

**FINAL Meeting Notes**  
**Lewis River License Implementation**  
**Aquatic Coordination Committee (ACC) Meeting**  
**Sub-Committee on Habitat Prioritization Synthesis**  
**January 5, 2007**  
**Ariel, WA**

**ACC Sub-Committee Participants Present (8)**

Jim Byrne, WDFW  
 Jeremiah Doyle, CH2M Hill  
 George Gilmour, Meridian Environmental  
 Adam Haspiel, USDA Forest Service  
 Erik Lesko, PacifiCorp Energy  
 Kevin Malone, Mobrand Jones & Stokes  
 Kimberly McCune, PacifiCorp Energy  
 Frank Shrier, PacifiCorp Energy

**Calendar:**

Feb. 16, 2007	Sub-Committee on Habitat Prioritization Synthesis	Merwin Hydro
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<b>Assignments from January 5th Meeting:</b>	<b>Status:</b>
Haspiel: Email High Intrinsic (Draft) Potential Fish Habitat Analysis – Kenneth E. Meyer (HIP) to Kimberly McCune (PacifiCorp Energy).	<b>Complete – 1/17/07</b>
Shrier – PacifiCorp will provide a map illustrating location to the Sub-committee.	Pending
<i>McCune: Email copy of the Draft Bull Trout Surveys and Stream Temperature Monitoring Conducted within Selected Watersheds on the Gifford Pinchot National Forest - Summer 2001</i> , which was created by Clearwater BioStudies, Inc. in January 2002.	<b>Complete – 1/18/07</b> <a href="http://www.pacificorp.com/Article/Article61767.html">http://www.pacificorp.com/Article/Article61767.html</a>

**Opening, Review of Agenda and Meeting Purpose**

Frank Shrier (PacifiCorp Energy) called the meeting to order at 9:05 a.m. He conducted a review of the agenda for the day and the purpose of the meeting and asked of the attendees had any changes to the Agenda; no changes were requested.

In addition, Shrier informed the Sub-committee that the purpose of this workshop and subsequent workshops is to research all available habitat data such as information on the key tributaries, habitat and basin and create a tool that can be used to determine if certain aquatic funding proposals are meaningful. This tool can also be distributed along with the requests for pre-proposals with the next round of funding (2007/2008). He also communicated that this meeting is an initial start as a point of gathering information and determination of what is out there and is an available resource.

### **Information Gathering by PacifiCorp**

Shrier provided a handout/Table to the Sub-committee titled “Draft Potential Restoration Projects for the Lewis River Basin” (**Attachment A**) as only a suggestion of organization of information. The Table is derived from EDT model output, sub-basin plan, Lower Columbia River Fish Recovery Board Salmon Recovery Plan and Bull Trout Recovery Plan. Shrier also expressed that the Table needs a lot of improvement and discussion about suggested changes.

### **Discussion**

Shrier informed the Sub-committee that Attachment A is broken down by lower & upper Lewis River, species, key habitat rating, and habitat issues. General discussion took place regarding organizing data in the Table by key attributes/characteristics, what are the habitat needs, level of importance, term length of the project, and uniformity of stream names & reaches. Additional ideas were suggested such as creation of an Access data base or creation of a CD with hot links to photos.

The Sub-committee reviewed a link on the WDFW website titled, “*SalmonScape*”, which can be viewed at: <http://wdfw.wa.gov/mapping/salmonscape/>. *SalmonScape* is an interactive, computer mapping system, which delivers the science that helps recovery planners identify and prioritize the restoration and protection activities that offer the greatest benefit to fish. *SalmonScape* merges fish and habitat data collected by state, federal, tribal and local biologists and presents it in an integrated system that can be readily accessed by other agencies and citizens.

The Sub-committee agreed that *SalmonScape* is a valuable tool for the purpose of habitat prioritization. In addition, *SalmonScape* will accept submittals of additional data from outside resources to address their specific needs.

The Sub-committee also reviewed a website titled Ecosystem Diagnosis and Treatment (EDT) Online: <http://www.mobrand.com/edt/home.jsp?subbasinID=33>. EDT is a method which provides a practical, science-based approach for developing and implementing watershed plans. EDT helps planners develop working hypotheses as a basis for moving forward with watershed protection and restoration activities.

EDT has been used extensively for watershed planning in the Pacific Northwest for keeping track of fish population, generate analyses and request reports of results for baseline population and fish passage assumptions.

A suggestion was made to seek out any additional data on the major tributaries as the initial focus, then gather available data on secondary tributaries as step two.

<Break 10:20am>

<Reconvene 10:30am>

Adam Haspiel (USDA Forest Service) discussed two documents which PacifiCorp emailed to the Sub-Committee on 1/3/07 titled, *Gifford Pinchot NF Restoration Plan (Attachment B)* and *Synthesis Projects – June (Attachment C)*. The Forest Service created these in an effort to identify areas they knew of that would benefit from additional work, and for use as an additional resource to be added to the Table this Sub-committee is creating.

Haspiel also discussed a document titled, *Draft Bull Trout Surveys and Stream Temperature Monitoring Conducted within Selected Watersheds on the Gifford Pinchot National Forest - Summer 2001*, which was created by Clearwater BioStudies, Inc. in January 2002 using AFS protocol. Kimberly McCune (PacifiCorp Energy) will provide an electronic copy to PacifiCorp for distribution. The Sub-committee also discussed the Muddy River Watershed Analysis, GP Land & Resource Management Plan – 1990, the High Intrinsic (Draft) Potential Fish Habitat Analysis – Kenneth E. Meyer (HIP), and the USFS Stream Surveys for Rush Creek and Pine Creek. Haspiel will email the HIP document to Kimberly McCune (PacifiCorp Energy).

All Sub-committee participants will continue to search for additional pertinent data and email to Jeremiah Doyle [doyle.jeremiah@ch2m.com](mailto:doyle.jeremiah@ch2m.com) and copy Frank Shrier at [frank.shrier@pacificorp.com](mailto:frank.shrier@pacificorp.com).

### **Additional Resources Identified**

- Draft Bull Trout Limiting Factors Analysis, completed by Meridian Environmental
- WDFW Draft Temperature Report – Joe Hiss
- Report on the Lewis River Salmon Conservation Program – Richard T. Smith
- East Fork Gravel Mining – R2 Resources
- Lewis River EDT Questionnaire – 2003, Mobrاند Jones & Stokes
- Lewis River Tributary Photos - George Gilmour, Meridian Environmental
- Lewis River Limiting Factors Analysis – Gary Wade

### **Next Meeting**

February 16, 2007
Merwin Hydro Facility
Ariel, WA
9:00am – 3:00pm

**Meeting Adjourned at 11:30am**

### **Handouts**

- Final Agenda
- Draft Potential Restoration Projects for the Lewis River Basin (**Attachment A**)
- Gifford Pinchot NF Restoration Plan (**Attachment B**)
- Synthesis Projects – June (**Attachment C**)

Figure 1. Lower North Fork Lewis River habitat improvement recommendations for Winter Steelhead (derived from EDT model output)

<b>Reach Name</b>	<b>Location</b>	<b>Length of spawning habitat (miles)</b>	<b>Key Habitat Rating (EDT)</b>	<b>Habitat Issues</b>
Cedar Creek 2	John Creek to Brush Creek	1.6	high positive impact	High flow, habitat diversity needs, temperature regime, and sediment issues. Moderate channel stability, predation, food, and pathogen issues.
Chelatchie Creek 2	mouth to RM 0.6	0.4	high positive impact	Moderate channel stability, habitat diversity needs, temperature, predation, and flow, food, and pathogen issues.
Cedar Creek 4	Bitter Creek to Chelatchie Creek	0.6	high positive impact	High sediment issues. Moderate habitat diversity, temperature, and flow issues.
Cedar Creek 3	Brush Creek to Bitter Creek	1.2	high positive impact	High sediment issues. Moderate habitat diversity, temperature, flow, and food issues.
Cedar Creek 5	mouth to NF Chelatchie Creek	0.4	high positive impact	Moderate habitat diversity needs, temperature regime, flow, and sediment issues.
Ross Creek	Trib at top end of Lewis 3		moderate	Moderate need for channel stability and habitat diversity as well as flow, sediment, and food issues.
Houghton Creek	Trib at top end of Lewis 4		moderate	Moderate habitat diversity, flow, and sediment issues.
Cedar Creek 6	Chelatchie Creek to Fork at the end of Elliot Road	6.8	high positive impact	High habitat diversity, flow, and sediment problems. Moderate channel stability, temperature, predation, and food problems.
John Creek	Trib at bottom end of Cedar Creek 2		high positive impact	High sediment problems. Moderate habitat diversity and flow issues.
Lewis 2 tidal	EF Lewis to Robinson Creek	5.5	moderate	Moderate habitat diversity needs.
Brush Creek	Trib at top end of Cedar Creek 2		moderate positive impact	High sediment issues. Moderate habitat diversity and flow problems.
Chelatchie Creek 1	NF Chelatchie Creek to RM 4.8 the extent of distribution	4.4	high positive impact	Moderate habitat diversity and sediment problems.
NF Chelatchie Cr	Mouth to RM 1.29	1.29	high positive impact	High sediment problems. Moderate need for habitat diversity and as well as flow issues.
Bitter Creek	Trib at top end of Cedar Creek 3		moderate positive impact	High sediment issues. Moderate habitat diversity, flow, and food issues.

Figure 2. Lower North Fork Lewis River habitat improvement recommendations for Fall Chinook (derived from EDT model output)

<b>Reach Name</b>	<b>Location</b>	<b>Length of spawning habitat (miles)</b>	<b>Key Habitat Rating (EDT)</b>	<b>Habitat Issues</b>
Lewis 6	Johnson Creek to Cedar Creek	0.4	low	Moderate channel stability, habitat diversity, temperature, and pathogen issues.
Lewis 2 tidal	EF Lewis to Robinson Creek	5.5	low	Moderate habitat diversity issues.
Lewis 3	Robinson Creek to Ross Creek	1	moderate	High sediment issues. Moderate habitat diversity needs and temperature issues.
Lewis 1 tidal	Mouth to East Fork Lewis	3.6	moderate	Moderate habitat diversity issues.
Lewis 4	Ross Creek to Houghton Creek	4.5	moderate	High habitat diversity needs and sediment issues. Moderate need for channel stability as well as temperature regime, predation, and flow problems.

