1. Project Title

2009 Nutrient Enhancement on Pine Creek

2. Project Manager

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3. Identification of problem or opportunity to be addressed

Pine Creek was affected by the eruption of Mount St. Helens in 1980 when a lahar scoured the length of it, eventually depositing sediment into Swift Reservoir. As a result of the eruption, nutrient levels decreased due to loss of allochthanous materials and decreased primary production (Lower Lewis River Watershed Analysis (WA) 1995). Additionally, the floods of 1996 removed much of the river's newly established riparian vegetation. Dams built in the 1930's prevented anadromous fish from returning to spawn in the Upper Lewis River System, including Pine Creek. This greatly decreased the nutrient levels in affected streams over time by eliminating contributions of carcasses and eggs.

Nutrients added to Pine Creek and P8 in the form of carcasses would increase primary and secondary production, leading to increased feeding opportunities for bull trout. The areas along Pine Creek and P8 that could be reached by vehicles would be treated by hand, while inaccessible areas would be treated by helicopter. A total of six miles in Pine Creek, and two miles in P8 are available to be treated depending upon partnership funding. The project will benefit bull trout and all species of introduced anadromous fish.

This project compliments the 2006 and 2008 the Nutrient Enhancement projects funded by the ACC.

There are two methods that can be selected this year:

Method A is to use a helicopter to distribute carcasses to Pine Creek and P8 as in past projects. A typical carcass is good for approximately 3.5 weeks, at that time the nutritional value and remains of the carcass is gone. Carcasses would be distributed in early December.

Method B is to use carcass analogs. A helicopter would still be used to distribute nutrients, but we could distribute them during early spring when bull trout fry are emerging from gravel. Analogs will last 10 days before they are gone (personal comm.. with Mendy Harlow), so it would take two applications to make the product emulate carcasses. The analogs are produced by Skretting fish food company using a pacific whitefish. The nutritional value is similar to salmon carcasses or analogs. One pound of

analog material is equivalent to 5 lbs of carcass material. Current price is approximately $1.00 per lb. for analogs. The 16 mm size of the analogs could be distributed using a helicopter and hopper developed for aerial application of fertilizer pellets. This would greatly reduce personnel time.

One method should be chosen. I wrote the proposal up this way and wish the ACC group to decide which method (analogs or carcasses) we want to use.

4. Background

Provide information related to how this project fits into greater watershed objectives and any previously collected information at the project site (e.g. fish surveys, habitat delineation, etc)

The Lower Lewis River Watershed Analysis (WA) (1995), and "A study of ecological responses to the 1980 eruption of Mount St. Helens (2005), have identified Pine Creek and its associated floodplains and riparian areas as containing high priority restoration needs.

Coho salmon fry from adult live plants in Swift Reservoir in 2005 were located in Pine Creek and P8 by WDFW during 2006 bull trout surveys.

In December 2006, approximately 3,300 coho carcasses (26,400 lbs) were distributed in Pine Creek and Tributary P8 using a helicopter, and 100 carcasses were distributed by Fish First using a truck. Approximately 4.5 miles of stream were treated with carcasses. The helicopter was able to distribute them fairly evenly with most of them landing instream near the stream edge, some inadvertently landed on the stream bank and in the water. The helicopter distributed them so the majority of carcasses were in slower water areas (i.e. stream margins). Approximately 0.3kg/m² were placed. (Studies performed on streams on the Mt. Hood National Forest that were treated at a rate of 0.4kg/m² showed increases in biofilm production and coho fork lengths.) In December 2008 approximately 2,600 coho carcasses were placed in Pine Creek and P8 using a helicopter, and 100 carcasses were distributed by hand using a truck. 800 of the carcasses were placed in the first two miles of P8 and the 2,000 were placed in Pine Creek above the Forest Boundary.

5. Project Objective(s)

State the objectives of your proposal including how the project is consistent with Aquatics Fund objectives and recovery plans. Describe the technical basis for the objectives including the identification of any supporting technical references.

GOAL:

Enhance the quality of fish habitat in Pine Creek by:

- Improving the nutrient levels in Pine Creek and associated floodplains and riparian areas using carcasses.

Based on ACC direction in 2006, carcasses will be targeted for instream distribution only. Riparian vegetation may benefit slightly from this activity as nutrients are dispersed via animal activity, and helicopter misplacement.

Increased nutrient availability instream will provide increased primary production - leading to increased secondary production of aquatic macroinvertebrates, which juvenile bull trout and other salmonids feed upon. Pine Creek and especially P8 are important spawning tributaries for bull trout in the Upper Lewis River Sub basin. It is one of only a few streams (Rush Creek and possibly sections of Muddy River) with cold enough summer water temperatures to allow for successful bull trout spawning and egg incubation.

As an option carcass analogs could be used instead of or in conjunction with instream placement of carcasses.

This project addresses the following Aquatic Fund priorities.

Priority 1: *Benefit fish recovery throughout the North Fork Lewis River, with priority to federal ESA-listed species.*
Bull trout are listed as a threatened species under the ESA.
Steelhead trout are listed as a threatened species under the ESA
Coho salmon are listed as a threatened species under the ESA

Priority 2: *Support the reintroduction of anadromous fish throughout the basin.*
Nutrients will enhance the growth and production of anadromous fish.

Priority 3*: Enhance fish habitat in the Lewis River Basin-, with priority given to the North Fork Lewis River.*

WDFW has produced a report titled, (*Pacific Salmon and Wildlife Ecological Contexts, Relationships, and Implications for Management*); the report states that there is a 50% increase in the size of coho in streams enriched with salmon carcasses. The assumption is made that bull trout and steelhead juveniles will respond in similar fashion.

6. Tasks:
State the specific actions which must be taken to achieve the project objectives.
1) secure funding;
2) acquire required permits;
3) secure carcasses and/or carcass analogs;
4) enlist volunteer groups to help distribute carcasses by truck/hand where applicable; and,
5) contract to secure helicopter for distribution of carcasses and/or analogs to areas inaccessible to trucks or hand distribution.

Pre-project monitoring has already been occurring as part of the 2006 and 2008 project. Current monitoring includes analysis of macroinvertebrate samples. Monitoring could be expanded and follow a number of protocols including ones used by the BPA under a contract titled, "Assessment of Three Alternative Methods of Nutrient Enhancement on Biological Communities in Columbia River Tributaries."

7. Methods:
Describe methods to be used. When using Best Management Practices (BMPs) identify sources of BMPs and how they will protect resource values.

Several methods can/will be used to meet project objectives:

Adult carcasses from various hatchery reared and collected salmonids species will be distributed by hand in areas accessible to vehicles, inaccessible areas would be seeded by helicopter. The Gifford Pinchot National Forest completed a nutrient enhancement project in 2006 and 2008 using a helicopter. Many of the logistical problems were worked out at that time, which makes this proposal solid. Mt. Hood National Forest completed a similar project using a helicopter (see attached write-up from Mt. Hood), carcasses distributed in streams with wood floated less than ¼ mile before lodging up, in streams devoid of wood, carcasses floated further lodging around boulders or in slack waters or pool eddies. WDFW guidelines from their draft nutrient supplementation paper "Protocols and guidelines for distributing salmonids carcasses, salmon carcass analogs, and delayed release fertilizers to enhance stream productivity in Washington State" allow up to 1.9 kg/m². We are proposing to seed at the rate of 0.4 kg/m², this equates to approximately four tons per mile, or about 1000 fish per mile.

Carcass analogs are in an experimental stage and have been studied by a USGS research team in the Wind River Drainage (Analogs for this study were produced from salmon carcasses). Another study of analogs by Mendy Harlow with the Hood Canal Salmon Enhancement Groups using the Skretting Analogs is ongoing. The use of carcass analogs is an emerging technology. Fish carcasses and other fish processing waste materials are converted into a solid cake. The cake would be treated to kill associated fish pathogens. The advantage of the analog is that they are lighter in weight per unit of nutrient (when compared to carcasses) and they would present a much lower risk of pathogen transfer. The technology is currently in development and testing, and may be useful in meeting Proposal objectives if analogs can be obtained and permitted for use. If analogs are used there would be two applications approximately 10 days apart to emulate the amount of time carcasses are in the system. A personal conversation with Hal Michaels of WDFW revealed that they would prefer to use analogs if possible.

The project would take place in December of 2009 if carcasses are used and in April or May of 2010 if analogs are used. The December time period mimics natural coho spawning periods. Literature has shown increased benefits to fry may occur if nutrients are placed in spring, prior to fry emergence. This however, does not mimic natural spawning behavior in coho, and may cause other unforeseen problems in the ecosystem.

Species that occurred in Pine Creek prior to Dam construction include coho salmon, steelhead trout, and possibly chinook salmon. At this time due to WDFW restrictions, and/or tribal concerns, the only species available for nutrient enhancement are coho salmon.

Carcass use for Pine Creek is limited to Lewis River stocks. This may cause availability problems because other projects in the Lewis River Basin need carcasses too.

8. Specific Work Products

Identify specific deliverable results of the project. Project managers will be required to provide status updates with submission of project invoices.

The preferred method to measure deliverables is number/pounds of carcasses/carcass analogs distributed per stream segment. For project assessment purposes, stream segments can be ½ mile increments based on river miles. To verify amounts distributed, hatchery forms documenting numbers of carcasses supplied for the project would be on file at the Mt. St. Helens Ranger District. Invoices for purchases of carcass analogs, if used, will also be on file at Mt. St. Helens Ranger District.

9. Project Duration

a. Identify project duration. Note that duration of a project funded from Fiscal Year 20xx appropriations may extend beyond the end of the fiscal year.
b. Provide a detailed project schedule to include:
- Initiation of project.
- Completion date for each milestone or major task.
- Project close-out site visit (with PacifiCorp, Cowlitz PUD, and ACC representatives)

The duration of this project under the current Proposal would continue for one season. The Proposal would build on efforts from 2006 and 2008. It could continue for several more years, depending on the results and ACC funding. If the project continues for several years, it would be similar in scope and size to this years project; however, it would include minor changes as needed on an annual basis.

The project would take 7 to 21 days to complete. Nutrients would be distributed by helicopter over 4 to 5 miles of stream over a 2-5 day period. Hand distribution would concurrently with or just after helicopter distribution and should be completed by the end of January.

Access may be limited during the months of December and January due to snow, if this is the case, helicopter distribution may occur in areas that were initially identified for hand distribution.

A project closeout meeting would occur at the soonest ACC meeting following project completion and access is available.

10. Permits

NEPA- The Forest Service completed NEPA for this project in 2006. NEPA documents allow us to continue this as an ongoing project for another 5 years.

WDFW- An approval form to distribute both carcasses and carcass analogs will be submitted to WDFW when funding is secured. WDFW coordinates with Department of Ecology (DOE) as part of the approval process.

DNR- A Land Use License from Washington DNR will need to be obtained to use Swift Reservoir boat launch parking area as a helicopter landing and staging area. Both of these permits were secured for the 2006 and 2008 project, and should be easily obtainable for an ongoing project.

Identify any applicable permits and resource surveys required for project. Please include timeline for obtaining and any action taken to-date. Applicant will be responsible for securing all such necessary permits. Landowner permission is required prior to finalization of a Funding Agreement with PacifiCorp. On-the-ground (dirt moving) projects will be required to be in compliance with Sections 401 and 404 of the Clean Water Act, Sections 7 and 10 of the Endangered Species Act, and the National Historic Preservation Act of 1966, as well as Department of the Interior regulations on hazardous substance determinations. Project site surveys may be required in order to comply with these and other regulations.

Land ownership in Pine Creek is comprised of federal and private lands. The Forest Service manages approximately 2 miles of stream in the area proposed for carcass seeding. Olympic Resources Management owns approximately 4 miles of stream in the proposed project area, and Three Rivers Recreational Area owns about 1 mile of stream near the mouth of Pine Creek. Olympic Resources Management and Three Rivers Recreational Area landowners have been contacted and wish to participate in the project.

11. Matching Funds and In-kind Contributions

If applicable, describe any matching funds and/or in-kind contributions that you have secured or have requested through other means. Matching funds are those funds contributed to the project from other funding sources. In-kind contributions may include donated labor, materials, or equipment. Please be specific in your description of contributions and use of volunteers (e.g. ACE construction is donating 8 hours of backhoe operation including operator).

Partner	**Contribution**	**Funds**
Forest Service	Project development, Contracting, Permitting, Monitoring	$12,000 In-kind
Clark Skamania Fly Fishers	Labor for carcass collection, Nutrient distribution, Vehicle use 200 miles	$2,000 In-kind
Mt. St. Helens Institute	Monitoring	$3,000 In-kind
Olympic Resource Management	Agreements, road use	$1,000 In-kind

12. Professional Review of Proposed Project

It is encouraged that the proposal be reviewed by an applicable resource professional prior to submission for funding. Focus of such review should be on biological value and proposed methodology. Please note who completed the review and contact information. This does not have to be a third party review, and can come from someone associated with the sponsoring organization.

This project proposal was reviewed by Gifford Pinchot National Forest (GPNF) Hydrology program manager, Ruth Tracy.

13. Budget

Provide a detailed budget for the project stages (Final design, Permitting, Construction, Monitoring/Reporting). Include:
Personnel costs
Labor and estimated hours
Operating expenses
Supplies and materials
Mileage
Administrative overhead
If in-kind contributions have been acquired, please note contributions according to project stage within the budget.

Pine Creek Nutrient Enhancement
Helicopter **CARCASS**

	Total	NEPA	Final designs	Project Mgmt.	Construction	Monitoring/Labor /Reporting
Personnel Costs						
FS - Zone Team or Contract						
FS –Fish Bio and Hydrologist			$5,000 (IK)			
FS - Fish Bio and Hydrologist				$2,000(IK) $2,000 (ACC)		$5,000 (ACC)
FS - Contract administrator -					$3,000 (IK)	
FS - Contract Specialist					$2,000 (IK)	
Clark Skamania FlyFishers						$2,000 (IK)
Pope & Talbot Timber (ORM)						$1,000 (IK)
Mt. St. Helens Institute						$3,000 (IK) $2,000 (ACC)
Contract Payables						
Helicopter Contract,					$28,600 (ACC)	
Refrigerated Trailer Rental and mobilization					$1,400 (ACC)	
Forklift Rental and mobilization					$1,000 (ACC)	
Supplies					$ 1000 (ACC)	
Administrative Overhead		$3,500(IK)	$1,500 (IK)			
Total ACC Funds	**$41,000**			**$2,000**	**$32,000**	**$ 7,000**
Total FS Funds	*$12,000*		*$5,000*	*$2,000*	*$5,000*	
Total other Partner Funds	*$8,000*					*$8,000*
Project Total	***$60,000***					

FS personnel estimated as $300/day.

This project can be implemented with funds solely acquired from the ACC and Forest Service in kind contributions allowing for four to five miles of carcass seeding, if funds from other groups such as LCFRB come through we can treat up to eight miles. Any other funds acquired will be used to extend the area of distribution.