**Figure 3. Lower North Fork Lewis River habitat improvement recommendations for Chum (derived from EDT model output)**

<b>Reach Name</b>	<b>Location</b>	<b>Length of spawning habitat (miles)</b>	<b>Key Habitat Rating (EDT)</b>	<b>Habitat Issues</b>
Lewis 2 tidal	EF Lewis to Robinson Creek	5.5	low	Moderate habitat diversity needs and sediment issues.
Lewis 1 tidal	Mouth to East Fork Lewis	3.6	moderate	Moderate habitat diversity needs and sediment issues.
Lewis 3	Robinson Creek to Ross Creek	1	moderate	Moderate sediment issues.

**Figure 4. Upper North Fork Lewis River habitat improvement recommendations for Winter Steelhead (derived from EDT model output)**

<b>Reach Name</b>	<b>Location</b>	<b>Length of spawning habitat (miles)</b>	<b>Key Habitat Rating (EDT)</b>	<b>Habitat Issues</b>
Muddy R. 1A	Clear Creek to Clearwater Creek	4.4	high positive impact	High sediment problems. Moderate channel stability and habitat diversity needs as well as temperature regime, predation, hatchery fish competition, flow, food, and pathogen issues.
Muddy R. 1	Mouth to Clear Creek	4.4	high positive impact	High habitat diversity needs and sediment issues. Moderate need for channel stability as well as temperature, predation, hatchery fish competition, flow, food, and pathogen problems.
Lewis 23	Big Creek to Spencer Creek	3.5	low	High sediment issues. Moderate habitat diversity, predation, and hatchery fish competition, flow, and food issues.
Lewis 20	Muddy River Fork to Rush Creek	5.5	low	High sediment issues. Moderate habitat diversity, predation, hatchery fish competition, and food problems.

Clearwater Creek	Mouth to Rm 3.5	5.2	low	High sediment issues. Moderate habitat diversity, temperature, flow, food, and pathogen problems.
Muddy R2	Clearwater Creek to Smith Creek	1.5	high positive impact	High sediment problems. Moderate habitat diversity, temperature, predation, and hatchery fish competition, flow, and food issues.
Clear Creek	Mouth to RM 8.7	6.15	low	High sediment concerns. Moderate habitat diversity, flow, and food needs.
Clear Creek Lower	Mouth to RM 4.13	6.15	low	High sediment issues. Moderate habitat diversity, flow and food problems.
Speelyai 1	Mouth to RM 3.2	3.2	low	High habitat diversity concerns. Moderate need for channel stability as well as predation, hatchery fish competition, sediment, and pathogen concerns.
Rush Creek	Mouth to RM 2.5	2.5	low	High sediment concerns. Moderate need for habitat diversity and flow concerns.
Lewis 18	Head of Swift Reservoir to Pine Creek	0.7	low	Moderate habitat diversity, predation, hatchery fish competition, and sediment issues.
Speelyai 2	Upstream of diversion dam	2.8	low	Moderate need for habitat diversity as well as temperature, flow, and sediment concerns.
NF Siouxon	Mouth to RM 2.1	2.1	low	High sediment problems. Moderate habitat diversity and flow needs.
Muddy R 3	Smith Creek to RM 13.8	3.5	high positive impact	High sediment problems. Moderate need for habitat diversity and flow.
Lewis 21	Rush Creek to Little Creek	1	low	Moderate sediment issues.
Lewis 22	Little Creek to Big Creek	1.1	low	Moderate sediment issues.
Lewis 26	Crab creek to Chickoom creek	0.9	low	Moderate sediment problems.
Pine Creek 1	Mouth to RM 1.75 (to trib P1)	1.75	high positive impact	Moderate habitat diversity needs and sediment issues.
Lewis 2 tidal	EF Lewis to Robinson Creek	5.5	low	Moderate need for habitat diversity and sediment concerns.
Siouxon 2	NF Siouxon to RM 2.3	2.3	low	High sediment concerns. Moderate habitat diversity needs and flow issues.
Lewis 19	Pine Creek to Muddy River Fork	0.5	low	Moderate sediment problems.
Lewis 24	Spencer Creek to Cussed Hollow Creek	0.4	low	Moderate sediment problems.
Drift Creek	Mouth to RM 1.54	1.54	low	High habitat diversity needs and sediment issues. Moderate flow problems.
Lewis 4	Ross Creek to Houghton Creek	4.5	low	Moderate habitat diversity needs and sediment issues.
Swift Creek	Mouth to RM 1.7	1.7	low	High sediment problems. Moderate habitat diversity needs and flow problems.

Lewis 25	Cussed Hollow Creek to Crab Creek	0.3	low	Moderate sediment concerns.
Pine Creek 6	Mouth to RM 8.0	2.75	high positive impact	Moderate habitat diversity concerns and sediment issues.
Crab Creek	Mouth to RM 0.4	0.5	low	Moderate sediment concerns.
Lewis 1 tidal	Mouth to East Fork Lewis	3.6	low	Moderate habitat diversity concerns and sediment issues.
Spencer Creek	Mouth to RM 0.4	0.6	low	Moderate sediment issues.
Big Creek Mid	Mouth to RM 0.3	0.3	low	Moderate sediment concerns.
Lewis 27	Chickoom Creek to Lower Falls	0.2	low	High sediment concerns. Moderate habitat diversity needs.
Range Creek	Mouth to RM 1.0	1	low	Moderate sediment concerns.

**Figure 5. Upper North Fork Lewis River habitat improvement recommendations for Spring Chinook (derived from EDT model output)**

<b>Reach Name</b>	<b>Location</b>	<b>Length of spawning habitat (miles)</b>	<b>Key Habitat Rating (EDT)</b>	<b>Habitat Issues</b>
Clearwater Creek		5.2	low	High temperature and sediment concerns.
Lewis 12	Yale Lake- Rain Creek to Swift Dam	2.7	low	High sediment concerns. Moderate concerns for channel stability, low habitat diversity, predation, competition from hatchery fish, and low food.
Lewis 20	Muddy River Fork to Rush Creek	5.5	low	High sediment concerns. Moderate channel stability and habitat diversity needs, as well as predation, hatchery fish competition, and food issues.
Muddy R 1A	Clear Creek to Clearwater Creek; 4.4 miles	4.4	moderate positive impact	Moderate temperature and sediment concerns.
Clear Creek	Mouth to RM 8.7	6.15	low	Moderate habitat diversity worries.
Smith Creek	Mouth to RM 5.7	5.7	moderate positive impact	Moderate temperature concerns.
Lewis 18	Head of Swift Reservoir to Pine Creek	0.7	low	High sediment concerns. Moderate concerns for low habitat diversity and high predation.
Muddy R 1	Mouth to Clear Creek	4.4	moderate positive impact	Moderate concerns for low habitat diversity, as well as temperature and sediment concerns.
Lewis 23	Big Creek to Spencer Creek	3.5	low	Moderate need for habitat diversity as well as sediment issues.
Range Creek	Mouth to RM 0.66	0.66	moderate positive impact	High sediment issues.
Cougar Creek	Mouth to RM 1.7	1.7	moderate positive impact	Moderate sediment issues.
Lewis 26	Crab creek to Chickoom creek	0.9	low	Moderate sediment issues.
Lewis 22	Little Creek to Big Creek	1.1	low	Moderate sediment issues.
Lewis 7	Cedar Creek to Merwin Dam	3.7	moderate positive impact	Moderate habitat diversity needs.



Clear Creek lower	Mouth to RM 4.3	6.15	low	High sediment concerns. Moderate habitat diversity needs as well as flow and food.
Lewis 25	Cussed Hollow Creek to Crab Creek	0.3	low	Moderate sediment concerns.
Lewis 19	Pine Creek to Muddy River Fork	0.5	low	Moderate sediment concerns.
Lewis 21	Rush Creek to Little Creek	1	low	Moderate sediment concerns.
Lewis 24	Spencer Creek to Cussed Hollow Creek	0.4	low	Moderate sediment concerns.

Figure 6. Upper North Fork Lewis River habitat improvement recommendations for Coho (derived from EDT model output)

<b>Reach Name</b>	<b>Location</b>	<b>Length of spawning habitat (miles)</b>	<b>Key Habitat Rating (EDT)</b>	<b>Habitat Issues</b>
Upper Smith Creek	Smith Creek above Ape Canyon Creek, extends into blast zone	13.5	high positive impact	High concerns for lack of habitat diversity. Moderate concerns for sediment load.
Muddy R1	Mouth to Clear Creek	4.4	high positive impact	High concerns for lack of habitat diversity and current temperature regimes as well as competition from hatchery fish, sediment load, and low abundance of food. Moderate concerns for channel stability, predation, and water flow.
Muddy R1A	Clear Creek to Clearwater Creek	4.4	moderate positive impact	High habitat diversity and sediment concerns. Moderate concerns for channel stability, temperature regimes, predation, competition from hatchery fish, water flow and lack of food.
Clearwater Creek	Mouth to Rm 3.5	5.2	low	High concerns from lack of habitat diversity, and thermal regimes as well as sediment load and lack of food. Moderate concerns for channel stability, predation, hatchery fish competition, and water flow.
Clear Creek	Mouth to RM 8.7	6.15	low	High habitat diversity and sediment worries. Moderate concerns for stream flow and lack of food.
Clear Creek Lower	Mouth to RM 4.3	6.15	low	High concern for lack of habitat diversity, sediment load and low availability of food. Moderate concern from hatchery fish competition and stream flow.
Smith Creek	Mouth to RM 5.7	5.7	high positive impact	High habitat diversity concerns. Moderate worries over channel stability, temperature, and stream flow, sediment load, and food availability.

Lewis 20	Muddy River Fork to Rush Creek	5.5	low	High habitat diversity and sediment concerns. Moderate channel stability, predation, hatchery fish competition, and food availability worries
Lewis 18	Head of Swift Reservoir to Pine Creek	0.7	low	High concern for lack of habitat diversity, and stream sediment load. Moderate concerns from predation and hatchery fish competition as well as food availability.
Rain Creek	Head of Yale Lake to RM 0.89	0.89	low	Moderate stream sediment load concerns.
Lewis 2 tidal	EF Lewis to Robinson Creek	5.5	low	Moderate need for habitat diversity.
Drift Creek	Above reservoir inundation to RM 1.6	1.6	low	Moderate sediment concerns.
Lewis 4	Ross Creek to Houghton Creek	4.5	low	Moderate habitat diversity needs.
Lewis 5	Houghton Creek to Johnson Creek	2.7	low	Moderate habitat diversity needs.
S15	Mouth to RM 1.3	1.3	low	Moderate sediment concerns.
Lewis 21	Rush Creek to Little Creek	1	low	Moderate habitat diversity needs.
Lewis 1 tidal	Mouth to East Fork Lewis	3.6	low	Moderate habitat diversity and sediment concerns.

Figure 7. East Fork Lewis River habitat improvement recommendations for Winter Steelhead (derived from EDT model output)

<b>Reach Name</b>	<b>Location</b>	<b>Length of spawning habitat (miles)</b>	<b>Key Habitat Rating (EDT)</b>	<b>Habitat Issues</b>
Lockwood Creek	Trib at bottom end of EF Lewis 3		moderately low	High habitat diversity needs and sediment issues. Moderate need for channel stability as well as flow and food problems.
EF Lewis 8	mouth upstream to Highway 503 Bridge	2.2	very low	High habitat diversity needs as well as high predation, flow and sediment issues. Moderate need for channel stability, temperature stability, reprieve from hatchery fish competition, lack of food and high amount of pathogens(EDT) . High need for in-stream structures (GPNF 2002 water quality restoration report)
EF Lewis 9	unnamed trib to Lucia Falls	1.89	low	High habitat diversity needs and sediment issues. Moderate need for channel stability, stable temperature, reprieve from predation, as well as flow and food issues.
EF Lewis 7	mouth to RM 2.5	2.5	moderately low	High sediment issues. Moderate need for channel stability, habitat diversity, temperature stability, and predation reprieve as well as food and flow issues(EDT) . High need for in-stream structures (GPNF 2002 water quality restoration report).

Breeze Creek	Trib at top end of EF Lewis 1		moderately low	Moderate need for channel stability as well as flow and sediment issues.
EF Lewis 11	Moulton Falls	0.1	moderately low	High need for habitat diversity as well as flow and sediment issues. Moderate need for channel stability, temperature stability, and predation reprieve as well as food problems.
EF Lewis 5	mouth to RM 2.3	2.29	moderately low	Moderate need for channel stability and habitat diversity as well as moderate temperature, predation, flow, and sediment problems(EDT) . High need for in-stream structures (GPNF 2002 water quality restoration report)
EF Lewis 10	Lucia Falls	0.1	low	High habitat diversity and sediment worries. Moderate need for channel stability as well as predation, temperature, flow, and food concerns.
EF Lewis 13	mouth to RM 1.2- exact location unknown flows into mainstem	1.2	low	High need for habitat diversity. Moderate flow and sediment concerns(EDT) . High need for in-stream structures (GPNF water quality restoration report)
EF Lewis 4	mouth to RM 9.0	9	very low	Moderate need for channel stability and habitat diversity as well as moderate temperature, predation, flow, and sediment problems(EDT) . High need for in-stream structures (GPNF water quality restoration report)
Mason Creek	Trib to EF Lewis		moderately low	Moderate need for habitat diversity as well as flow and sediment problems.
Cedar Creek	Trib at top end of Rock Creek 3		moderately low	High habitat diversity and sediment issues. Moderate flow concerns.
EF Lewis 3	Lockwood Creek to Mason Creek	1.2	moderately low	Moderate habitat diversity worries as well as flow and sediment concerns.
McCormick Creek	Trib at bottom end of EF Lewis 1		low	Moderate habitat diversity worries as well as flow and sediment concerns.
EF Lewis 14	King Creek to Horseshoe Falls	0.5	low	Moderate habitat diversity worries as well as flow and sediment concerns. (GPNF water quality restoration report) high temperature problems and high need for in-stream structures. Moderate need for problem road decommissioning.
Rock Creek 4	mouth to RM 1.1	1.1	low	Moderate habitat diversity worries as well as flow and sediment concerns.
Rock Creek 1	mouth to RM 0.5	0.5	low	Moderate habitat diversity worries as well as flow and sediment concerns.
Rock Creek lower	?		low	Moderate habitat diversity needs and sediment concerns.
Rock Creek 5	?		low	High sediment concerns. Moderate need for habitat diversity and flow problems.
Rock Creek 2	mouth to RM 0.4	0.4	low positive impact	Moderate habitat diversity worries as well as flow and sediment concerns.

Mill Creek	Trib at top end of EF Lewis 6		low	Moderate sediment concerns.
Lewis 1 tidal	Mouth to East Fork Lewis	3.6	low	Moderate habitat diversity needs as well as sediment concerns.
EF Lewis 15	mouth to RM 0.4	0.4	low	Moderate habitat diversity needs(EDT) . High need for in-stream structures (GPNF 2002 water quality restoration report)

**Figure 8. East Fork Lewis River habitat improvement recommendations for Summer Steelhead (derived from EDT model output and GPNF Upper East Fork**

<b>Reach Name</b>	<b>Location</b>	<b>Length of spawning habitat (miles)</b>	<b>Key Habitat Rating (EDT)</b>	<b>Habitat Issues</b>
EF Lewis 14	King Creek to Horseshoe Falls	0.5	very low	High habitat diversity needs and flow concerns. Moderate need for channel stability as well as sediment and food problems. (GPNF 2002 water quality restoration report) high temperature problems and high need for in-stream structures. Moderate need for problem road decommissioning.
EF Lewis 17	mouth to RM 1.5	1.5	low positive impact	High habitat diversity needs. Moderate need for channel stability as well as sediment and food problems. (EDT) . High need for in-stream structures (GPNF 2002 water quality restoration report)
EF Lewis 19	Green Fork to RM 40.5	2.79	moderately positive impact	High habitat diversity needs and flow and sediment concerns. Moderate channel stability needs and food problems(EDT) . (GPNF 2002 water quality restoration report) high temperature problems and high need for in-stream structures. Moderate need for problem road decommissioning.
EF Lewis 18	Slide Creek to Green Fork	3.4	low positive impact	High habitat diversity needs and flow and sediment concerns. Moderate channel stability needs. (GPNF 2002 water quality restoration report) high temperature problems and high need for in-stream structures. Moderate need for problem road decommissioning.
EF Lewis 16	Copper Creek to Sunset Falls	0.89	low positive impact	High habitat diversity needs and flow and sediment concerns. Moderate channel stability needs. (GPNF 2002 water quality restoration report) high temperature problems and high need for in-stream structures. Moderate need for problem road decommissioning.
EF Lewis 11	Moulton Falls	0.1	moderately positive impact	High habitat diversity needs. Moderate need for channel stability as well as food and flow concerns.
EF Lewis 13	mouth to RM 1.2- exact location unknown flows into mainstem EFL	1.2	moderately low	High habitat diversity needs. Moderate flow concerns.

EF Lewis 8	mouth upstream to Highway 503 Bridge	2.2	very low	High need for habitat diversity and sediment concerns. Moderate need for channel stability as well as temperature, predation, and hatchery fish competition concerns and food flow and pathogen worries.
EF Lewis 9	unnamed trib to Lucia Falls	1.89	low	Moderate need for habitat diversity and flow concerns.
EF Lewis 10	Lucia Falls	0.1	low	Moderate need for habitat diversity and flow and food concerns.
Green Fork	mouth to RM 1.6	1.89	very low	High sediment concerns. Moderate need for habitat diversity and flow concerns(EDT) .(GPNF water quality restoration report) high temperature problems and high need for in-stream structures. Moderate need for problem road decommissioning.
Slide Creek	Trib to EF Lewis		low	High sediment concerns. Moderate need for habitat diversity and flow concerns (EDT).(GPNF 2002 water quality restoration report) high temperature problems and high need for in-stream structures. Moderate need for problem road decommissioning.
EF Lewis 15	mouth to RM 0.4	0.4	low	Moderate need for habitat diversity and flow concerns(EDT) . High need for in-stream structures (GPNF 2002 water quality restoration report).
EF Lewis 5	mouth to RM 2.3	2.29	low	Moderate sediment concerns.
EF Lewis 20	Headwaters		low	High need for habitat diversity. Moderate flow concerns (EDT). (GPNF 2002 water quality restoration report) high temperature problems and high need for in-stream structures. Moderate need for problem road decommissioning.
Copper Creek	Trib at bottom end of EF Lewis 16		low	High sediment concerns. Moderate need for habitat diversity.

**Figure 9. East Fork Lewis River habitat improvement recommendations for Fall Chinook (derived from EDT model output)**

<b>Reach Name</b>	<b>Location</b>	<b>Length of spawning habitat (miles)</b>	<b>Key Habitat Rating (EDT)</b>	<b>Habitat Issues</b>
EF Lewis 8	mouth upstream to Highway 503 Bridge	2.2	very low	High need for channel stability and habitat diversity, high sediment concerns. Moderate temperature, flow and food problems(EDT) . High need for in-stream structures (GPNF 2002 water quality restoration report).
EF Lewis 7	mouth to RM 2.5	2.5	moderately low	High sediment concerns. Moderate need for channel stability and habitat diversity as well as temperature and flow concerns(EDT) . High need for in-stream structures (GPNF 2002 water quality restoration report).

EF Lewis 5	mouth to RM 2.3	2.29	moderately low	High sediment concerns. Moderate need for channel stability and habitat diversity as well as temperature concerns(EDT) . High need for in-stream structures (GPNF 2002 water quality restoration report).
EF Lewis 9	unnamed trib to Lucia Falls	1.89	moderately low	High sediment concerns. Moderate need for channel stability and habitat diversity as well as flow concerns.
EF Lewis 1	McCormick Creek to Brezee Creek	1.2	low	Moderate need for habitat diversity(EDT) . High need for in-stream structures (GPNF 2002 water quality restoration report).
EF Lewis 4	mouth to RM 9.0	9	low	Moderate need for habitat diversity(EDT) . High need for in-stream structures (GPNF 2002 water quality restoration report).
EF Lewis 10	Lucia Falls	0.1	moderately low	High sediment concerns. Moderate need for channel stability and habitat diversity(EDT) . High need for in-stream structures (GPNF 2002 water quality restoration report).
EF Lewis 6	Manley Creek to Mill Creek	1.7	moderately low	Moderate need for channel stability and sediment concerns(EDT) . High need for in-stream structures (GPNF 2002 water quality restoration report).
EF Lewis 3	Lockwood Creek to Mason Creek	1.2	low	Moderate need for greater habitat diversity(EDT) . High need for in-stream structures (GPNF 2002 water quality restoration report).
Lewis 1 tidal	Mouth to East Fork Lewis	3.6	low	Moderate need for greater habitat diversity(EDT) . High need for in-stream structures (GPNF 2002 water quality restoration report).