PINE CREEK NUTRIENT ENHANCEMENT HELICOPTER COST SHEET for CACRCASS

Prepared by R. Pankratz / Helicopter Manager

Assumptions:

1) Approximately 4 tons of fish carcasses per mile to be distributed along Pine Creek by air for four river miles.
2) Calculations based upon utilization of Northwest Helicopters Jet Ranger (206 B-III) with custom fish bucket
3) No cost factors considered for delivery of fish to operations site
4) No cost factors considered for any personnel other than those required to accommodate safe and effective helicopter delivery of fish. Positions considered are helicopter manager, helitack, road guards, streamside safety monitors, forklift operators, fish loaders.
5) Two weathered out days have been factored in.
6) Swift boat launch will serve as the heliport and staging area for fish carcasses

7) Average weight per fish carcass is ten pounds
8) It's an approximate 1 mile flight from the Swift boat launch heliport to the confluence of the Pine Creek and Lewis River
9) Personnel salary will include necessary aviation safety and logistical planning
10) Helicopter rates derived from Region 6 light helicopter contract with cost modifications addressing this operation
11) During proj. imp. phase 12 hour days are accounted for to allow for daily prep time, travel times, daily clean-up, contract docs etc. Objective is to effectively use aircraft resource during available windows with salary costs secondary to aircraft logistics
12) Helicopter mobilization calculated from Olympia, Washington
13) Mobilization, recon and operational flight time are all accounted for in separate line items
14) A scale is identified for use at heliport as required by regional aviation oversight
15) No vehicle costs assumed for project support equip.-will need type 6 engine, several pickups, forklift, equip. trailer and tow rig
16) No cost listed for rental of refer trailer to hold fish

Estimated costs are developed below. . .

COST ITEM	UNIT	# OF UNITS	COST PER UNIT	COST ITEM TOTAL
Helicopter Manager developing project aviation safety plan and logistical planning	day	6	$271.00	$1,626.00
Helicopter Manager daily implementation oversight	day	5	$271.00	$1,355.00
Helicopter manager overtime	hour	20	$42.00	$840.00
Helicopter manager hazard pay for actual flying days	hour	24	$6.97	$167.28
Helitack for daily operations = one GS-6	day	4	$199.00	$796.00
GS-6 overtime	hour	16	$24.44	$391.04
GS-6 hazard pay for actual flying days	hour	24	$4.07	$97.68
Helitack for daily operations = two GS-5	day	8	$130.00	$1,040.00
GS-5 overtime	hour	32	$21.21	$678.72
GS-5 hazard pay for actual flying days	hour	48	$3.54	$169.92
Streamside monitoring personnel = two GS-5	day	8	$130.00	$1,040.00
GS-5 overtime	hour	32	$21.21	$678.72
Road guards for 25 road = two GS-5	day	8	$130.00	$1,040.00
GS-5 overtime	hour	32	$21.21	$678.72
Fork lift operator GS-9	day	4	$271.00	$1,084.00
GS-9 overtime	hour	16	$42.00	$672.00
Fish handlers/loaders two GS-9	day	4	$271.00	$1,084.00
GS-9 overtime	hour	32	$42.00	$1,344.00
Helicopter mobilization flat fee	ea	1	$555.00	$555.00
Helicopter demobilization flat fee	ea	1	$555.00	$555.00

Helicopter hourly cost project recon	hour	0.5	$865.00	$432.00
Helicopter hourly cost project implementation	hour	12	$865.00	$10,380
Helicopter daily guarantee	day	1	$1,000.00	$1,000.00
Fuel truck mileage fee	mile	620	$1.40	$868.00

$
$28,573.00

Total cost estimate for aviation component of fish carcass placement / Pine Creek

Personnel Budget CARCASS				
Item	**Personnel**	**Estimated Days/units**	**Cost Per Unit**	**Total**
Project Management	Fish Biologist Fish Technician	2 4.6	$300 per day per person	$2,000
Materials & Supplies	Field Equipment, Notebooks, Misc Supplies			$1,000
Monitoring	Fish Biologist Fish Technician Transportation Macroinvertebrate analysis	3 4.3 600 $2,500	$300 per day per person $0.50	$2,200 $300 $2,500
MSHI Monitoring	Supervisor Assistant Volunteers Transportation	1 2 5 2,000	$300 per day per person $20 $0.50	$900 $100 $1,000
Total				**$10,000**

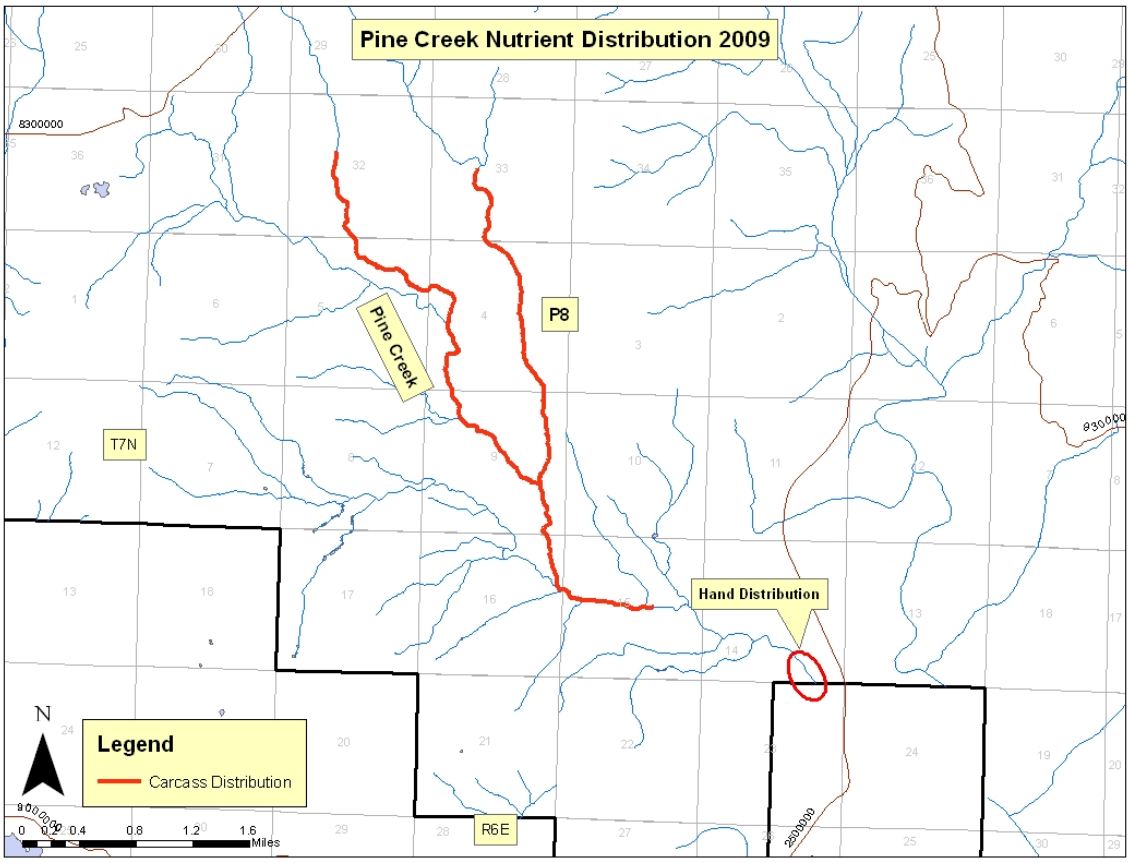
Pine Creek Nutrient Enhancement
Helicopter **ANALOGS**

	Total	NEPA	Final designs	Project Mgmt.	Construction	Monitoring/Labor /Reporting
Personnel Costs						
FS - Zone Team or Contract						
FS –Fish Bio and Hydrologist			$5,000 (IK)			
FS - Fish Bio and Hydrologist				$2,000(IK) $2,000 (ACC)		$5,000 (ACC)
FS - Contract administrator -					$3,000 (IK)	
FS - Contract Specialist					$2,000 (IK)	
Clark Skamania FlyFishers						$2,000 (IK)
Pope & Talbot Timber (ORM)						$1,000 (IK)
Mt. St. Helens Institute						$2,000 (IK) $2,000 (ACC)
Contract Payables						
Helicopter Contract with analogs					$20,000 (ACC)	
Refrigerated Trailer Rental and mobilization						
Forklift Rental and mobilization						
Supplies					$ 1,000 (ACC)	
Administrative Overhead		$3,500(IK)	$1,500 (IK)			
Total ACC Funds	**$30,000**			**$2,000**	**$21,000**	**$ 7,000**
Total FS Funds	*$12,000*		*$5,000*	*$2,000*	*$5,000*	
Total other Partner Funds	*$8,000*					*$8,000*
Project Total	***$48,000***					

FS personnel estimated as $300/day.

EQUIPMENT Budget ANALOG			
Item	**Cost per unit**	**Number of units**	**Total**
Helicopter	$865	8	$6,920
Fuel Truck	2.10 mile	600	$1,260
Laborers	$20/hour	59	$1,180
Analogs	$2,128 ton	5	$10,640
Total			**$19,940**

Personnel Budget ANALOG				
Item	**Personnel**	**Estimated Days/units**	**Cost Per Unit**	**Total**
Project Management	Fish Biologist Fish Technician	2 4.6	$300 per day per person	$2,000
Materials & Supplies	Field Equipment, Notebooks, Misc Supplies			$1,000
Monitoring	Fish Biologist Fish Technician Transportation Macroinvertebrate analysis	3 4.3 600 $2,500	$300 per day per person $0.50	$2,200 $300 $2,500
MSHI Monitoring	Supervisor Assistant Volunteers Transportation	1 2 5 2,000	$300 per day per person $20 $0.50	$900 $100 $1,000
Total				**$10,000**


Pine Creek Nutrient Distribution 2009
8300000
8300000
P8
Pine Creek
T7N
R6E
Hand Distribution
N
Legend
Carcass Distribution
0 0.2 0.4 0.8 1.2 1.6
Miles

1. **Project Title**

Clear Creek Instream Habitat Restoration

2. **Project Manager**

Adam Haspiel
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3. **Identification of problem or opportunity to be addressed**

The lower 1.3 miles of Clear Creek lacks large woody material and provides minimal structure for fish habitat. 900 pieces of Large Wood Material would be added to the lower 1.3 miles to create pool habitat and provide complex structure to the stream. This would create and improve rearing opportunities for chinook, coho salmon and steelhead trout. In addition it would improve spawning opportunities for reintroduced adult chinook and coho salmon and steelhead trout. Wood for this project would come from USFS lands and from Swift Reservoir cleaning operations. Most of the woody material will be placed downstream of the 93 road bridge to avoid potential problems with both the bridge and the proposed acclimation pond.

4. **Background**

Clear Creek is 14.2 miles long and is a class II tributary to Muddy River. It enters the Muddy River at RM 4.8 (see map). It has a watershed size of 22,720 acres. A level II FS stream survey was performed on the lower two miles in August 1996 following the floods of January of that year. In 1996, 24.8 pieces of Large Woody Debris (LWD) per mile was documented, well below the regional FS standard of 80 pieces per mile. The pool count was 11.9 pools per mile, also below the regional FS standard of 96 pools per mile, however the pools tended to be long scour pools. Pools made up 24% of total channel area, an ideal pool riffle ratio is 50-50. Electrofishing was conducted as part of the survey and only rainbow trout were documented, however earlier surveys documented cutthroat trout as well. On September 16th, 2008 Forest Hydrologist Ruth Tracy and District Fisheries Biologist Adam Haspiel performed an ocular survey of the lower 1.3 miles of Clear Creek. A lack of LWD was confirmed, however the few pools that were present were formed by deposits of LWD. Juvenile coho salmon were observed in each of the existing pools. In August 2007 the Forest Service TEAMS Enterprise unit conducted a multidisciplinary riparian and stream channel corridor assessment of the mile located upstream of the bridge crossing the 93 road. As part of this survey they also walked the lower mile of Clear Creek and documented the need to implement stream restoration activities including LWD placement, road removal and riparian planting and thinning.

This project would fit into restoration objectives for the Clear Creek watershed which includes restoring watershed functionality. The Forest Service recently completed an EA to allow for removal of roads affecting riparian areas, removal of roads creating a risk of sediment delivery to Clear Creek, and closure of dispersed campsites that affect fish habitat and riparian values. A Forest Service Stewardship timber sale know as Wildcat is currently being planned for this watershed. This type of timber sale can allow for some of the restoration work to be performed

as part of the sale and provide us with an opportunity to leverage funding to get the most bang for our buck.

PacifiCorp is proposing an acclimation pond for juvenile chinook within this project area. These juveniles will benefit from increased pool habitat and complexity as they migrate downstream.

Current fish use of Clear Creek includes low numbers of rainbow trout (FS Stream Survey 1996). Juvenile coho salmon were observed in this reach of Clear Creek by Adam Haspiel in September 2008

The Lewis River Synthesis tool developed by the Aquatic Coordination Committee (ACC) gave this section of Clear Creek a medium rating for habitat restoration potential for coho and steelhead and listed the following concerns: High concern for lack of habitat diversity and quantity, sediment load and low availability of food. Moderate concern for stream flow (Environmental Diagnosis and Treatment (EDT). The Lower Columbia Fish Recovery Board (LCFRB) Salmon Recovery Plan rated this as a Primary stream for coho population recovery and also thought the restoration potential was high. For steelhead LCFRB rated this as a Continuing population recovery and having low restoration potential.

Community Involvement.
The Mount St. Helens Institute (MSHI) is currently creating a Youth Stream Team program consisting of students interested in the environment. These students come from diverse backgrounds, some are at risk youths, and others are from urban environments. This is part of the overall goal of getting "Kids Back in the Woods" program developed at both a National and State level. This proposal includes a request for $4,000 to help with transportation and on the ground supervision and guidance of these students. They will help with the monitoring of the project, including using survey equipment and photo documentation. In addition two college level interns from the MSHI will assist in project monitoring and implementation.

Nexus to the Projects: This project has a clear connection to the hydropower projects. It is upstream of all projects and is a tributary to the Muddy River. Prior to dam construction the Muddy River Watershed was a major producer of anadromous salmonids in the Lewis River.

Fund Objectives: This project meets the funds objectives in the following manner.
Priority 1: *Benefit fish recovery throughout the North Fork Lewis River, with priority to federal ESA-listed species.*
Lower Columbia River Chinook Salmon are listed as a threatened species under the ESA.
Lower Columbia River Steelhead Trout are listed as a threatened species under the ESA
Lower Columbia River Coho Salmon are listed as a threatened species under the ESA

Priority 2: *Support the reintroduction of anadromous fish throughout the basin.*
Large woody material will increase pools, providing rearing opportunities for juveniles, and enhanced spawning opportunities for adult anadromous fish. This project will increase the chances for success when anadromous fish are reintroduced into the basin. Small numbers of juvenile coho salmon from habitat preparation activities are already using this section of creek for rearing.

Priority 3*: Enhance fish habitat in the Lewis River Basin, with priority given to the North Fork Lewis River.*

Large woody material will directly enhance and increase fish habitat in the North Fork Lewis River Basin for re-introduced anadromous fish. LWD will create pools, provide stream structure and diversity, and create optimal spawning locations.

Provide information related to how this project fits into greater watershed objectives and any previously collected information at the project site (e.g. fish surveys, habitat delineation, etc)

5. Project Objective(s)

The main objectives of this project are to create rearing pools for juvenile salmonids, to improve spawning opportunities and increase habitat complexity in the lower 1.3 mile of Clear Creek. Many studies have documented that restoration projects using LWD increase habitat complexity and biomass throughout the restored reach. Cederholm found an increase in pool area of 33% to 74 % following restoration activities in North Fork Porter Creek, a coastal tributary to the Chehalis River, WA. Fish were frequently found spawning near treated sites, and coho winter density increased 20-fold in the engineered sites (Cederholm et al 1997). A paper by Roni, et al reviewing numerous stream restoration projects using LWD found that juvenile coho salmon often had a significant increase in numbers following restoration projects. In addition spawning gravel associated with engineered log jams in Lobster Creek increased suitable spawning habitat by 115%. Sixty percent of the steelhead and 56% of coho salmon adults in East Fork Lobster Creek spawned within 5 meters of structures (Roni, et al 2002).