Figure 10. East Fork Lewis River habitat improvement recommendations for Chum (derived from EDT model output)

<b>Reach Name</b>	<b>Location</b>	<b>Length of spawning habitat (miles)</b>	<b>Key Habitat Rating (EDT)</b>	<b>Habitat Issues</b>
Lockwood Creek	Trib at bottom end of EF Lewis 3		very low	High need for greater habitat diversity as well as high sediment concerns. Moderate need for channel stability.
Mason Creek	Trib at top end of EF Lewis 3		very low	High need for greater habitat diversity as well as high sediment concerns. Moderate need for channel stability.
Brezee Creek	Trib at top end of EF Lewis 1		very low	High need for greater habitat diversity as well as high sediment concerns.
EF Lewis 8	mouth upstream to Highway 503 Bridge	2.2	very low	High need for greater habitat diversity as well as high sediment concerns. Moderate need for channel stability(EDT) . High need for in-stream structures (GPNF 2002 water quality restoration report).

McCormick Creek	Trib at bottom end of EF Lewis 1		very low	High need for greater habitat diversity as well as high sediment concerns.
EF Lewis 5	mouth to RM 2.3	2.29	moderately low	High need for greater habitat diversity as well as high sediment concerns. Moderate need for channel stability(EDT) . High need for in-stream structures (GPNF 2002 water quality restoration report).
EF Lewis 7	mouth to RM 2.5	2.5	moderately low	High sediment concerns. Moderate need for channel stability and habitat diversity(EDT) . High need for in-stream structures (GPNF 2002 water quality restoration report).
EF Lewis 4	mouth to RM 9.0	9	moderately low	Moderate need for greater habitat diversity and moderate sediment concerns(EDT) . High need for in-stream structures (GPNF 2002 water quality restoration report).
Mill Creek	Trib at top end of EF Lewis 6		very low	High need for greater habitat diversity as well as high sediment concerns.
Dean Creek	Trib to EF Lewis 5		very low	Moderate need for greater habitat diversity and moderate sediment concerns.
Manley Creek	Trib to bottom end of EF Lewis 6		moderately low	Moderate need for greater habitat diversity and moderate sediment concerns.
EF Lewis 6	Manley Creek to Mill Creek	1.7	moderately low	Moderate need for greater habitat diversity and moderate sediment concerns(EDT) . High need for in-stream structures (GPNF 2002 water quality restoration report).

Attachment B

# Gifford Pinchot NF Restoration Plan



# Background

The Gifford Pinchot NF Aquatic Health Assessment prioritized watersheds for restoration in 2002. The assessment was based on federal land data and analyzed at the watershed scale. The restoration need was considered to address the ecological needs of at-risk fish stocks and improvement of water quality.

Three primary categories for analysis were resource condition, inherent stability and Forest Plan Direction. Resource condition represents the present watershed condition and was 64% of the total rating. Inherent sensitivity characterizes the inherent relative watershed response to disturbance and degree of relative negative impact from unabated or uncorrected anthropogenic risk factors. Inherent sensitivity comprised 29% of the total rating. Forest Plan Direction category recognized Key Watersheds' focus on restoration and comprised 7% of the total rating.

## ***Aquatic Resource Condition***

<b>Resource Condition</b>	<b>Indicator</b>	<b>Rankings</b>
Wood Routing Species Migration Sediment Delivery	Road/Stream Crossings (number/square mile)	Less than 5 5-10 More than 10
Rate of Flow Habitat Connectivity Sediment Delivery	Road in Riparian Reserves (miles/square mile)	Less than 2 2-3 More than 3
Sediment Delivery	Road Sediment Delivery (tons/acre/year)	Less than 1,000 1,000-3,000 More than 3,000
Sediment Delivery	Road on Slope Greater than 55% (mile/square mile)	Less than 0.1 0.1-0.3 Greater than 0.3
Shade Bank Stability Species Diversity	Early Seral in Riparian Reserves (%)	Less than 10 10-20 More than 20
Source of Large Wood Late Successional Habitat LS Habitat Connectivity	Late Seral in Riparian Reserves (%)	More than 30 15-30 Less than 15
Water Quality	Annual Maximum Temperature at any one location within watershed (°C)	Less than 16 16-19 More than 19
Fish Habitat Quality	Large Wood in Stream (Number of wood peices/surveyed stream mile)	Greater than 79 50-79 Less than 50
Fish Habitat Quantity	Fish TES Habitat (% TES Miles/ Perennial Stream Mile)	Less than 10 10-18 More than 18

### **Inherent Sensitivity**

<b>Inherent Sensitivity</b>	<b>Indicator</b>	<b>Rankings</b>
Mass Failure Risk	Unstable Slopes (%)	Less than 10 10-20 More than 20
Surface Erosion Risk	Soils with Moderate to Very Severe Erosion Potential (acres)	Less than 2,500 2,500-9,700 Greater than 9,700
Species Loss Risk	Federally Listed Fish Species Present (# listed species existing)	1 or less 2 More than 2

### **Forest Plan Direction**

<b>Forest Plan Direction</b>	<b>Indicator</b>	<b>Rankings</b>
Key Watershed	Key Watersheds (Key 1, Key 2 or not)	none Key 2 Key 1

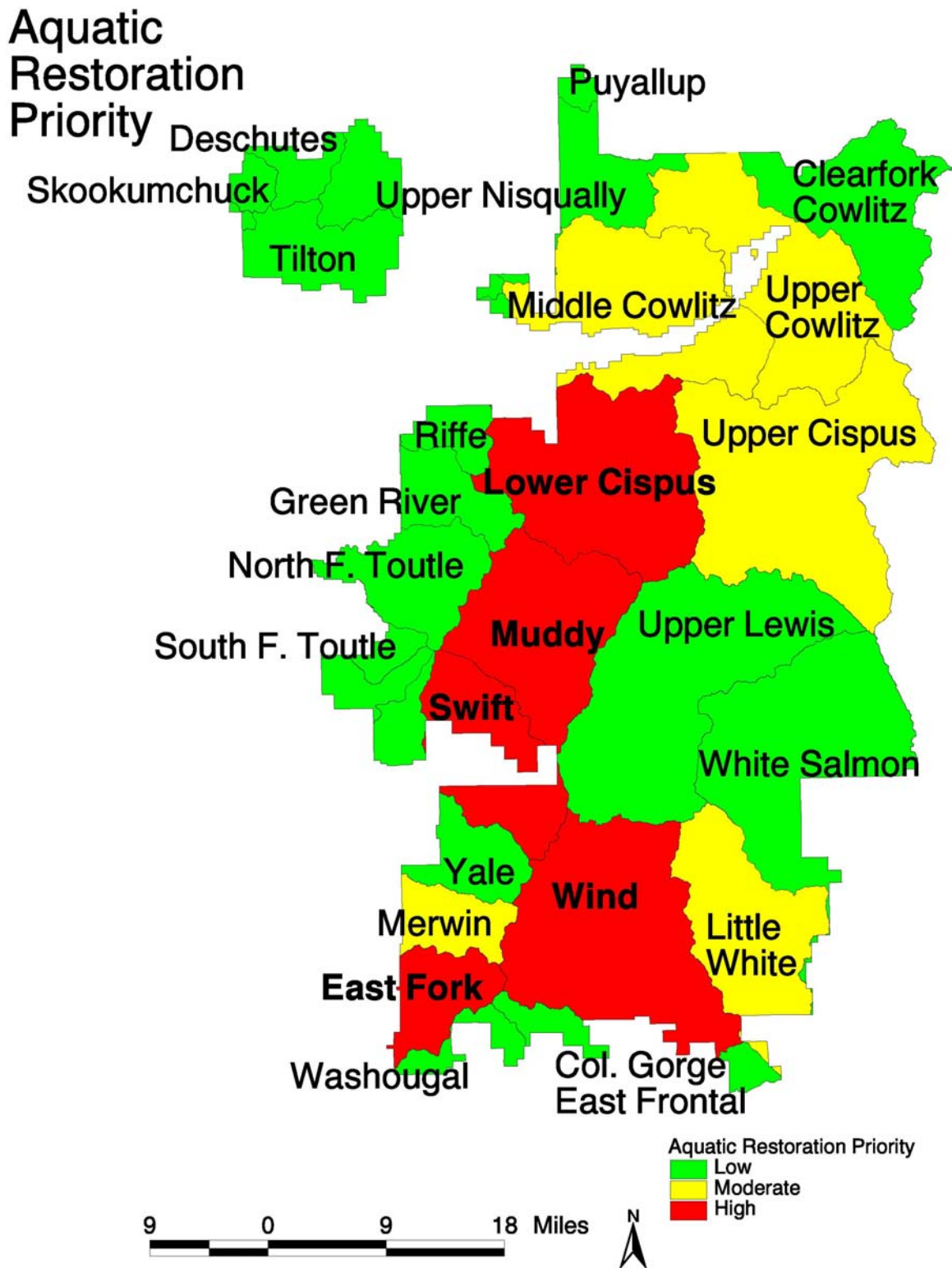
Using these criteria, the 5 highest priority watersheds for Aquatic Restoration are the Lower Cispus, East Fork Lewis, Swift Reservoir, Muddy River, and the Wind River (Map 1).

In March 2005, the Pacific Northwest Region Aquatic Restoration Strategy was published. One of the two strategy goals is to accelerate improvement of watershed and riparian/habitat conditions by promoting broad-scale maintenance/recovery of watershed and habitat conditions (“Passive” restoration) and complete restoration of priority watersheds (“Active” restoration). A Basin-scale Restoration Prioritization Process identified the Lower Columbia Basin Highest priority for restoration. Priority watersheds within this basin were to be selected in conjunction with partners and should have line participation and/or agreement. The other strategy goal is to increase the availability of resources (partnerships, funding and skills) to maximize implementation of the program.

The Gifford Pinchot NF has narrowed the Top 5 Watersheds for Aquatic Restoration into three areas based on strong partnerships and high likelihood of restoration funding in those areas. Restoration recommendations are grouped into three general categories for each of the priority areas:

- Roads
- Riparian
- River.