State the objectives of your proposal including how the project is consistent with Aquatics Fund objectives and recovery plans. Clearly describe the biological benefits and expected outcome of your project. Describe the technical basis for the objectives including the identification of any supporting technical references. Identify biological metrics to help quantify the benefit of the project.

6. Tasks

Finalize project design
Complete NEPA compliance on project
Secure Wood (Wildcat TS and Swift Reservoir)
Develop contract
Implement project
Pre and Post project monitoring-longitudinal profile, cross sections, photo points, pebble counts, snorkel or electrofishing surveys.

State the specific actions which must be taken to achieve the project objectives.

7. Methods

Trees will be transported to the site leaving them as long as possible.
Log trucks will deliver trees to the site.
A front end loader will be used to transport trees from road to structure locations in the creek. An excavator will be used to excavate pools and place the trees. Ends of trees will be buried in streambanks and substrate to anchor them. Best Management Practices (BMPs) listed in the Gifford Pinchot National Forest Plan will be used along with Design Criteria identified in the 2007 NOAA and USFWS Programmatic Biological Opinions, and the USFS and WDFW MOU. These BMPs swill protect resource values by ensuring we follow instream work windows, minimize sediment input during implementation, provide oil sorbent booms to capture oil spills, eliminate the risk of spreading noxious weeds, etc.

Describe methods to be used. When using Best Management Practices (BMPs) identify sources of BMPs and how they will protect resource values.

8. Specific Work Products

Deliverables include:
Number of trees placed
Number of pools created
Number of structures created

Identify specific deliverable results of the project. Project managers will be required to provide status updates with submission of project invoices.

9. Project Duration

a. Monitoring for this project will begin during the summer of 2009, project implementation will occur in 2010, and post project monitoring will occur for several years on annual basis after that. As-built documents will be completed by December 31st, 2010. An initial report documenting fish response to the structures will be completed by December 31st 2011, and then amended on an annual basis thereafter.

Identify project duration. Note that duration of a project funded from Fiscal Year 20xx appropriations may extend beyond the end of the fiscal year.

b. Provide a detailed project schedule to include:

NEPA-Summer	2009/Winter 2010
Project Implementation	July 2010
Project site visit	August 2010
Pre-Project Monitoring	July 2009 & July 2010
Post Project Monitoring	July 2011 and beyond.
Project Close-out visit	August 2011

Initiation of project.
Completion date for each milestone or major task.
Project close-out site visit (with PacifiCorp, Cowlitz PUD, and ACC representatives)

10. Permits

Once NEPA is complete our MOU with WDFW precludes us from securing any other state permits. Our Forest Service Regional Programmatic Restoration Biological Opinions cover this type of work. We will notify USFWS and NOAA when NEPA is complete and coordinate activities with them. The USFS is the landowner for the Clear Creek Project.

Identify any applicable permits and resource surveys required for project. Please include timeline for obtaining and any action taken to-date. Applicant will be responsible for securing all such necessary permits. Landowner permission is required prior to finalization of a Funding Agreement with PacifiCorp.

On-the-ground (dirt moving) projects will be required to be in compliance with Sections 401 and 404 of the Clean Water Act, Sections 7 and 10 of the Endangered Species Act, and the National Historic Preservation Act of 1966, as well as Department of the Interior regulations on hazardous substance determinations. Project site surveys may be required in order to comply with these and other regulations.

11. Matching Funds and In-kind Contributions

Matching Funds-

USFS will contribute materials for the project in the form of Large Woody Material

	$90,000 Trees
Ecotrust	**$40,000 Cash**

In-Kind-

USFS	**$15,000**
MSHI	**$4,000**

If applicable, describe any matching funds and/or in-kind contributions that you have secured or have requested through other means. Matching funds are those funds contributed to the project from other funding sources. In-kind contributions may include donated labor, materials, or equipment. Please be specific in your description of contributions and use of volunteers (e.g. ACE construction is donating 8 hours of backhoe operation including operator).

12. Peer Review of Proposed Project

This proposal was reviewed by David Hu, Gifford Pinchot Forest Fish Biologist and Ruth Tracy, Gifford Pinchot National Forest Hydrologist prior to submittal.

13. Budget

Clear Creek Instream Habitat Restoration Budget

	Total	NEPA	Final designs	Project Mgmt	Construction	Monitoring/Labor /Reporting/Coord.
Personnel Costs						
FS - Zone Team or Contract		$8,000 (ACC)				
FS –Fish Bio and Hydrologist			$4,000 (IK) $20,000(ET)			
FS - Fish Bio and Hydrologist				$3,000 (ET)		$7,000 (ET)
FS - Contract administrator -					$5,000 (IK) $10,000 (ET)	
FS - Contract Specialist					$2,000 (IK)	
Mt St. Helens Institute						$4,000 (IK)
Mt. St. Helens Institute Community Education						$4,000 (ACC)
Materials						
Forest Service 900 Pieces of LWM					$90,000 (IK)	
Contract Payables						
Excavator/Front End Loader Contract					$22,000 (ACC)	
Logging and hauling of trees					$60,000 (ACC)	
Skidder Contract					$8,000 (ACC)	
Materials and Supplies				$ 2,000 (ACC)	$2,000 (ACC)	
Administrative Overhead		$3,500(IK)	$1,500 (IK)			
Total ACC Funds	**$106,000**	**8,000**		**2,000**	**$92,000**	**$4,000**
Total FS Funds	*$106,000*	*$3,500*	*$5,500*		*$97,000*	
Total Ecotrust funds	*$40,000*		*$20,000*	*$3,000*	*$10,000*	*$7,000*
Total other Partner Funds	*$4,000*					*$4,000*
Project Total	***$256,000***					

FS personnel estimated as $300/day.

Clear Creek expanded budget 2008

Item	Personnel	Estimated Days/units	Cost Per Unit	Total
NEPA Environmental Assessment required by Federal Law	Fish Biologist Wildlife Biologist Hydrologist Botanist Archeologist Soil Scientist Recreation Forester NEPA Coordinator	5 2 5 5 5 1 0.5 0.5 2.6	$300 per day per person	$8,000
Materials & Supplies	Field Equipment, Notebooks, Misc Supplies			$2,000
MSHI Monitoring	Supervisor Assistant Volunteers Transportation	3 3 10 4,000	$300 per day per person $20 $0.50	$1,800 $200 $2,000
Total				**$14,000**

Item	Cost per unit	Number of units	Total cost
Excavator	$200/hour	100	$20,000
Excavator Move in/out	$2000	1	$2,000
Skidder	$150/hour	40 hours	$6,000
Skidder Move in/out	$2,000		$2,000
Logging and Hauling cost: Estimate from Chilton Logging	$60,000	1	$60,000
Materials and Supplies			$2,000
Equipment Total			**$92,000**

From Chilton Logging
Ball Park Estimate Received on January 21, 2009

900 trees will take:
11.5 days to log
Logging costs are $3,900 per day
They can log 4 loads per day
The can haul about 20 pieces per load
Total of about 45 loads
They will need to use a skidder to move trees from road to Clear Creek
$44,800 to Log
$15,200 to haul from unit (Wildcat Timber Sale Unit) 1 mile to Clear Creek
$60,000 Total

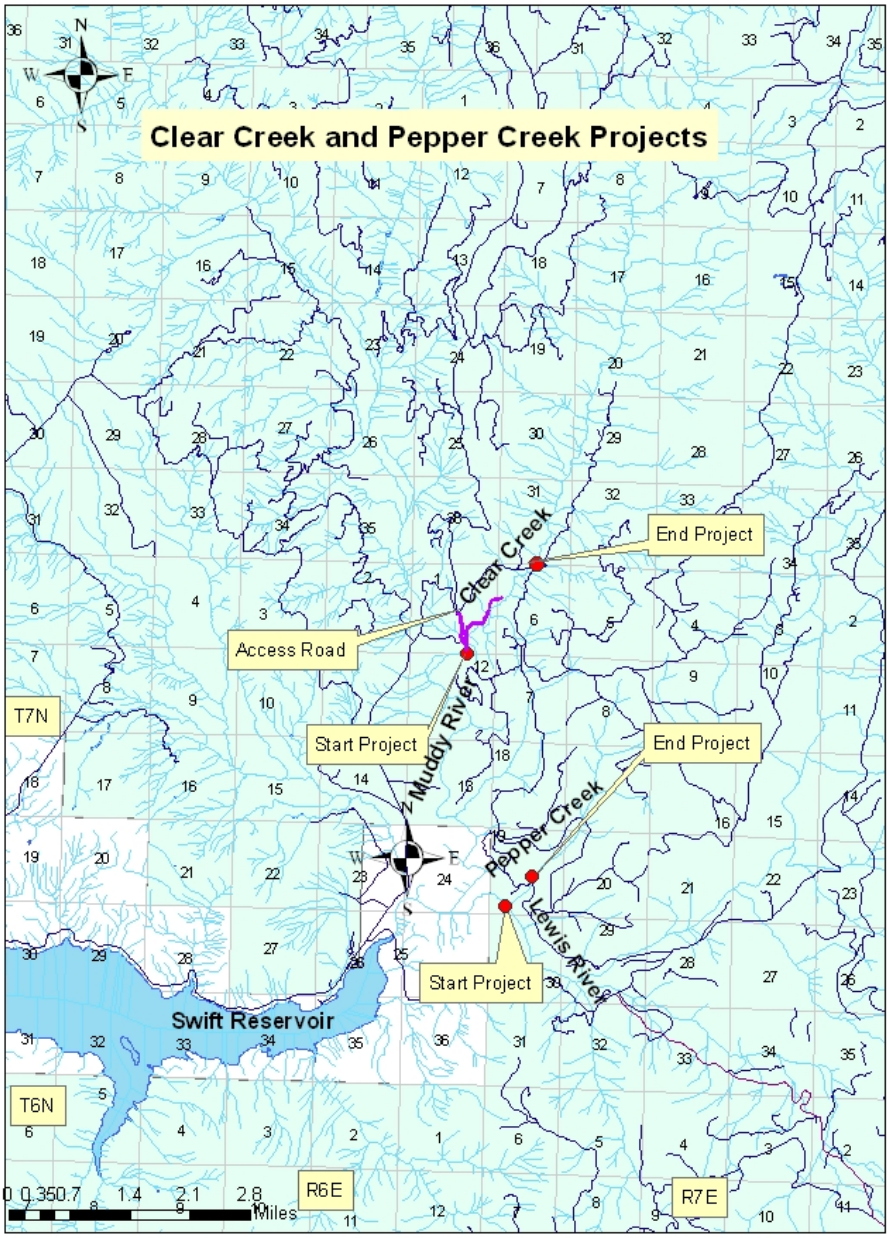
14. Photo Documentation (<u>Per National Marine Fisheries Service's Biological Opinion for Relicensing of the Lewis River Hydroelectric Projects):</u>

Photo-documentation is included as part of the monitoring process, it will include all items listed below.

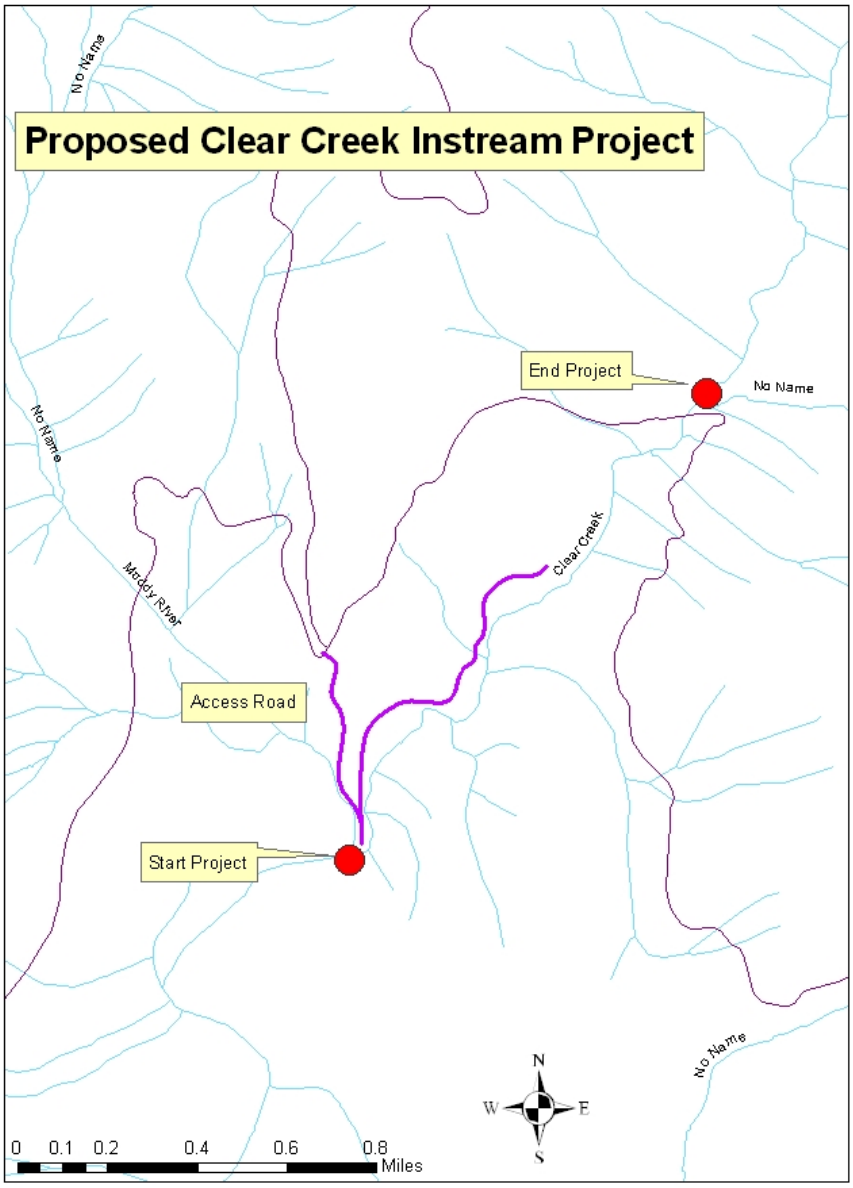
a. *Include general views and close-ups showing details of the project and project area, including pre- and post-construction.*

b. *Label each photo with date, time, project name, photographer's name, and documentation of the subject activity.*

Photos of existing LWD in Clear Creek. Notice pools forming from LWD.



Map 1: Project Vicinity Map



Map 2: Project location Map

Bibliography.

Abbe, T. B. and D. R. Montgomery. 1996. Large woody debris jams, channel hydraulics and habitat formation in large rivers. Regulated Rivers: Research and Management 12:201-221.

Cederholm, C.J. , R.E. Bilby, P.A. Bisson, T.W. Bumstead, B.R. Fransen, W.J. Scarlett, and J.W. Ward. 1997. Response of juvenile coho salmon and steelhead to placement of large woody debris in a coastal Washington stream. North American Journal of Fisheries Management 17:947-963, 1997.

Ronni, Phillip, T. J. Beechie, R.E. Bilby, F.E. Leonetti, M. M. Pollock, and G. R. Pess. 2002. A review of restoration techniques and a hierarchical strategy for prioritizing restoration in pacific Northwest Watersheds. North American Journal of Fisheries Management 22:1-20, 2002.

Attachment

ACC Comments and Questions on Pre-Proposals
USDA Forest Service - Pine Creek Instream Nutrient Enhancement, East Fork Lewis River Instream Structures Steelhead, Clear Creek Instream Habitat Restoration and Pepper Creek Instream Habitat Restoration

Note: Comments and questions that follow are directly from emails and discussions by the ACC.

All projects: Proposals should demonstrate that the project is scientifically supported, has a clear nexus to the Lewis River hydroelectric projects, and clearly supports the Aquatic Fund objectives. Please prepare the document with the assumption that the reader is not familiar with the Lewis River basin, its issues, or its resources.

Clear Creek Instream Habitat Restoration
Recommend USFS include a stronger description of benefiting species and limiting factors from the Recovery Plan and improve description of current and proposed habitat.

Recommend the USFS include a stronger description of benefiting species and limiting factors from the Recovery Plan; include description of community involvement specific to this project; and improve description of current and proposed habitat.

Need to address positive or negative impacts on other resources. 900 pieces of large woody material may create safety hazard and could impact Forest Road 93 bridge. What does the habitat look like now? Current fish use? Inclusion of pictures would be helpful.

1. **Project Title**

Pepper Creek Instream Habitat Restoration

2. **Project Manager**

Adam Haspiel
Fish Biologist
Mt. St. Helens National Volcanic Monument
42218 NE Yale Bridge Road, Amboy WA 98601
ahaspiel@fs.fed.us
360-449-7833

3. **Identification of problem or opportunity to be addressed**

The lower 0.5 miles of Pepper Creek lacks large woody material and provides minimal structure for fish habitat. 150 pieces of Large Wood Material would be added to the lower 0.5 miles to create pool habitat and provide complex structure to the stream. This would create and improve rearing opportunities for, coho salmon and steelhead trout. In addition it would improve spawning opportunities for reintroduced adult coho salmon and steelhead trout. Wood for this project would come from USFS lands and from Swift Reservoir cleaning operations.

4. **Background**

Pepper Creek is approximately 3.5 miles long and is a class II tributary to Lewis River. It enters the Lewis River approximately 2.5 miles upstream from the end of Swift Reservoir (see map). It has a watershed size of 2,023 acres. A level II stream survey was performed on it in July 2008, and July of 1989. In a 2008 FS stream survey 39 pieces of LWD per mile was documented, well below the regional FS standard of 80 pieces per mile. The pool count was 44 pools per mile, also below the regional standard of 96 pools per mile, and the pools tended to be short plunge pools. Pools made up 16% of total channel area, an ideal pool riffle ratio is 50-50. The bankfull channel width in the first reach (1.4 miles) averaged 23 feet. Temperatures were taken at 30 minute intervals throughout the day from July 23 to July 29th, 2008. Temperatures were taken during daylight hours by hand and were consistently between 50 and 52 degrees F. Electrofishing was conducted as part of the survey and juvenile coho salmon from experimental releases were documented in the first 1/10 mile of stream. Cutthroat and rainbow trout were also documented throughout the survey.

This project would fit into restoration objectives for the watershed which includes restoring watershed functionality. The Forest Service upgraded the culvert on the 9039 road to allow fish passage following the 1996 floods. A Forest Service Stewardship timber sale know as Wildcat is currently being planned for portions of this watershed. This type of timber sale can allow for some of the restoration work to be performed as part of the sale and provide us with an opportunity to leverage funding to get the most bang for our buck.

The Lewis River Synthesis tool developed by the Aquatic Coordination Committee (ACC) gave this section of Pepper Creek a medium rating for habitat restoration potential for coho and steelhead and listed the following concerns: High sediment and key habitat quantity concerns. Moderate need for channel stability and habitat diversity (Environmental Diagnosis and Treatment, EDT), low flow and high temperature. The Lower Columbia Fish Recovery Board (LCFRB) Salmon Recovery Plan rated this as a Primary stream for coho population recovery and also thought the restoration potential was medium. For steelhead LCFRB rated this as a Continuing population recovery and having low restoration potential.

Current Fish use of Pepper Creek includes rainbow, cutthroat trout and juvenile coho salmon (FS Stream Survey 2008).

Community Involvement.
The Mount St. Helens Institute (MSHI) is currently creating a Youth Stream Team program consisting of students interested in the environment. These students come from diverse backgrounds, some are at risk youths, and others are from urban environments. This is part of the overall goal of getting "Kids Back in the Woods" program developed at both a National and State level. This proposal includes a request for $2,000 to help with transportation and on the ground supervision/guidance of these students. They will help with the monitoring of the project, including using survey equipment and photo documentation. In addition two college level interns from the MSHI will assist in project monitoring and implementation.

Nexus to the Projects: This project has a clear connection to the hydropower projects. It is upstream of all projects and is a tributary to the Lewis River. Prior to dam construction the Upper Lewis River Watershed was a major producer of salmonids in the Lewis River.

Fund Objectives: This project meets the funds objectives in the following manner:

Priority 1: *Benefit fish recovery throughout the North Fork Lewis River, with priority to federal ESA-listed species.*
Lower Columbia River Steelhead Trout are listed as a threatened species under the ESA
Lower Columbia River Coho Salmon are listed as a threatened species under the ESA

Priority 2: *Support the reintroduction of anadromous fish throughout the basin.*
Large Woody Material will increase pools and pool quality, providing rearing opportunities for juveniles, and enhanced spawning opportunities for adult anadromous fish. This project will increase the chances for success when anadromous fish are reintroduced into the basin. Small numbers of juvenile coho salmon from prior habitat preparation activities are already using this section of Pepper Creek for rearing.

Priority 3*: Enhance fish habitat in the Lewis River Basin, with priority given to the North Fork Lewis River.*
Large woody material will directly enhance and increase the diversity and structure of fish habitat in the North Fork Lewis River Basin for re-introduced anadromous fish.

Provide information related to how this project fits into greater watershed objectives and any previously collected information at the project site (e.g. fish surveys, habitat delineation, etc)

5. **Project Objective(s)**

The main objectives of this project are to create rearing pools for juvenile salmonids, to improve spawning opportunities and increase habitat complexity in the lower 0.5 miles of Pepper Creek. Cederholm found an increase in pool area of 33% to 74 % following restoration activities. Fish were frequently found spawning near treated sites, and coho winter density increased 20-fold in the engineered sites (Cederholm et al 1997). A paper by Roni, et al. reviewing numerous stream restoration projects using LWD found that juvenile coho salmon often had a significant increase in numbers following restoration projects. In addition spawning gravel associated with engineered log jams in Lobster Creek increased suitable spawning habitat by 115%. Sixty percent of the steelhead and 56% of coho salmon adults in an Oregon Coastal stream, East Fork Lobster Creek spawned within 5 meters of structures (Roni, et al 2002).

State the objectives of your proposal including how the project is consistent with Aquatics Fund objectives and recovery plans. Clearly describe the biological benefits and expected outcome of your project. Describe the technical basis for the objectives including the identification of any supporting technical references. Identify biological metrics to help quantify the benefit of the project.

6. Tasks

Finalize project design
Complete NEPA Compliance on project
Secure Wood (Wildcat TS and Swift Reservoir) (should be described in project description)
Develop contract
Implement project
Pre and Post project monitoring-longitudinal profile, cross sections, photo points, pebble counts, snorkel or electrofishing surveys.

State the specific actions which must be taken to achieve the project objectives.

7. Methods

Trees will be transported to the site by log truck, leaving them as long as possible.
A mobile yarder will fly trees into the creek from FS road 9039330 located near the mouth and from strategic locations off the 9039 road.
An all terrain excavator (Spyder) will be used to excavate pools and place trees instream. Ends of trees will be buried in streambanks and substrate to anchor them.
Best Management Practices (BMPs) listed in the Gifford Pinchot National Forest Plan will be used along with Design Criteria identified in the 2007 NOAA and USFWS Programmatic Biological Opinions, and the USFS and WDFW MOU. These BMPs will protect resource values by ensuring we follow instream work windows, minimize sediment input during implementation, provide oil sorbent booms to capture oil spills, eliminate the risk of spreading noxious weeds, etc.

Describe methods to be used. When using Best Management Practices (BMPs) identify sources of BMPs and how they will protect resource values.

8. Specific Work Products

Deliverables include:
Number of trees placed
Number of pools created
Number of structures created

Identify specific deliverable results of the project. Project managers will be required to provide status updates with submission of project invoices.

9. Project Duration

a. Monitoring for this project will begin during the summer of 2009, project implementation will occur in 2010, and post project monitoring will occur for several years on annual basis after that. As-built documents will be completed by December 31st, 2010. An initial report documenting fish response to the structures will be completed by December 31st 2011, and then amended on an annual basis thereafter.

b. Provide a detailed project schedule to include:
NEPA-Summer 2009/Winter 2010

Project Implementation	July 2010
Project site visit	August 2010
Pre-Project Monitoring	July 2009 & July 2010
Post Project Monitoring	July 2011 and beyond.
Project Close-out visit	August 2011

Initiation of project.
Completion date for each milestone or major task.
Project close-out site visit (with PacifiCorp, Cowlitz PUD, and ACC representatives)

10. Permits

Once NEPA is complete our MOU with WDFW precludes us from securing any other state permits. Our Forest Service Regional Programmatic Restoration Biological Opinions cover this type of work. We will notify USFWS and NOAA when NEPA is complete and coordinate activities with them. The USFS is the landowner for the Pepper Creek Project.

Identify any applicable permits and resource surveys required for project. Please include timeline for obtaining and any action taken to-date. Applicant will be responsible for securing all such necessary permits. Landowner permission is required prior to finalization of a Funding Agreement with PacifiCorp.

On-the-ground (dirt moving) projects will be required to be in compliance with Sections 401 and 404 of the Clean Water Act, Sections 7 and 10 of the Endangered Species Act, and the National Historic Preservation Act of 1966, as well as Department of the Interior regulations on hazardous substance determinations. Project site surveys may be required in order to comply with these and other regulations.

11. Matching Funds and In-kind Contributions

Matching Funds- USFS will contribute $15,000 worth of materials for the project in the form of Large Woody Material

In-Kind-

USFS	$8,000
MSHI	$2,000

If applicable, describe any matching funds and/or in-kind contributions that you have secured or have requested through other means. Matching funds are those funds contributed to the project from other funding sources. In-kind contributions may include donated labor, materials, or equipment. Please be specific in your description of contributions and use of volunteers (e.g. ACE construction is donating 8 hours of backhoe operation including operator).

12. Peer Review of Proposed Project

This proposal was reviewed by David Hu, Gifford Pinchot Forest Fish Biologist and Ruth Tracy, Gifford Pinchot National Forest Hydrologist prior to submittal.

13. Budget

Pepper Creek Instream Habitat Restoration Budget

	Total	NEPA	Final designs	Project Mgmt	Construction	Monitoring/Labor /Reporting/Coord
Personnel Costs						
FS - Zone Team or Contract		$4,000 (ACC)				
FS –Fish Bio and Hydrologist			$2,000 (IK) $2,000 (ACC)	$3,000 (ACC)		
FS - Fish Bio and Hydrologist						$1,000 (ACC)
FS - Contract administrator -					$4,000 (IK) $4,000 (ACC)	
FS - Contract Specialist					$2,000 (IK)	
Mt St. Helens Institute						$2,000 (IK)
Mt. St. Helens Institute Community Education						$2,000 (ACC)
Materials						
Forest Service 900 Pieces of LWM					$15,000 (IK)	
Contract Payables						
Mobile Yarder					$4,000 (ACC)	
Logging and hauling of trees					$16,000 (ACC)	
All Terrain Excavator Contract					$8,000 (ACC)	
Materials and Supplies				$2,000 (ACC)		
Administrative Overhead		$2,000(IK)				
Total ACC Funds	**$46,000**	**$4,000**	**$2,000**	**$5,000**	**$32,000**	**$3,000**
Total FS Funds	*$24,000*	*$2,000*	*$3,000*		*$19,000*	
Total other Partner Funds	*$2,000*					*$2,000*
Project Total	***$72,000***					

FS personnel estimated as $300/day.

Pepper Creek expanded budget 2008

Item	Personnel	Estimated Days/units	Cost Per Unit	Total
NEPA Environmental Assessment required by Federal Law	Fish Biologist Wildlife Biologist Hydrologist Botanist Archeologist Soil Scientist Recreation Forester	3 1 1 3 3 1 0.25 0.25	$300 per day per person	$4,000

	NEPA Coordinator	1		
Final Designs	Fish Biologist Hydrologist Fish Technician	3 2 5	$300 per day per person	$2,000
Project Management	Fish Biologist Fish Technician Mileage	4 4.1 1000 miles	$300 per day per person $0.50	$2,500 $500
Construction	Contract Administration Transportation	12 800 miles	$300 per day per person $0.50	$3,600 $400
Materials & Supplies	Field Equipment, Notebooks, Misc Supplies			$2,000
Monitoring	Fish Biologist Fish Technician Transportation	1 2 200	$300 per day per person $0.50	$900 $100
MSHI Monitoring	Supervisor Assistant Volunteers Transportation	1 2 10 1,800	$300 per day per person $20 $0.50	$900 $200 $900
Total				**$18,000**

Item	**Cost per unit**	**Number of units**	**Total cost**
All Terrain Excavator	$200/hour	30	$6,000
Excavator Move in/out	$1200	1	$2,000
Logging an Hauling cost: Estimate from Chilton Logging	$16,000	1	$16,000
Mobile Yarder	$1,500/Day	3	$4,000
Equipment Total			**$28,000**

From Chilton Logging
Ball Park Estimate Received on January 21, 2009

100 (150 logs) trees will take:
2 days to log
Logging costs are $3,900 per day
They can log 4 loads per day
The can haul about 20 pieces per load
Total of 7.5 loads
$7,800 to Log
$8,200 to haul from unit (Wildcat Timber Sale Unit) 8 miles to Pepper Creek
$16,000 Total

*Provide a **detailed** budget for the project stages (Final design, Permitting, Construction, Monitoring/Reporting) by work task. Include:*

Personnel costs

Labor and estimated hours for each project employee

Operating expenses

Supplies and materials

Mileage

Administrative overhead

If in-kind contributions have been acquired, please note contributions according to project stage within the budget.