The Road category includes road decommissions, stabilizations and fish passage culvert removals. Riparian category includes shade enhancements, future large wood, recruitment and/or direct large wood placement, underplanting, thinning, weed control and nutrient enhancement. The River category includes bank stability improvements, instream structures, floodplain and side channel reconnection, and dam removal.



Map – Aquatic Health Assessment Priority Watersheds for the Gifford Pinchot NF.

# **Bull Trout Area**

The Bull Trout Area comprises of the Muddy River Watershed, Pine Creek Subwatershed and the Upper Lewis River Watershed below the lower falls (6 subwatersheds). Restoration Plan for the Bull Trout Area was developed based upon the following Planning Documents, in conjunction with partners and fits within the prioritized measures for habitat in the Lower Columbia Salmon Recovery and Fish and Wildlife Subbasin Plans.

## **Planning Documents**

- 2<sup>nd</sup> Iteration Muddy River Watershed Analysis (2006 pending)
- Lower Columbia Salmon Recovery and Fish & Wildlife Subbasin Plan (2004)
- USFW Bull Trout Recovery Plan-Lower Columbia Recovery Unit (2002)
- Fish Passage Culvert Survey Results (2001 Draft)
- Middle Lewis River Watershed Analysis (1995)
- Lower Lewis River Watershed Analysis (1996)

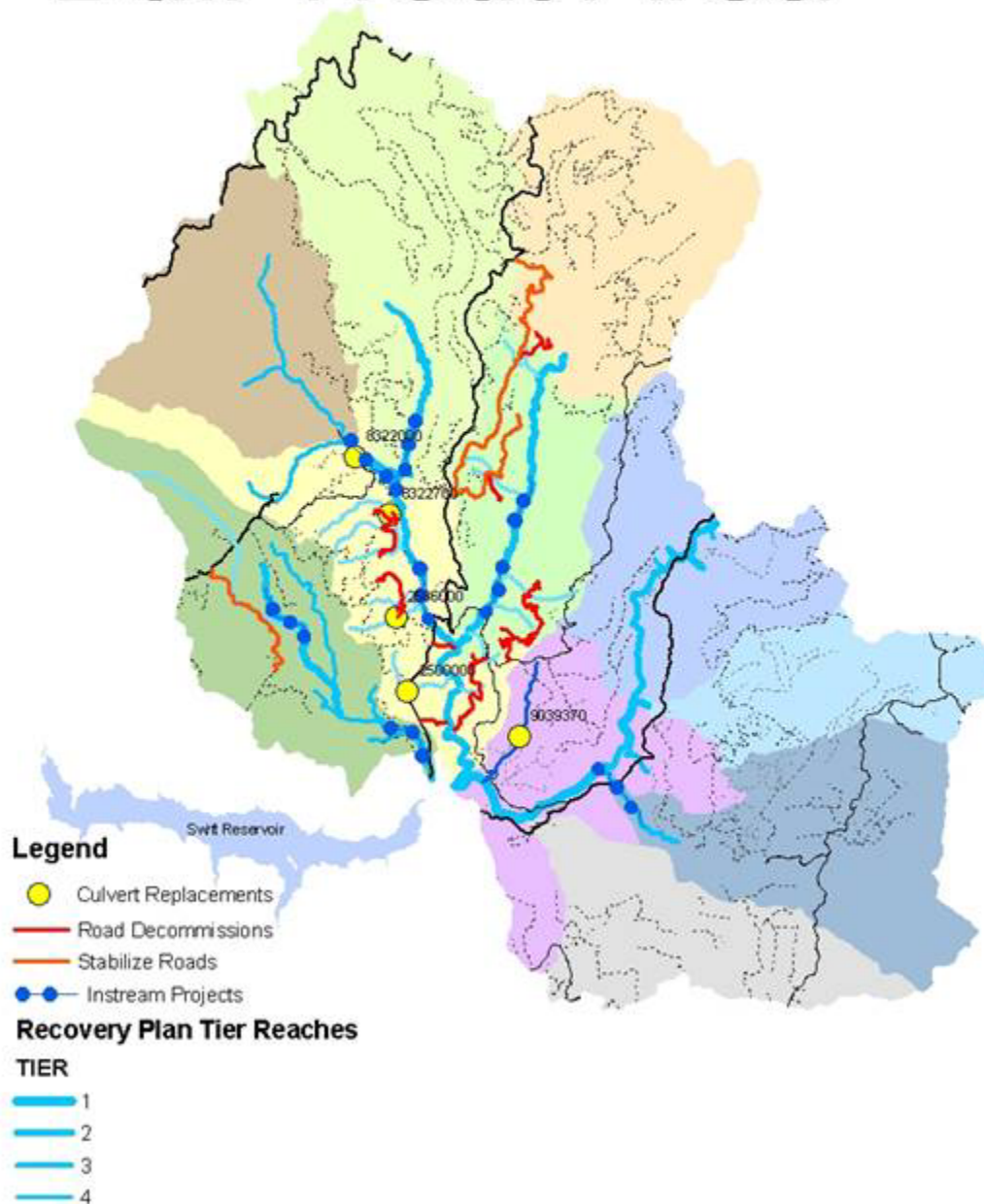
## **Partners and Grants**

- Lewis River Relicensing Aquatic Coordination Committee (ACC)
- Lower Columbia Fish Recovery Board (LCFRB)
- Community Salmon Fund (CSF)
- Gifford Pinchot NF Resource Advisory Committee (RAC)
- Trout Unlimited
- Friends of the East Fork
- Fish First

## **Lower Columbia River Subbasin Plan**

Identifies Spring Chinook, Coho, Winter Steelhead and Bull Trout as focus species in the Upper North Fork Lewis Basin (includes all drainages above Merwin Dam).

# Bull Trout Area



Restoration Plans in the Bull Trout Habitat Area.

# Recommendations

## Road

### Decommissions

Road & Spurs	Miles	NEPA	Design	Implement	Partners/Grants
8322700 & spurs	1.5	\$19,500 Funded 06	\$8,500	\$138,000	ACC - pending LCFRB – approved RAC - approved
2586000	1.7	\$20,000*	\$20,000	\$170,000	ACC, LCFRB, RAC
9300150 & spurs	4.5			\$450,000	
2575200	0.9			\$90,000	
2573460 & spur	1.5			\$150,000	
2500970	0.5			\$50,000	
2500910	0.4			\$40,000	
9039620 & spur	0.7			\$70,000	
3 non-system	2.0			\$200,000	
<b>Total</b>	<b>13.7</b>			<b>\$1,370,000</b>	

\* - NEPA includes all road decommission projects

### Top 5 Fish Passage Culvert Removals or Replacements

Road	Habitat	NEPA	Design	Implement	Partners/Grants
8322700	0.6	*	*	*	ACC - pending LCFRB – approved RAC - approved
8322000	1.4	\$5,000	\$12,000	\$111,000	ACC - pending RAC - pending
2500000	1.4				
2586000	1.1	*	*	*	
9039370	1.5				

\* Project Costs shown in Decommission Table

### Stabilization

Road	Miles	NEPA	Design	Implement	Partners/Grants
8318000	3.8	\$20,000		\$10,000/mi.	<i>Accesses Private Land</i>
2588000	7.4				<i>Cost Share Road</i>
2575000	3.9				
2573000	8.1				
Total					

# Riparian

## Shade Enhancement

Subwatershed	Shade Specific Treatment	Implementation
Clear Creek	TBD	

## Future Large Wood Recruitment and/or Direct Large Wood Placement

Subwatershed	Acres	NEPA	Design	Implement	Partner
Pine Creek	*	*	06	*	ACC LCFRB
Muddy River	Yes				
Clear Creek	Yes				
Lewis R. Tribs	TBD				

\*Related to Instream structure project

## Nutrient Enhancement

Subwatershed	Acres	NEPA	Design	Implement	Partner
Muddy River/ Pine Creek	Yes	\$10,000	\$7,000	\$77,000	ACC, RAC LCFRB

# River

## Instream Structures, Floodplain Enhancement and Bank Stability

Subwatershed	Miles	NEPA	Design	Implement	Partner
Pine Creek	2.0	\$20,000	\$20,000	\$150,000	ACC LCFRB Fish First GP Institute RAC
Muddy River	2.0				
Clear Creek	3.0				
Clearwater Ck	2.0				
Rush Creek	1.7	\$25,000	\$12,000	\$100,000	ACC LCFRB Fish First RAC GP Institute

# Wind River Watershed

Restoration Plan for the Wind River Watershed was developed based upon the following Planning Documents, in conjunction with partners and fits within the prioritized measures for habitat in the Lower Columbia Salmon Recovery and Fish and Wildlife Subbasin Plans.

## Planning Documents

- 2<sup>nd</sup> Iteration Wind River Watershed Analysis
- Fish Passage Culvert Survey Results
- Wind River Water Quality Restoration Plan and Department of Ecology Wind River TMDL
- Wind River Watershed Restoration Project Proposal for the US Fish and Wildlife Program
- Lower Columbia Salmon Recovery and Fish & Wildlife Subbasin Plan