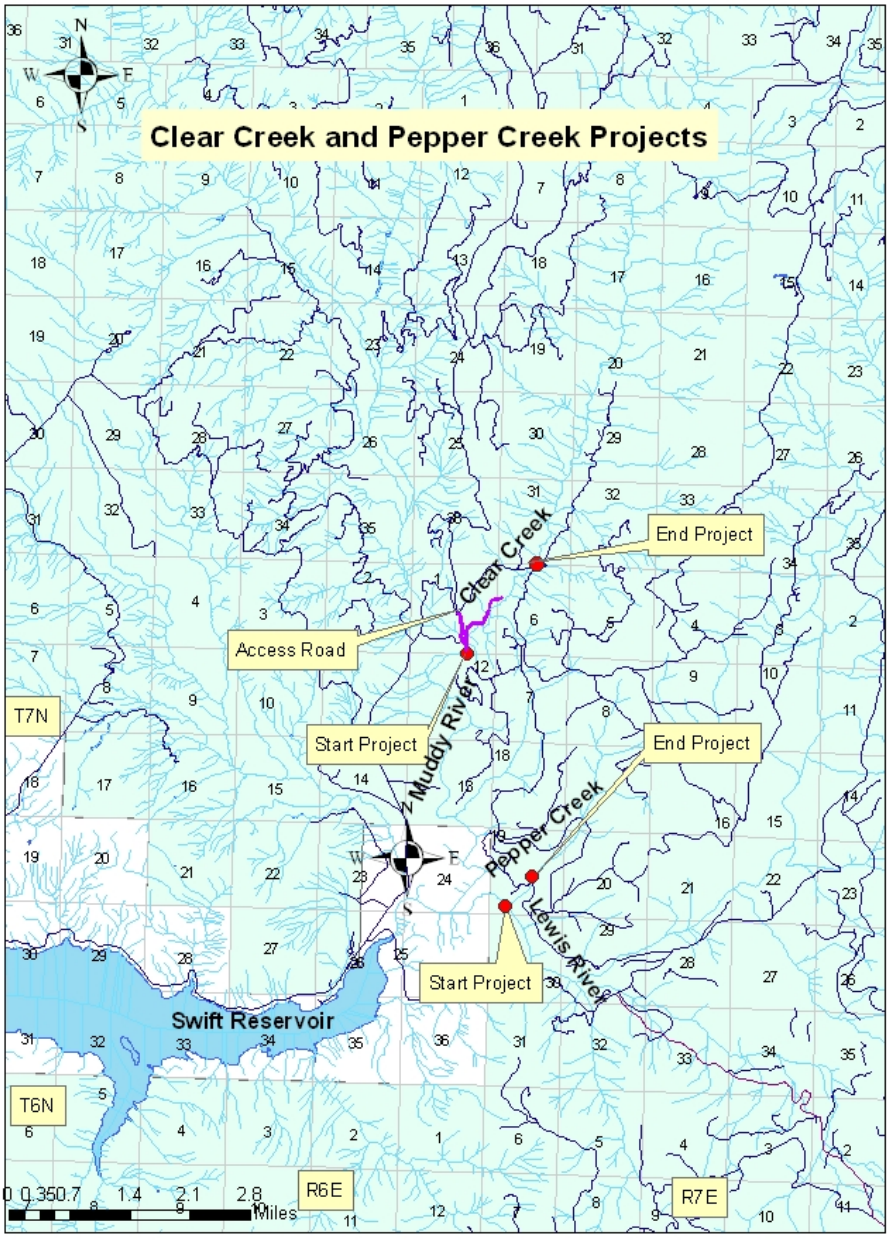
14. Photo Documentation (<u>Per National Marine Fisheries Service's Biological Opinion for Relicensing of the Lewis River Hydroelectric Projects):</u>

Photo-documentation is included as part of the monitoring process, it will include all items listed below..

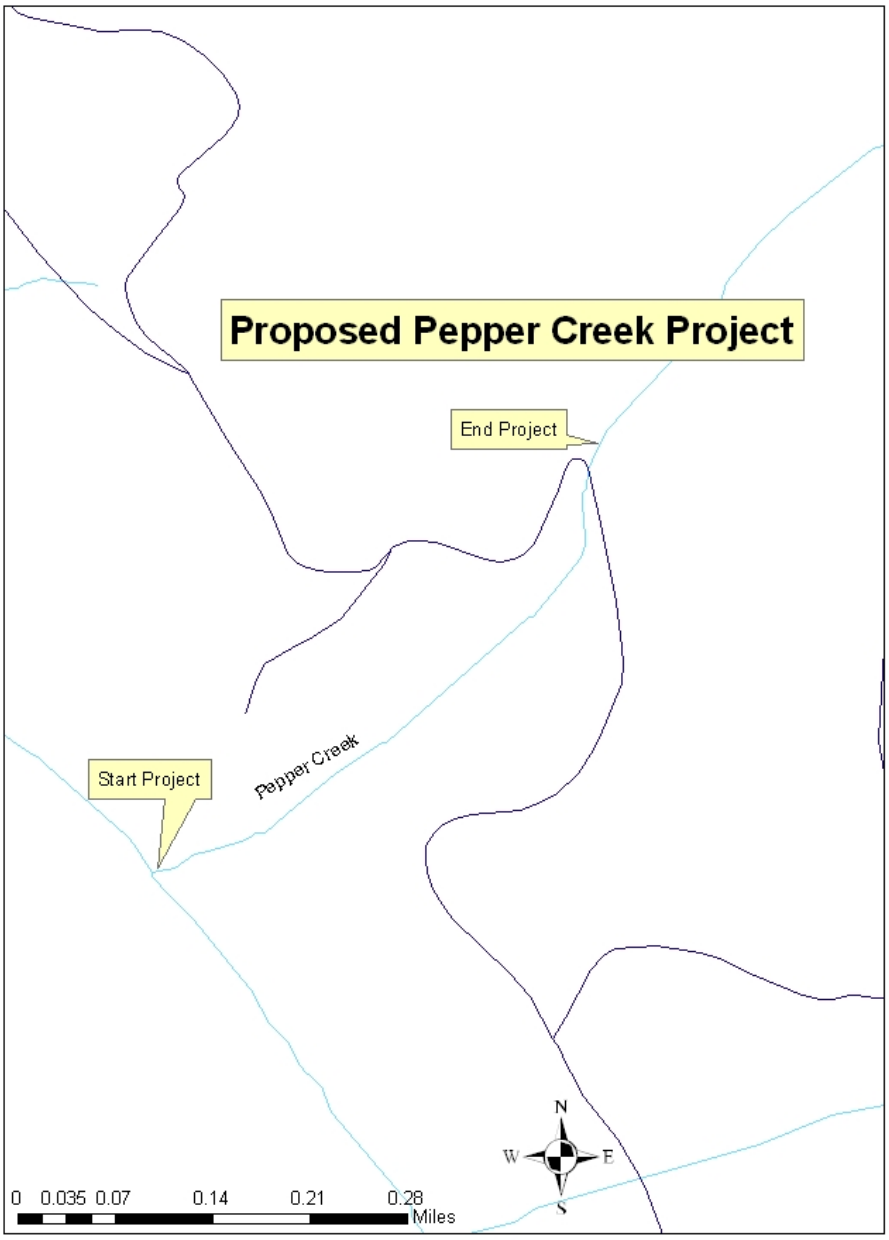
Identify process or methodology project will include photo documentation of habitat conditions at the project site before, during, and after project completion.

a. Include general views and close-ups showing details of the project and project area, including pre- and post-construction.

b. Label each photo with date, time, project name, photographer's name, and documentation of the subject activity.



Map1: Project Vicinity Map



Map 2: Project Location Map

Bibliography

Abbe, T. B. and D. R. Montgomery. 1996. Large woody debris jams, channel hydraulics and habitat formation in large rivers. Regulated Rivers: Research and Management 12:201-221.

Cederholm, C.J. , R.E. Bilby, P.A. Bisson, T.W. Bumstead, B.R. Fransen, W.J. Scarlett, and J.W. Ward. 1997. Response of juvenile coho salmon and steelhead to placement of large woody debris in a coastal Washington stream. North American Journal of Fisheries Management 17:947-963, 1997.

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Attachment

Pepper Creek Instream Habitat Restoration

Recommend USFS include a stronger description of benefiting species and limiting factors from the Recovery Plan and improve description of current and proposed habitat.

Recommend the USFS include a stronger description of benefiting species and limiting factors from the Recovery Plan; include description of community involvement specific to this project; and improve description of current and proposed habitat conditions.

Amount of large woody material seems high for such a small reach. Limited benefit, but may be of longer duration. Concern is with this amount of LWD in such a small stream, if not placed correctly could create barrier.

Concern with the cost of the project versus its biological benefit.

PACIFICORP ENERGY
A DIVISION OF PACIFICORP

825 NE Multnomah, Suite 1500
Portland, Oregon 97232

December 23, 2008

Ruth Tracy
USDA Forest Service
10600 NE 51st Circle
Vancouver, WA 98682

Subject: Lewis River Aquatics Fund 2008/2009 - Request for Full Proposals

Dear Ms. Tracy:

On November 30, 2004 the Lewis River Settlement Agreement established the Lewis River Aquatics Fund (Fund). On June 26, 2008, the Federal Energy Regulatory Commission issued licenses for the Lewis River hydroelectric projects which stipulated establishment and operation of the Fund. The purpose of the Fund is to support resource protection measures via aquatic related projects (Resource Projects) in the Lewis River basin. Resource Projects may include, without limitation, projects that enhance and improve wetlands, riparian, and riverine habitats; projects that enhance and improve riparian and aquatic species connectivity that may be affected by the continued operation of the hydroelectric projects; and projects that increase the probability for a successful fish reintroduction program upstream of Merwin Dam. Species that are targeted to benefit from Resource Projects include chinook, steelhead, coho, bull trout, chum, and sea-run cutthroat.

This letter is to notify you that your Pre-proposal entitled "Spencer Peak Road Decommission" has been selected for further consideration by the Lewis River Aquatic Coordination Committee (ACC).

To provide the ACC with additional information on your proposed projects, we request that you submit full proposals for each individual project **by January 30, 2009**. The full proposal information needs are attached to this document and can be made available in electronic format per request (Attachment 1). As you prepare the proposals please consider the comments and questions the ACC has on your projects (Attachment 2). We would also like to offer you the opportunity to provide a presentation of your proposals to the ACC on **February 12, 2009**. Please advise Kim McCune, Project Coordinator, if you would like to be placed on the ACC agenda.

The Utilities and representatives of the Lewis River Aquatic Coordination Committee will finalize the list of projects to be funded in April 2009. Following this finalization, the Utilities will submit the project list to the Federal Energy Regulatory Commission for approval prior to any project funding.

If you should have any questions feel free to contact Frank Shrier, PacifiCorp, (503) 813-6622. We look forward to your response in late January.

Sincerely,

<Todd Olson>

Todd Olson
Implementation Program Manager

cc: Diana Gritten-MacDonald, Cowlitz PUD
Adam Haspiel, USDA Forest Service

Attachments

Attachment 1

PROPOSAL FORM -
Lewis River Aquatic Fund

Form Intent:
To provide a venue for an applicant to clearly indicate the technical basis and support for proposed project. Specifically the project's consistency with recovery plans, SA Fund objectives, technical studies and assessments which support the proposed action and approach.

Proposal format:
Please complete the following form for your proposal. Maps, design drawings and other supporting materials may be attached.

The deadline for Proposal Form submission is January 30, 2009. Please submit materials to:

Frank Shrier
PacifiCorp – LCT 1500
825 NE Multnomah
Portland, OR 97232

1. Project Title

Spencer Peak Road Decommission – Forest Road 9300150 and spurs

2. Project Manager

Adam Haspiel
Mount Saint Helens National Volcanic Monument
42218 NE Yale Bridge Road
Amboy, WA 98601
360-449-7833
360-449-7801-FAX
ahaspiel@fs.fed.us- e-mail

3. Identification of problem or opportunity to be addressed

Summarize information about the problem or opportunity addressed by your proposal.

Clear Creek is a tributary to the Muddy River and currently has habitat suitable for the Lower Columbia River ESU coho and steelhead trout. Small numbers of juvenile coho salmon from habitat preparation activities for reintroduction are already using this section of creek for rearing. A few existing roads in the lower Clear Creek Watershed are identified to have high potential for risk of sediment delivery to lower Clear Creek. The lowest two miles of Clear Creek lack quality pool habitat for rearing and overwintering juvenile salmonids. The proposed road decommission addresses one of these roads with high risk of failure which could result in sediment delivery to limited rearing habitat in the lowest 2 miles of Clear Creek.

This road decommission will decrease the risk of catastrophic sediment delivery to Clear Creek and therefore prevent the degradation of fish habitat in the mainstem Clear Creek. The one perennial road/stream crossing is about 1 mile from the confluence of Clear Creek at RM 1.8. The perennial tributary confluence with Clear Creek, provides refugia for fish utilizing Clear Creek. This confluence is about a half mile above both the proposed acclimation pond on Clear Creek and the relatively flat gradient reach proposed by the USFS for adding large wood to restore pools and habitat diversity for juvenile fish, primarily coho and steelhead (Clear Creek Instream Habitat Full Proposal 2009). This road decommission project's elimination of chronic sediment delivery and the sediment delivery risk of culvert failures will improve the aquatic limiting factor of quality rearing habitat for Coho in the lowest two miles of Clear Creek.

Currently, road drainage at one stream crossing is eroding the road tread and delivering sediment to one intermittent tributary of Clear Creek (See photos in Section 14.). Two other stream crossings are at risk of plugging and failure, one of which is on a perennial tributary. This 2.6 mile road decommission project includes removing three stream culverts and all ditch relief culverts, leaving the streams in a stable configuration (channel width and stream banks), and revegetating all disturbed areas. Vehicle access will be eliminated.

4. Background

Provide information related to how this project fits into greater watershed objectives and any previously collected information at the project site (e.g. fish surveys, habitat delineation, etc)

The watershed objectives addressed are to maintain and enhance the sediment regime under which aquatic ecosystems evolved and to maintain and restore habitat to support well distributed populations of aquatic species (Aquatic Conservation Strategy Objectives of the Northwest Forest Plan. Specifically, road decommissions reduce road miles with chronic sediment delivery and high risk of sediment delivery from culvert failures to anadromous fish bearing streams.

The Forest Service is the designated management agency for meeting the Clean Water Act requirements on National Forest Lands. The Gifford Pinchot NF recognizes the need to remediate road crossing failures and has completed an Environmental Analysis which covered about 20 miles of roads considered to be a high aquatic risk. This high aquatic risk rating was based on six aquatic related criteria, of which three assess the risk of sediment delivery (sediment delivery, mass wasting potential and number of stream crossings).

The Clear Creek Roads Project Environmental Analysis focused mainly on roads with the risks of direct sediment delivery to fish bearing waters of Clear Creek and the Muddy River. Project scoping of the community and interested parties occurred during the Environmental Analysis which was completed in September 08. The Forest Service maintains active community involvement by scheduling regular events with legislators, scientists, members, and key individuals for continual program and

project development along with cultivating strong ties with agencies, academia, and local citizen groups.

This project is not a required action for the Forest Service. The Forest Service is not appropriated enough funds to remediate all failed road/stream crossings nor the road/stream crossings that are at a high risk of failure. Consequently, the Gifford Pinchot NF looks for partners with similar goals of minimizing sediment delivery to streams, giving near term priority to fish bearing streams, and special emphasis to streams with federal ESA-listed fish species.

The Gifford Pinchot NF has secured some funding for this project from the Gifford Pinchot Task Force. They had received their funding from two grants for three road decommissions (Ecotrust and Fish Conservancy Grants) of which $34K from ACC funds previously approved for the FR2575 road decommission project was included as matching funds and contributed to their success of attaining the grant funds. Road decommisioning is a high priorty action to ensure that the risk of sediment delivery to the stream channel due to road failure/existence is minimized.

5. Project Objective(s)

State the objectives of your proposal including how the project is consistent with Aquatics Fund objectives and recovery plans. Clearly describe the biological benefits and expected outcome of your project. Describe the technical basis for the objectives including the identification of any supporting technical references. Identify biological metrics to help quantify the benefit of the project.

The objectives of this road decommission is to remove failed or at risk culvert crossings which could deliver large quantities of sediment to the lower 1.8 miles of Clear Creek. The objective of eliminating road related sediment delivery to rearing and spawning habitat is consistent with the Aquatics Fund objectives by benefiting the recovery of fish that will utilize the rearing and anadromous spawning habitat of Clear Creek, in the Muddy River Watershed of the North Fork Lewis River Subbasin. Small numbers of juvenile coho salmon from habitat preparation activities for reintroduction are already using this section of creek for rearing. Eliminating road related sediment from the 9300150 road will protect the existing rearing and spawning habitat in Clear Creek which will support the reintroduction of anadromous fish (spring Chinook, coho and winter steelhead) above the uppermost reservoir. This project will increase the chances for success when reintroduced fish are utilizing the habitat by eliminating the risk of sediment delivery from the road thereby protecting the limited rearing habitat.