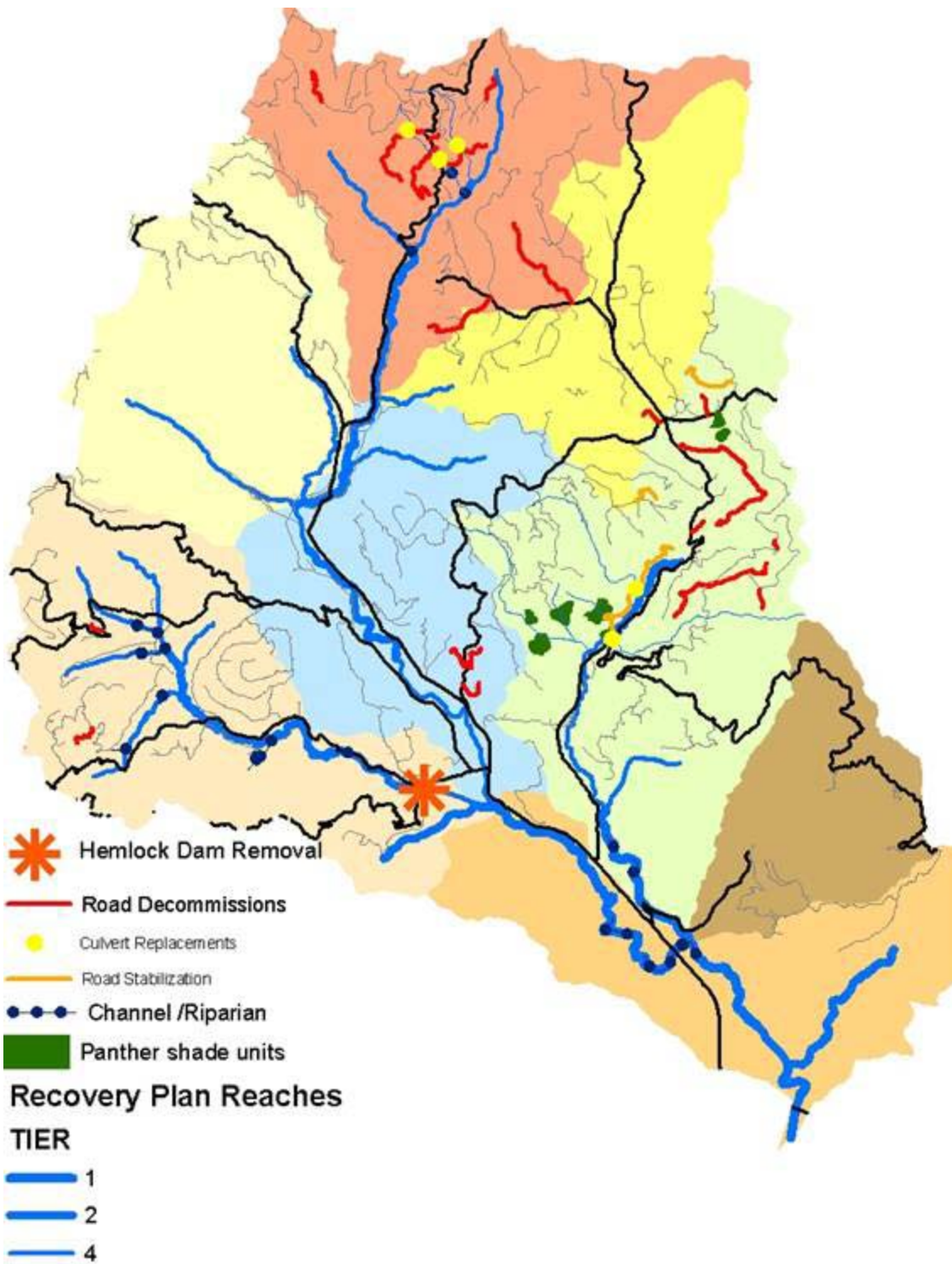
## Partners and Grants

- Bonneville Power Authority
- Underwood Conservation District
- Clark-Skamania Flyfishers Association
- Trout Unlimited
- Skamania County
- Lower Columbia Fish Recovery Board (LCFRB)
- Gifford Pinchot NF Resource Advisory Committee (RAC)
- Washington Department of Fish and Wildlife
- Biological Research Division of the US Geological Survey
- US Fish and Wildlife Service

## Lower Columbia River Subbasin Plan

Identifies summer steelhead as a Primary Population in the Upper Gorge Strata.





Map - Restoration Plans within the Wind River Watershed.

# Recommendations

## Road Decommissions

Road	Miles	NEPA	Design	Implementation	Partners/Grants
3000101	1.5	\$20,000	\$50,000	\$150,000	BPA, UCD, USGS, WDFW
3000102	1.8			\$180,000	
3000138	0.2			\$20,000	
3000678	0.2			\$20,000	
3055145	0.5			\$50,000	
3056000	1.8			\$180,000	
3100106	0.8			\$80,000	
3300407	0.6			\$60,000	
4200420	0.3			\$30,000	
5000608	0.4			\$40,000	
6000064	0.9			\$90,000	
6000078	0.6			\$60,000	
6000088	0.9			\$90,000	
6000089	0.5			\$50,000	
6000788	0.6			\$60,000	
6500030	3.3			\$330,000	
6500606	0.1			\$10,000	
6700121	2.2			\$220,000	
6707000	1.5			\$150,000	
6801000	0.2			\$20,000	
6801025	1.3			\$130,000	
6801026	1.4			\$140,000	
6801071	0.4			\$40,000	
<b>Total</b>	<b>22.0</b>			<b>\$2,200,000</b>	

\* - NEPA will cover all roads

## Top 6 Fish Passage Culvert Removals or Replacements

Road	Habitat	NEPA	Design	Implement	Partners/Grants
6500000	0.6				
6513000	1.0				
3056000	2.5				Federal Highways
3056000	0.7				Federal Highways
3000102	0.3				Federal Highways
3000000	1.0				Federal Highways

## Stabilization

Road	Miles	NEPA	Design	Implement	Partners/Grants
6048021	3.5			\$60,000	BPA, UCD, USGS, WDFW
6057024	0.7				
6513000	2.9				

## Riparian

### Shade Enhancement in Panther Creek Subwatershed (Eightmile Ck)

Subwatershed	Shade Specific Treatment	NEPA	Implement	Partner
Lollipop #1, 2, and 3	TBD			
Cumulus #2 and 3				
Lynx #2				
Lava #6				

### Thin and Underplant Riparian Forest

Subwatershed	Treatment	NEPA	Implement	Partner
Trout Creek	Interplant (100 acres)		\$36,000	UCD
????????????	Thin Trees		\$72,000	UCD

## River

### Remove Hemlock Dam

Activity	Units	NEPA	Design	Implement	Partner
Remove Dam	15 miles access	\$500,000	\$160,000	\$2,200,000	
Restore reservoir reach	0.3 miles			\$180,000	
Revegetate disturbed areas				\$20,000	

### Instream Structures, Floodplain Enhancement and Bank Stability

Subwatershed	Miles	NEPA	Design	Implement	Partner
Trout Creek	8.5	Done			
Middle Wind	4.0				
Upper Wind	5.1				
Panther Creek	1.9				

# Lower Cispus River Watershed

Restoration Plan for the Lower Cispus River Watershed was developed based upon the following Planning Documents, in conjunction with partners and fits within the prioritized measures for habitat in the Lower Columbia Salmon Recovery and Fish and Wildlife Subbasin Plans.

## Planning Documents

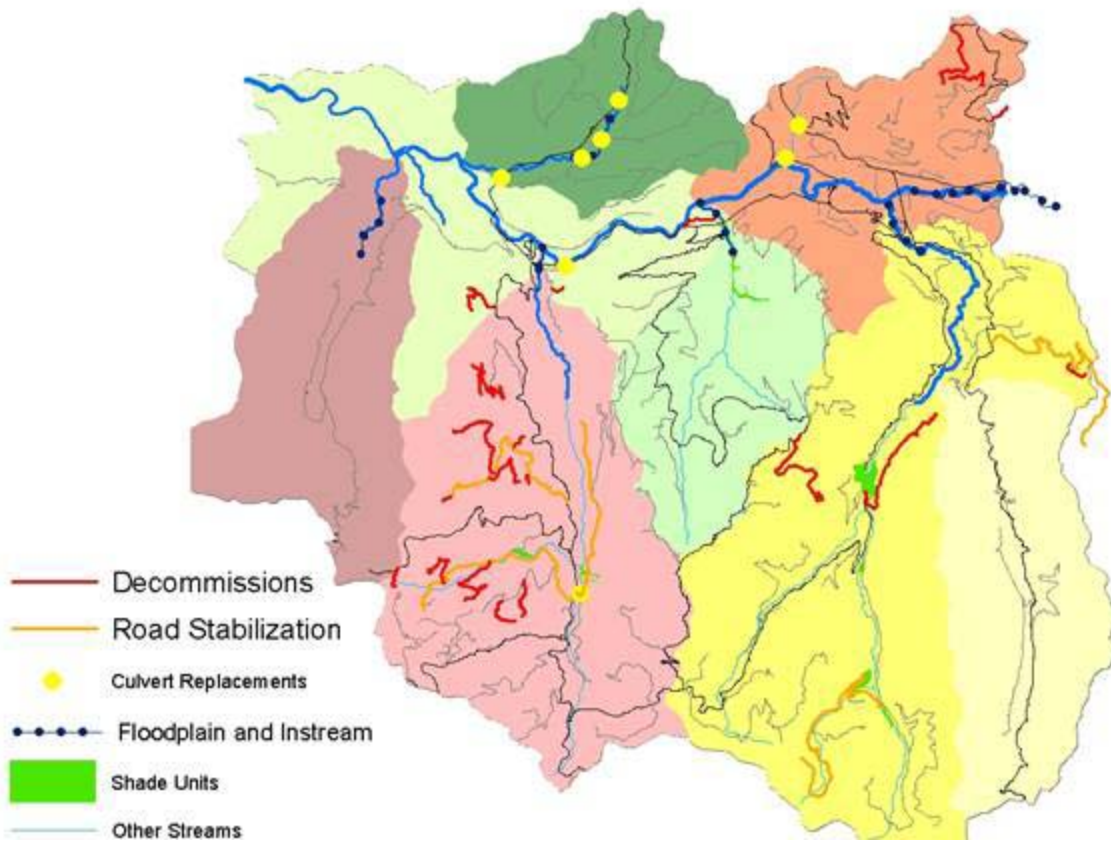
- 2<sup>nd</sup> Iteration L. Cispus River Watershed Analysis
- Fish Passage Culvert Survey Results
- Yellowjacket, Greenhorn, Iron and Woods Creek Water Quality Restoration Plan
- Lower Columbia Salmon Recovery and Fish & Wildlife Subbasin Plan
- Woods Creek Late Successional Reserve Planning

## Partners and Grants

- Gifford Pinchot Collaborative Group (GPCG)
- Gifford Pinchot NF Resource Advisory Committee (RAC)
- Pinchot Partners

## Lower Columbia River Subbasin Plan

Identifies Fall Chinook, Spring Chinook, Coho, and Winter Steelhead as focus species in the Upper Cowlitz Basin (includes all drainages above Mayfield Dam).