The project outcome is the elimination of chronic sediment delivery and the elimination of the risk of sediment delivery to a tributary of Lower Clear Creek. The biological benefit of this project is to keep the sediment regime similar to that which the aquatic species evolved. Decommissioning unneeded high aquatic risk roads is one primary activity to attain this biological benefit. The biological metric would be the number of road culverts removed from stream courses and the quantity of course road sediment removed from the three tributaries. The risk to the spawning and rearing habitat can be quantified as the quantity of sediment that could be directly

delivered to live streams and estimated as the amount of road fill to be removed at the three stream culvert crossings, which is 2235 cu yds for the one perennial culvert and about 1000 cu yds for the other two culverts.

The Lower Columbia Salmon Recovery Six-Year Habitat Work Schedule and Lead Entity Habitat Strategy (April 2006) designates Clear Creek as a Tier 2 reach (page L-2) and lists restoration of sediment processes as having a high potential for benefiting Upper Lewis Coho in Clear Creek (page L-4). In this plan, habitat factor analysis lists primary habitat factors affecting population performance. For Upper Lewis Coho egg incubation sediment and channel stability are listed, and for Upper Lewis Winter Steelhead egg incubation sediment is listed. Project benefits were listed as High for the project category Watershed Conditions and hillslope processes.

6. Tasks

State the specific actions which must be taken to achieve the project objectives.

This road decommission will remove all culverts along the last 2.6 miles of Forest Road 930015 (Attachment B - Map). At each stream crossing, culverts will be removed, channel will be reconstructed to bankfull width and stream banks contoured to 1.5:1, or to match the natural stream banks slopes, dependent upon site conditions. The perennial stream crossing bankfull width is 30 feet and the two intermittent stream crossing bankfull widths are 15 feet. Site evaluation and project design were completed in September 2009.

Re-vegetation with native species of the disturbed areas will be implemented at a time that will best assure the survival of the plants. Revegetation will include applying weed-free straw and mulch immediately after earth disturbing activities are complete. Native seed mix will be applied towards the end of September to maximize germination and growth success (earlier months are too dry). The Gifford Pinchot NF has a native seeding prescription and planting guideline and has developed a seed bank of preferred native species. The generally recommended seed mixture includes blue wild rye, mountain brome and slender hair grass, and is available from the Gifford Pinchot National Forest. Seed will be applied at a rate of 25.5 pounds of live seed/acre. During the spring following completion of earth disturbing activities, 10-12 trees (willow, alder or cedar) will be planted at the three stream crossings to re-vegetate the areas with plants providing root strength to keep the soil in place.

The Gifford Pinchot NF Effectiveness Monitoring Protocol will be conducted and consists of evaluating stream crossings for stable configurations and ground cover for vegetation establishment. Monitoring would occur one year following implementation and again 5 years later.

7. Methods

Describe methods to be used. When using Best Management Practices (BMPs) identify sources of BMPs and how they will protect resource values.

An excavator will remove the culverts and road fill from the stream crossing and then reconstruct the bankfull width and recontour the streambanks. The road fill material will be placed on the existing road outside of the floodable area. Road access will be eliminated.

Best Management Practices include the following:

1) Where work necessitates the operation of heavy equipment within the bankfull width of stream crossings, the timing and extent of this work will be conducted to minimize negative impacts to downstream fish bearing streams. Accumulations of soil or debris shall be removed from drive mechanisms and undercarriage of all heavy equipmenht prior to its working within the bankfull width. Every effort wil be made to avoid stream crossing with heavy equipment.

2) The perennial stream crossing will be dewatered or isolated from flowing waters prior to removal of the culvert to prevent generation of sediment and minimize turbidity.

3) A waterbar will be constructed across the road with an outlet onto the forest floor on any upgrade side of the stream crossings to prevent the existing road ditch flow to access the newly established stream banks.

4) Large wood and/or appropriately sized rock, where available on-site, may be placed within the reestablished streambed to mimic the natural streambed characteristics and/or prevent erosion of the new streambed and banks.

5) Control of invasive weeds will occur where deemed necessary, prior to and after earth disturbing activities.

6) Erosion control measures will be implemented and at a minimum include a heavy application of mulch immediately after work is completed. Seeding will occur and will be delayed until late September when cooler, moister weather conditions aid seed germination and seedling survival.

7) Riparian vegetation such as willow, alder, and cedar trees will be planted at the three crossings to provide shade and future source of large wood (10-12 trees per stream crossing). Planting will be delayed until the following spring to aid the survival of the young trees.

8. Specific Work Products

Identify specific deliverable results of the project. Project managers will be required to provide status updates with submission of project invoices.

Deliverables include: Culverts removed and quantities of material removed from culvert crossings and crossing bankfull widths and stream banks configured to required specifications. Notice of contract award date, project start date, contract completion date, and

tree planting date will be provided. A final project report will be submitted upon project completion.

9. Project Duration

   a. *Identify project duration. Note that duration of a project funded from Fiscal Year 20xx appropriations may extend beyond the end of the fiscal year.*

   b. *Provide a detailed project schedule to include:*
      - Initiation of project.
      - Completion date for each milestone or major task.
      - Project close-out site visit (with PacifiCorp, Cowlitz PUD, and ACC representatives)

   Contract preparation is expected to occur in June and could be awarded in July if all funds are secured. Implementation is expected to occur in the dry season prior to October 1, 2009. The contract for this project is expected to take 10-15 days to complete and implemented in one field season.

   The following is a tentative schedule of milestones. A project close-out site visit with ACC representatives will be provided upon project completion.

   Project Inititiation – The NEPA Environmental Assessment was completed in July 2008 the design for this project was completed in September 08.
   Contract Implementation is proposed for July 2009 if all funds are secured.
   Completion Date for all activities except the tree plantings is September 2009.
   Completion Date for tree plantings is July of the following year.
   Project close out site visit – Field Season one year after construction contract is complete (2010).

10. Permits

    Identify any applicable permits and resource surveys required for project. Please include timeline for obtaining and any action taken to-date. Applicant will be responsible for securing all such necessary permits. Landowner permission is required prior to finalization of a Funding Agreement with PacifiCorp.

    The Gifford Pinchot National Forest has a Memorandum (MOU) with the Washington State Department of Fish and Wildlife Regarding Hydraulic Projects conducted by USDA Forest Service Northwest Region (2005). This MOU allows road decommission on the Gifford Pinchot without an individual hydraulic project approval if the project complies with the provisions of the MOU. This road decommission will be conducted within the provisions set forth in this MOU.

    The Clean Water Act (as amended by the Water quality Act of 1987, Public Law 100-4) authorizes the states to regulate the “fill and removal” activities of Federal agencies. In Washington, the Forest Service has authorization for its fill and removal projects through the MOU with WDFW when the projects comply with the provisions of the MOU.

This project will be in compliance with the requirements found in US Fish and Wildlife Service Biological Opinion for Fish and Wildlife and NOAA Fisheries Biological Opinion for Programmatic Culvert Replacement Activities in Washington and Eastern Oregon (2003/00676).

11. Matching Funds and In-kind Contributions

If applicable, describe any matching funds and/or in-kind contributions that you have secured or have requested through other means. Matching funds are those funds contributed to the project from other funding sources. In-kind contributions may include donated labor, materials, or equipment. Please be specific in your description of contributions and use of volunteers (e.g. ACE construction is donating 8 hours of backhoe operation including operator).

Partial funding for this project has been secured with Gifford Pinchot Task Force and Legacy Roads Funds.

Gifford Pinchot National Forest	$ 20,000	(In-kind) (Co)
Gifford Pinchot Task Force	$ 40,000	(Cash) (Co)
Lewis River Aquatics Fund	$ 33,000	(Cash)

12. Peer Review of Proposed Project

It is encouraged that the proposal be reviewed by an independent resource professional prior to submission for funding. Focus of such review should be on biological value and proposed methodology. Please note who completed the review and contact information. This does not have to be a third party review, and can come from someone associated with the sponsoring organization.

The Lower Columbia Fish Enhancement Group (Nello 360-882-6671), Washington State Fish and Wildlife (Donna Bighouse 360-906-6738), and Mt. Baker Snoqualmie NF (Amy Leib 425-783-6032) reviewed a similar completed project (FR8322700 included ACC funds) in Fall of 08 (Pictures provided in Appendix A). They are willing to comment on this completed decommission project.

13. Budget

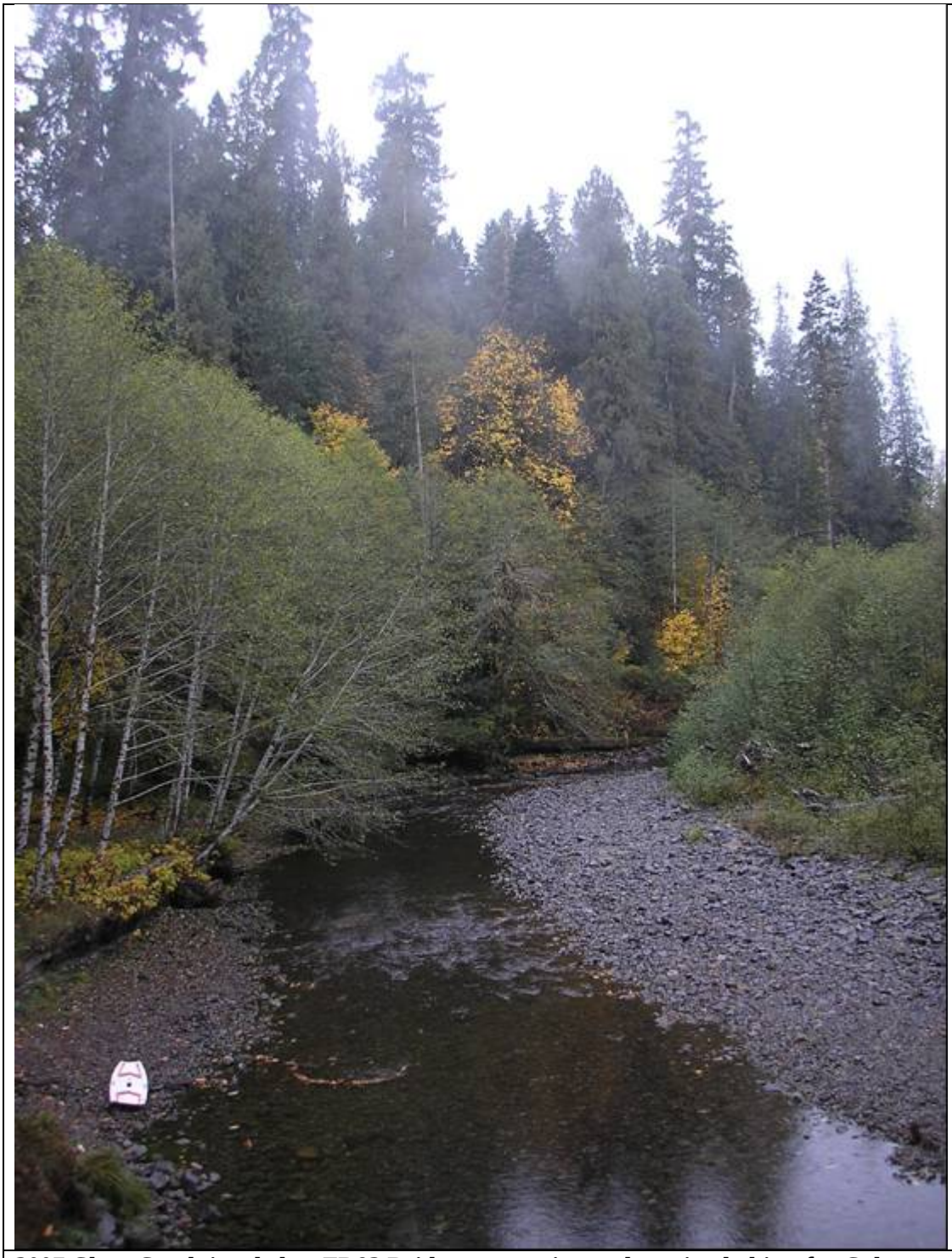
Provide a **detailed** budget for the project stages (Final design, Permitting, Construction, Monitoring/Reporting) by work task. Include:

- Personnel costs
  - Labor and estimated hours for each project employee
- Operating expenses
  - Supplies and materials
  - Mileage
  - Administrative overhead

If in-kind contributions have been acquired, please note contributions according to project stage within the budget.

Project Stage	**Personnel Cost**	**Contract Cost**
NEPA and Preliminary Design	$10,000 – GP Inkind (08) Interdisciplinary Team 30 8-hour days	
Final Design	$3,500 – GP Inkind (Engineer 10 8-hour days and includes mileage)	
Permitting and Project Management	$6,000 – GP Inkind (Hydro & Fish 20 8-hour days and includes mileage)	
Contract		$ 36,000 Gifford Pinchot Task Force **$ 30,000 Aquatic Fund**
Contract Administration and Administrative Overhead	$3,000 GP Task Force $3,000 GP Inkind (Engineer – 15 8-hour days and include mileage)	
Trees	**$1,000 Aquatics Fund** (Technician – Five 8-hour days and includes mileage)	$ 500 Mileage, Materials and Supplies GP In Kind
Monitoring Reporting	**$2,000 Aquatics Fund** $1,000 GP Task Force (Hydro & Fish – 10 8-hour days and included mileage)	

14. Photo Documentation (Per National Marine Fisheries Service's Biological Opinion for Relicensing of the Lewis River Hydroelectric Projects):



2007 Clear Creek just below FR93 Bridge – spawning and rearing habitat for Coho. Tributary, with road crossing sediment risk, confluence with Clear Creek is about 1 mile above this location.

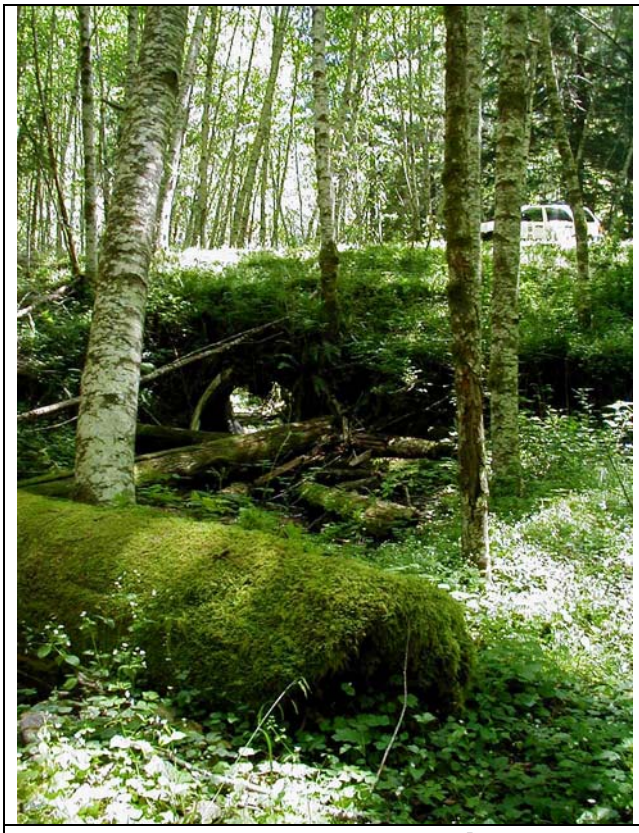
Blocked Culvert Inlet on FR9300150.

Surface erosion from blocked culvert on FR9300150.

Collapsing culvert on FR930015.