**Map of Lower Cispus River Watershed**

# Recommendations

## Road Decommissions

Road & Spurs	Miles	NEPA	Design	Contract	Partners/Grants
<b>2800144</b>	1.1	\$5,000	\$5,000	\$83,000	RAC - Completed FY05
<b>2517035</b>	1.9	\$21,000	\$8,000	\$190,000	GPCG
<b>7713000</b>	1.5				
<b>2904602</b>	0.2				
<b>5500 spurs</b>	2.4				
<b>2809000</b>	3.7				
<b>2516069</b>	0.4				
<b>2515000</b>	1.0				
<b>2517021</b>	0.6				
<b>2517022</b>	0.4				
<b>2517023</b>	0.3				
<b>Total</b>	<b>13.5</b>				

\* - NEPA includes other road projects

## Top 7 Fish Passage Culvert Removals or Replacements

Road	Habitat (Miles)	NEPA	Design	Contract	Partners
<b>7600000</b>	0.5				
<b>2305000</b>	1.1	\$20,000*	\$25,000		RAC
<b>2500000 mp 6.8</b>	0.2		\$25,000	\$225,000	RAC
<b>2500000 mp 4.0</b>	1.6				RAC
<b>2506000</b>	0.6				RAC
<b>2800144</b>		*	*	*	RAC
<b>7708000</b>		*	*	*	

## Stabilization

Road	Miles	NEPA	Design	Contract	Partners
<b>2511000</b>	2.0				
<b>2517000</b>	0.2	\$13,000	\$5,000	\$100,000	RAC – Completed FY05
<b>2515000</b>	4.6				
<b>7708000</b>	2.0				
<b>2904000</b>	6.2				
<b>Total</b>	<b>15.9</b>				

## Riparian

### Shade Enhancement

Subwatershed	WQRP Recommendation	Cost	Precommercial Thinning	Acres	Cost
Yellowjacket	8 acres		6 units	192	
Iron Creek	5 acres		9 units	146	
Greenhorn	4 acres		1 unit	15	
Cispus	1 structure		4 units	98	
Woods Creek	TBD		1 unit	8	

### Future Large Wood Recruitment and/or Direct Large Wood Placement

Subwatershed	Acres	NEPA	Design	Cost	Partner
Yellowjacket					
Iron Creek					
Greenhorn		*	*		
Cispus Frontal		*	*		
Woods Creek		\$60,000	\$8,000		

## River

### Instream Structures, Floodplain Enhancement and Bank Stability

Subwatershed	Miles	NEPA	Design	Cost	Partner
Yellowjacket	2.0				
Iron Creek	1.0				
Greenhorn	1.0				
Cispus River	1.0				
Woods Creek	Yes				

## Monitoring

Synthesis

Four areas were created which would focus on multiple project types while being logistically coherent. These four focus areas are named Western Muddy, Clear Muddy, Middle Clear and Clearwater Matrix (Map ?). Projects recommended in each issue discussion were synthesized among projects to formulate highest priorities for the focus area. In each focus areas, project types were prioritized differently to reflect the synthesized focus for each area. Focus areas were not prioritized as different funding mechanisms may allow work in several focus areas ie. Lewis River Aquatic Restoration Fund from Pacific Corp and the Lower Columbia Fish Recovery Board 6 Year Recovery Plan may emphasize two focus areas, Western Muddy and Clear Muddy, while stewardship opportunities may be effective in the Clear Muddy and Middle Clear where large Late Successional Reserves exist.

Western Muddy

The Western Muddy Focus area consists of lands that are accessed from the west side of the Muddy River along with lands that are accessed from the end of FR 2562000 (Map X). This area has 1) several clustered commercial thinning opportunities of stands between the age of 41-80 years, 2) stands needing precommercial thinning less than 41 years, 3) road crossing fish passage barriers needing replacements, 4) floodplain enhancement opportunities, and 5) road decommission recommendations with objectives of decreasing sediment, allowing for large wood transport, improving stream connectivity and decreasing road densities in deer and elk winter range.

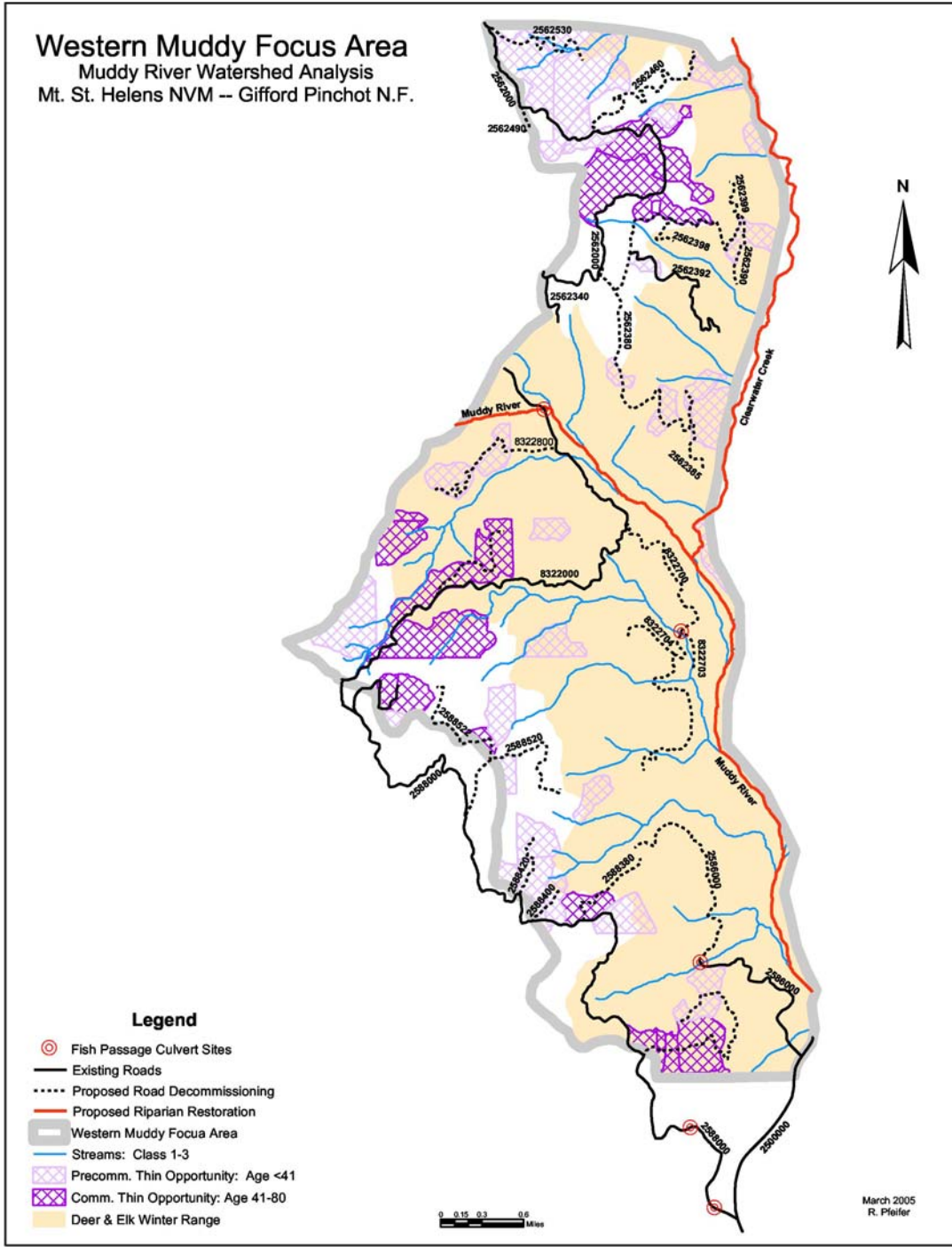
Commercial thinning opportunities for reducing overall fragmentation were identified for XX units (Table X). The selection of units was based on the need to maintain currently existing stands containing larger tree structure and other late successional features. Precommercial thinning treatments were identified with the objectives to accelerate the development of late successional features.

Twenty two road crossings of fish habitat were identified in Aquatic Issue #. Seven of these were rated as High Priority for Treatment within the Western Muddy Focus Area.

Road Number	Milepost	Habitat Blocked	Replace or Remove	Priority
8322000	4.6	1.2	Replace	1
8322700	1.3	0.1	Decommission	2
8322700	1.7	0.4	Decommission	3
2586000	1.5	0.2	Decommission	4
2500000	39.2	1.4	Replace	5
2588000	0.2	0.3	Replace	6 - Replaced 05
2588000	0.95	0.2	Replace	7



**Western Muddy Focus Area**  
 Muddy River Watershed Analysis  
 Mt. St. Helens NVM -- Gifford Pinchot N.F.



High implementation priority roads decommissions were within Deer and Elk Winter Range and either potentially contributing to increased peak flows within drainages identified in the 19?? Watershed Analysis or rated as High Risk of Sediment Delivery

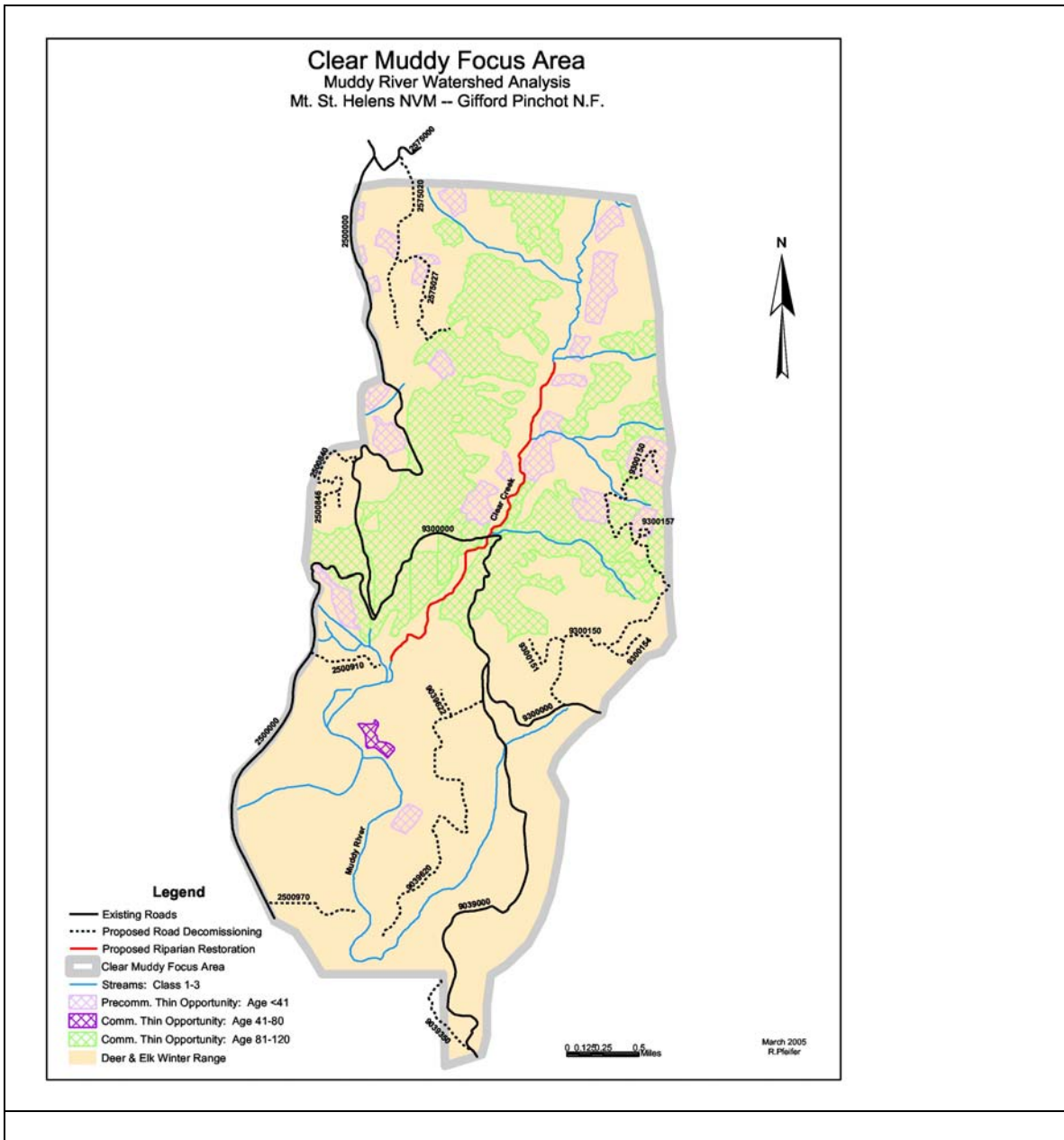
within the Gifford Pinchot National Forest Roads Analysis (Table XX). All spur roads off these high implementation priority road decommissions will also be considered High Implementation Priority. All other road decommissions were considered moderate implementation priority.