Blocked Culvert on FR9300150.

Appendix A. Photos of Completed Road Decommission project – FR8322700.



2006 Pre - Project FR 8322700 Road Decommission – Blocked Inlet, 1 foot drop at outlet. Low gradient tributary to the Muddy River.

2008 Post – Project FR 8322700 Road Decommission – Road Fill Removed, Stream banks match adjacent natural slopes. Available large wood placed into stream and along stream bank, Trees still to be planted. Low gradient tributary to Muddy River.

USFS ACC Projects 2009

Clear Creek

- The lower 1.3 miles of Clear Creek lacks large woody material and provides minimal structure for fish habitat.
- 900 pieces of Large Wood Material would be added to the lower 1.3 miles to create pool habitat and provide complex structure to the stream.
- This would create and improve rearing opportunities for chinook, coho salmon and steelhead trout.
- In addition it would improve spawning opportunities for reintroduced adult chinook and coho salmon and steelhead trout.
- Wood for this project would come from USFS lands and from Swift Reservoir cleaning operations.
- Most of the woody material will be placed downstream of the 93 road bridge to avoid potential problems with both the bridge and the proposed acclimation pond.

Method of work

- Wood for the project would be transported by log truck to Clear Creek from a nearby timber sale thinning unit- part of the Wildcat Stewardship Timber Sale.
- A skidder or front end loader would transport trees to project sites in Clear Creek.
- An excavator would place trees into clusters along streambanks- burying ends as needed to anchor the structures.

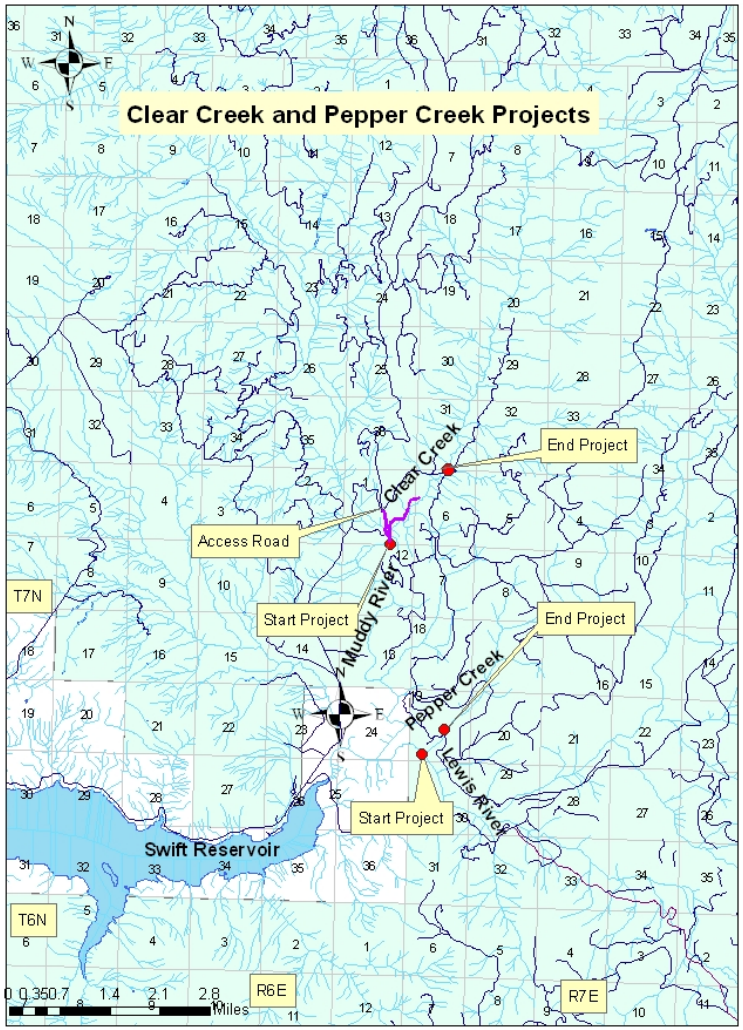
Present Condition- lack of large wood and pool habitat in many areas

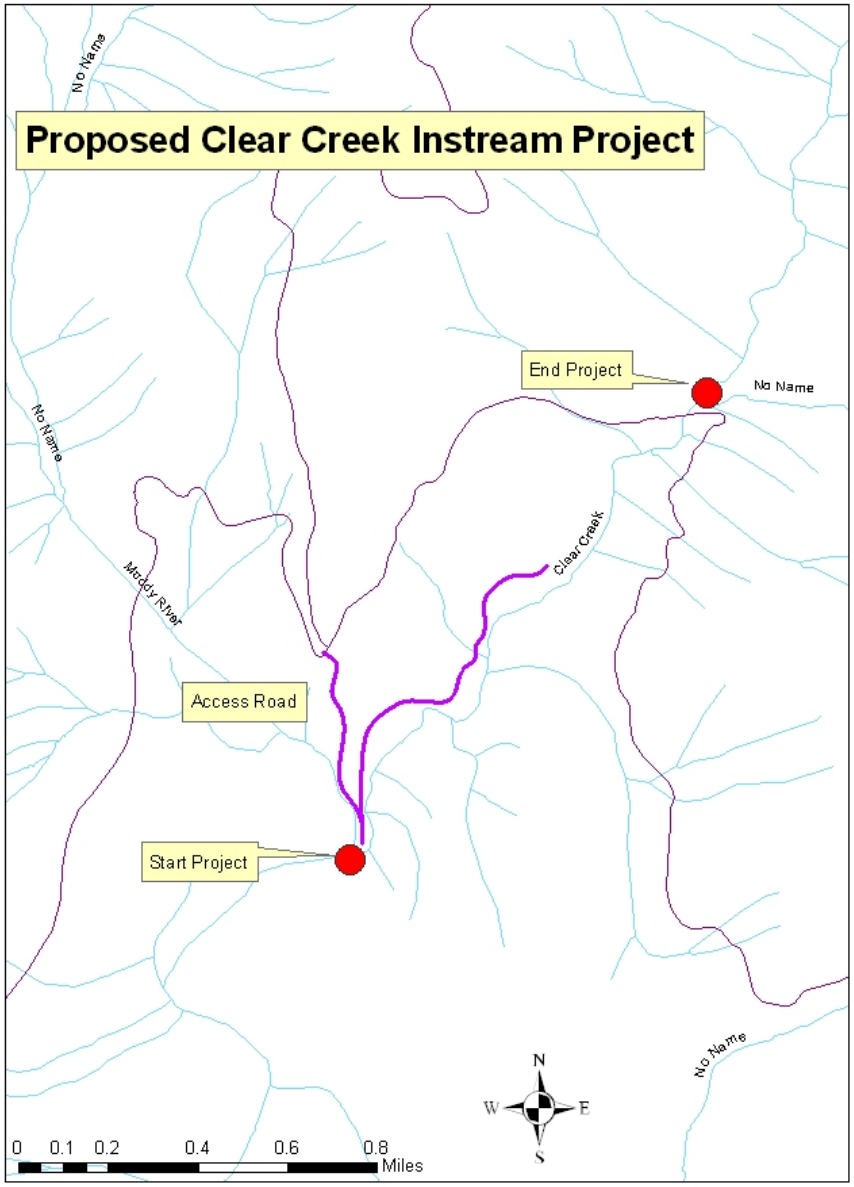
Present Condition-banks failing in some areas

Present Condition-banks failing in some areas

Present Condition-natural accumulations of wood create pools for rearing, help to stabilize streambanks, and add structure to the creek. This are similar to the types of structure we want to create. Not channel spanning, but clusters of 30 trees along the streambanks

Proposed Project Location




Proposed Clear Creek Instream Project
End Project
Start Project
Access Road
No Name
No Name
No Name
No Name
Muddy River
Clear Creek
N
W
E
S
0 0.1 0.2 0.4 0.6 0.8
Miles

Project partners to date

Partner	Contribution	Funds
USFS	Personnel time 900 pieces of woody material	15K 90K
Ecotrust	Riparian planting project Project personnel time including monitoring	10K-Cash 30K-Cash
Swift Community Action Team (SCAT)	One month of excavator time and hauling	7.5K
Mount St. Helens Institute (MSHI)	Personnel time and monitoring, and Youth Stream Team	4K
ACC	Project implementation dollars and project support dollars	106K
Total		**256K**

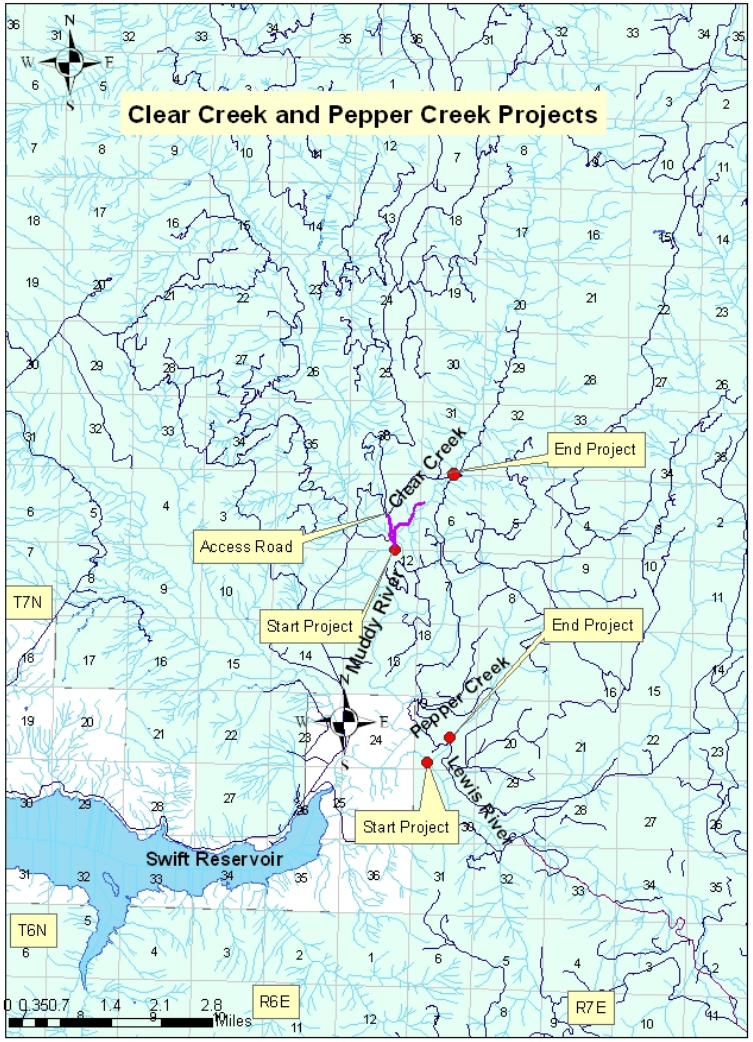
Pepper Creek

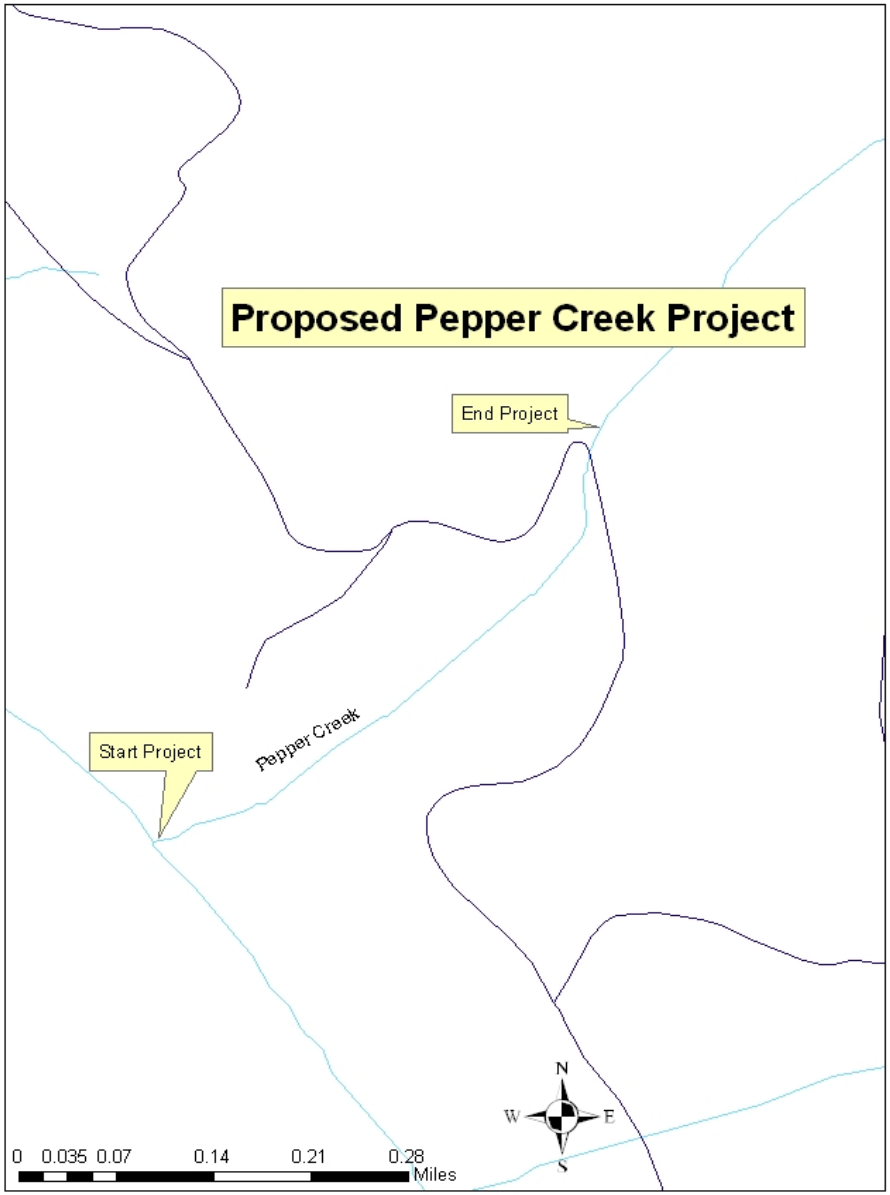
- The lower 0.5 miles of Pepper Creek lacks large woody material and provides minimal structure for fish habitat.
- 150 pieces of Large Wood Material would be added to the lower 0.5 miles to create pool habitat and provide complex structure to the stream.
- This would create and improve rearing opportunities for, coho salmon and steelhead trout. In addition it would improve spawning opportunities for reintroduced adult coho salmon and steelhead trout.
- Wood for this project would come from USFS lands and from Swift Reservoir cleaning operations.

Method

- Wood for the project would be transported by log truck to Pepper Creek from a nearby timber sale thinning unit- part of the Wildcat Stewardship Timber Sale.
- Woody material would be flown into the creek using a mobile yarder set up at strategic locations along the road.
- An all terrain excavator (Spyder) would walk up the creek placing the wood into clusters and logjams to create rearing pools and spawning opportunities for fish

Proposed Project Location




Proposed Pepper Creek Project
End Project
Start Project
Pepper Creek
N
W
E
S
0 0.035 0.07 0.14 0.21 0.28
Miles

Project Partners to Date

Partner	Contribution	Funds
USFS	Personnel time 150 pieces of woody material	8K 15K
Swift Community Action Team (SCAT)	Equipment hauling	1K
Mount St. Helens Institute (MSHI)	Personnel time and monitoring, and Youth Stream Team	2K
ACC	Project implementation dollars and project support dollars	46K
Total		**72K**

Pine Creek Nutrient Enhancement

•Because of the lahar flows of 1980, the 1996 floods, and the blockage of anadromous fish by Merwin Dam, Pine Creek is nutrient deficient.

• This results in reduced primary and secondary production, creating poor fish habitat, and a poor food base.

•This project will utilize coho salmon carcasses to add nutrients to Pine Creek. We plan to add up to 4,000 carcasses to the system over a six mile reach using mostly helicopter support to distribute fish because of poor access.

•A second method we could use would be carcass analogs produced by Skretting fish food company. They are made from a pacific whitefish and have the same nutritional value as a salmon carcass analog. Using analogs would allow us to target fry emergence in early spring.

Carcasses being loaded into a specialized helicopter bucket for deployment- The bucket can hold 800-1000 lbs of carcasses

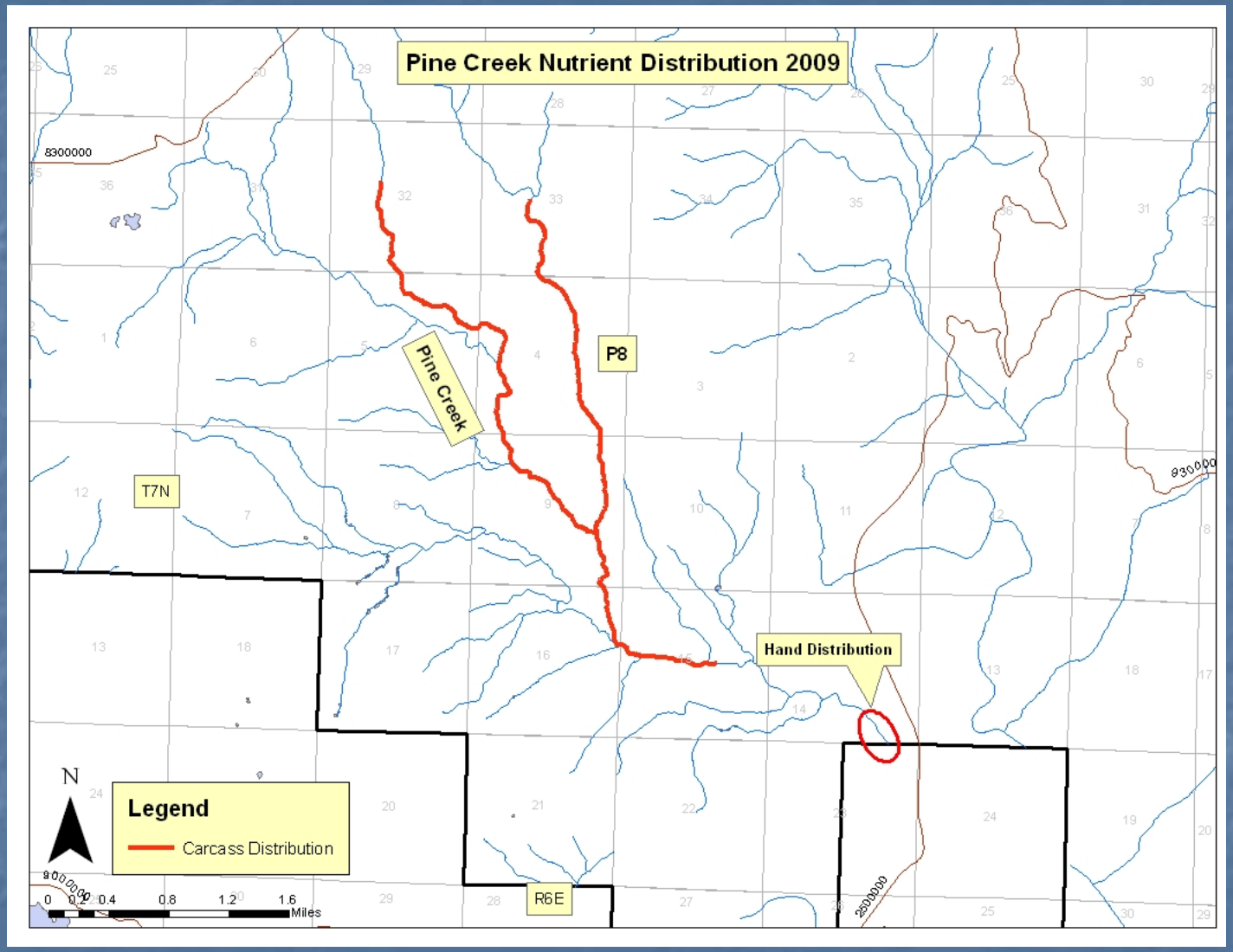
Helicopter with bucket of salmon

The pilot can control the trap door on the bucket so that the carcasses can be spread out over a long stretch of the creek.

Carcass Analogs

Benefits of the project include:

- **Increased stream biota**
- **Increased food base for fish**
- **Increased riparian vegetation growth**
- **Long-term source of large woody debris for Pine Creek**


Pine Creek Nutrient Distribution 2009
8300000
Pine Creek
P8
T7N
8300000
Hand Distribution
N
Legend
Carcass Distribution
R6E
2500000
0 0.2 0.4 0.8 1.2 1.6
Miles

Project Partners to Date

Partner	Contribution	Funds
Forest Service	Project development, Contracting, Permitting, Monitoring	$12,000 In-kind
Clark Skamania Fly Fishers	Labor for carcass collection, Nutrient distribution, Vehicle use 200 miles	$2,000 In-kind
Mt. St. Helens Institute	Monitoring	$3,000 In-kind
Olympic Resource Management	Agreements, road use	$1,000 In-kind
ACC	Project implementation and support dollars	$41,000 Carcasses OR $30,000 Analogs

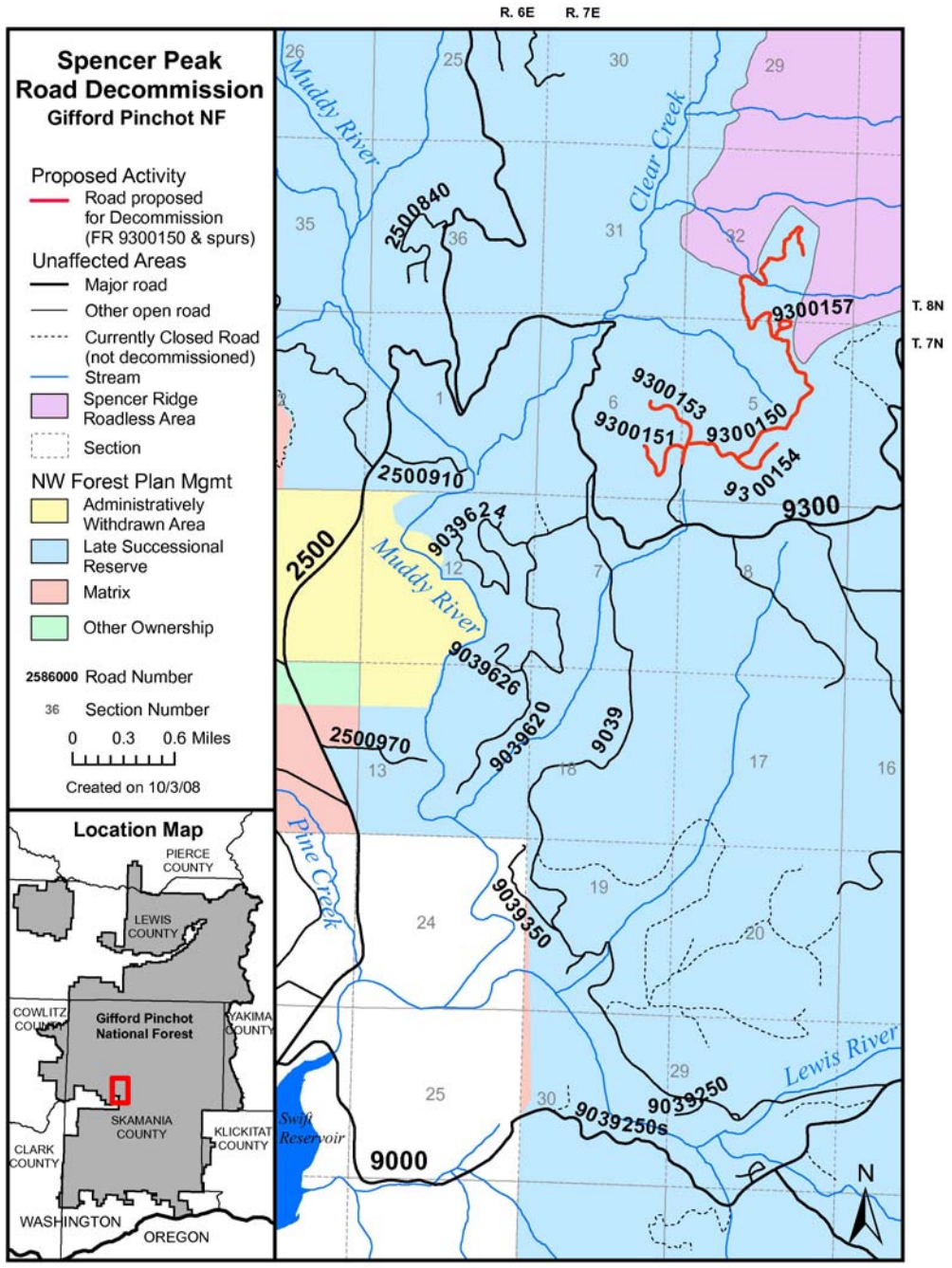
Spencer Peak Road Decomissioning

- Remove all culverts along the last 2.6 miles of Forest Road 9300150 and spur roads.
- Reconstruct channel at each stream crossing (1 perennial and 2 intermittent)
- Re-vegetate disturbed areas with native vegetation

Benefits of the project include:

- Reduced erosion
- Reduced sediment delivery to Clear Creek
- Removal of risk of culvert failure- total sediment risk is 2235 cu yards for the perennial culvert and 2,000 cu yards for the intermittent culverts

Spencer Peak Road Decomission



Project Partners to Date

Partner	**Contribution**	**Funds**
USFS	Personnel time	20K
GP Task Force	Personnel time Contract Other	3K 30K 7K
ACC	Project implementation dollars and project support dollars	33K
Total		**73K**

Spencer Peak Road Decommissioning

- Remove all culverts (stream crossings and ditch relief) along the last 2.6 miles of Forest Road 9300150 and spur roads.
- Reconstruct channel at each stream crossing (1 perennial and 2 intermittent)
- Re-vegetate disturbed areas with native vegetation
- Close vehicular access

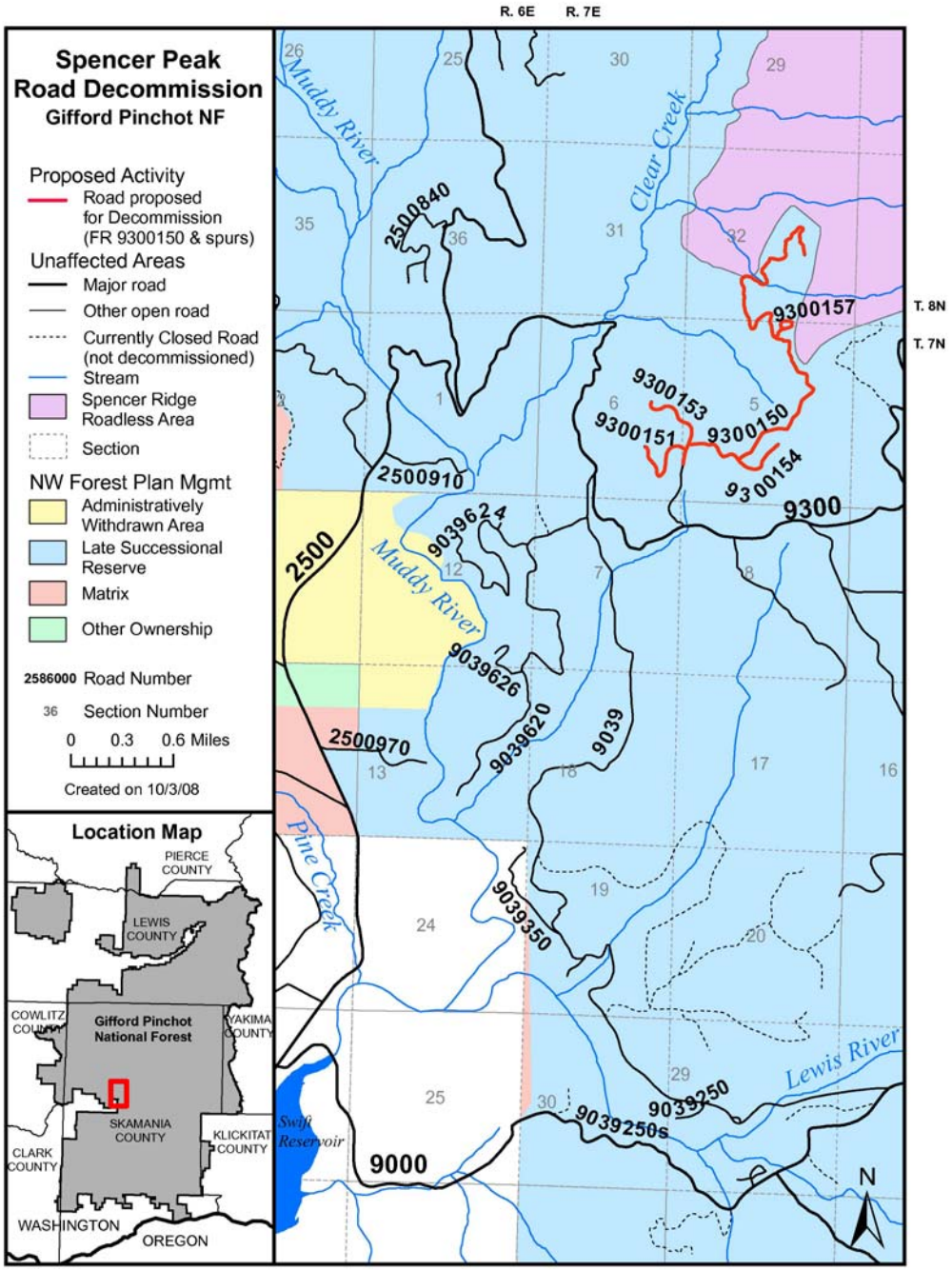
Road Decommissioning Background

- Culvert fill, constructed primarily of coarse angular rock (2-6”), is delivered to streams when a failure occurs.
- High gradient streams transport the coarse angular rock to lower gradient streams where it can be deposited amongst or on top of smooth rounded spawning sized sediments.
- Eroded material from road surfaces are mostly fines and sand sized sediments which are readily transported far distances in streams.
- Road related fines and sands also can settle out where spawning sized sediment occur.

Benefits of Road Decommission

- Reduce the risk of coarse sediment delivery to anadromous habitat of Clear Creek (Tier 2 reach) from road culvert failures
  - total sediment risk is 2235 cu yards for one perennial culvert and 2,000 cu yards for two intermittent culverts
- Eliminate chronic road surface erosion
- Restore drainage connectivity critical for riparian dependent species

Spencer Peak Road Decomission



Project Partners to Date

Partner	Contribution	Funds
USFS	**NEPA** **Final Design, Project Management and Supplies** **Contract Administration**	**10K** **10K** **3K**
GP Task Force	**Contract** **Contract Administration and Administrative overhead** **Monitoring and Reporting**	**36K** **3K** **1K**
ACC **Request**	**Contract** **Revegetation Technician** **Monitoring and Reporting**	**30K** **1K** **2K**
Total		**96K**