Table XX. Roads Proposed for Decommission from discussions in Aquatic Issue ? and the Implementation Priority.

Road Number	Length (miles)	High Peak Flow Risk	High Sediment Risk	Aquatic Risk	Deer and Elk Zone	Implementation Priority
2562390	1.8	X	X	High		Mod
2562399	0.3	X	X	High		Mod
2562398	0.2		X	Mod (no culverts)		Mod (spur off 2562390)
2562460	1.5	X		High	X	High
2562530	2.2		X	High	X	High
2562490	0.3			Mod (problems identified on the ground)		Mod
2562380	2.2			Mod	X	Mod
2562385	0.2			Mod	X	Mod
8322800	1.4	X		Mod	X	High
8322700 <sup>1</sup>	2.8	X		High	X	High
8322703	0.2	X	X	High	X	High
8322560	0.7			Mod	X	Mod
2588200	1.9	X	X	High	X	High
2588420 <sup>2</sup>	0.5	X	X	Mod		Mod
2588520	0.9	X		Mod		Mod
2588522	0.7			Low		Mod (spur road off 2588520)
2588400	0.3			Mod	X	Mod
2588380	0.8			Mod	X	Mod
2586000 <sup>3</sup>	1.7 (Begin MP 1.5)	X		Mod	X	High
Total	20.6					High – 11.7 miles

## Clear Muddy

The Clear Muddy Focus area consists of lands around the lower reaches of the Muddy River, lower reaches of Clear Creek and are east of FR 2500000 (Map XX). This area has 1) road closure recommendations to decrease the potential for illegal Bull Trout fishing 2) road decommissioning recommendations with the objective of decreasing sediment, allowing for large wood transport, improving stream connectivity and decreasing road densities in deer and elk winter range 3) instream and riparian enhancement along the lower 4.5 miles of Clear Creek, 4) one road crossing fish passage barriers needing replacement, and 5) opportunities to thinning stands age 81-120 years.



This area has opportunities to close or decommission roads to reduce the potential for illegal Bull Trout Fishing along with decommissioning to eliminate the negative effect roads have to the aquatic ecosystem. High implementation priority roads decommissions were within Deer and Elk Winter Range and either contributing to the illegal bull trout fishing or were rated as High Aquatic Risk in the Gifford Pinchot National Forest Roads Analysis (Table XX). At least two other miles of non-classified roads will be closed to reduce the occurrence of illegal fishing of Bull Trout.

Table X.

Road Number	Length	Aquatic Risk	Illegal Bull Trout Fishing Areas	Deer and Elk Zone	Implementation Priority
9300150	3.6	High		X	High
9300151	0.4	High		X	High
9300154	0.2	Mod		X	High (spur off 9300150)
9300157	0.1	Mod		X	High (spur off 9300150)
2575020	1.3	Low		X	Mod (spur off 2575027)
2575027	1.4	Mod		X	Mod
9039350	0.3	Mod	Yes	X	High
9039620	2.7	Mod	Yes	X	High
9039622	0.2	Low		X	High (spur off 9039620)
2500840	1.0	High		X	High
2500846	0.2	Mod		X	High (spur off 2500840)
2500910	0.6	Low	Yes	X	High
2500970	0.5	Low	Yes	X	High
Total	12.5				High – 9.8 miles

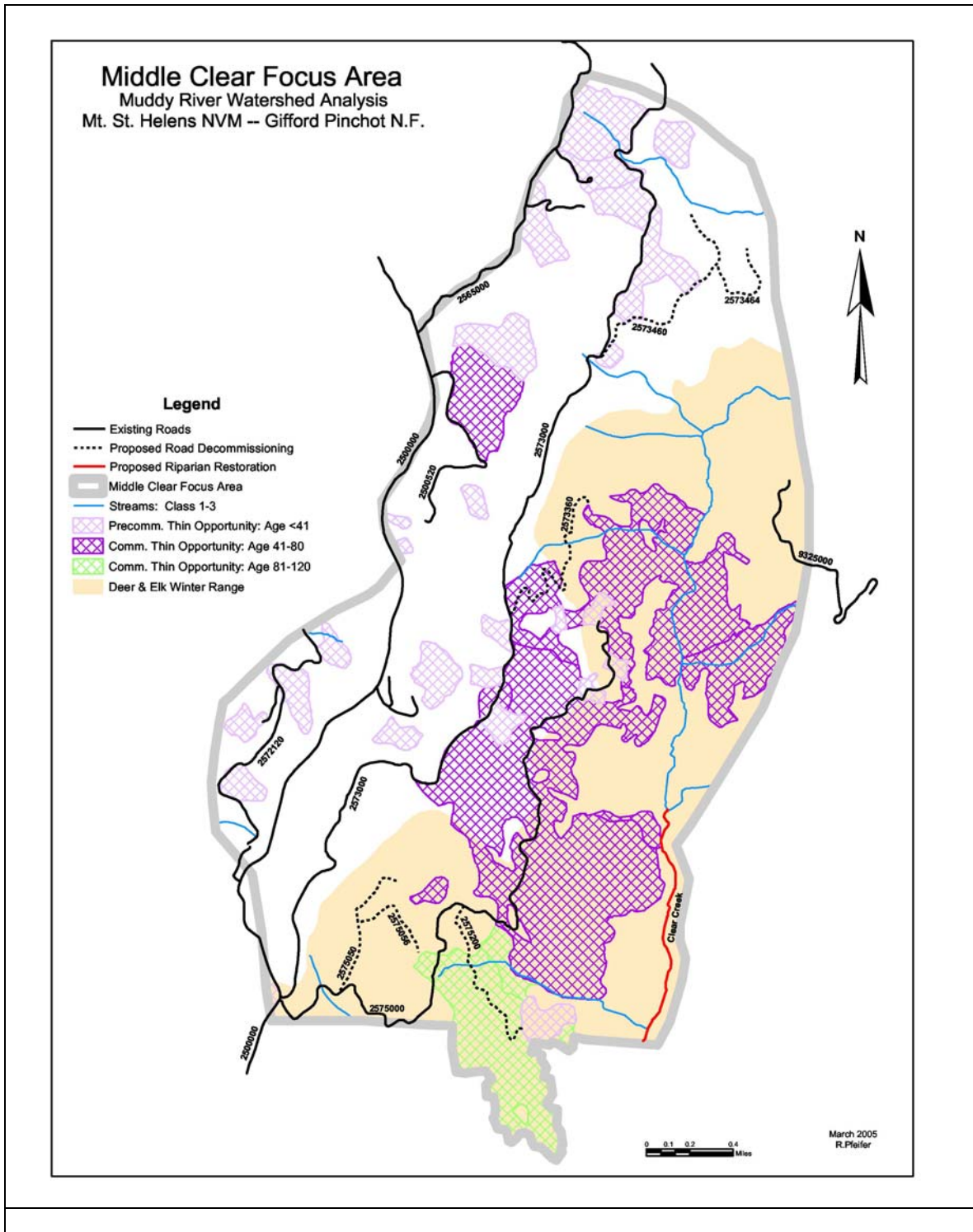
This area has areas of opportunities for thinning stands age 81-120 years for the purpose of enhancing late successional characteristics although the treatments will be non-commercial, subtle and may be limited as these stands are generally in a condition that structurally and compositionally are functioning to the benefit of late successional species, or are on a growth trajectory to do so in the near future.

4.5? miles of riparian and intream restoration.

One road crossing along FR 9300000 MP 0.8 needs field verification for habitat blocked to determine the priority for replacing culvert.

## Middle Clear

The Middle Clear Focus area consists of lands within the Clear Creek Subwatershed, immediately north of the Clear Muddy focus area and is accessed by FR 2575 road system and other shorter spurs off the FR 250000 (Map xx).



Recommendations within the Middle Clear Focus Area include 1) LSR stand thinning to maintain and in some cases accelerate existing large tree structure and other late successional features, 2) decommission roads that have been identified as limited access needs for the near future (about 10 years) and within Deer and Elk Winter Range and 3) riparian and instream restoration for the mainstem Clear Creek RM 7.0-9.0.

This focus areas has ?? acres of candidate stands for thinning (Table x).

About 2.1 miles of road decommission within this focus area is considered the highest priority for implementation as they were both rated as high aquatic risk and within Deer and Elk Winter Range. All road decommissions recommended in the Roads Analysis within the focus area are mapped and listed in Table X. Approximately 2 miles of Clear Creek in this focus area is recommended for riparian and instream restoration due to the low levels of instream large wood and limited pools.

Table X.

<b>Road Number</b>	<b>Length</b>	<b>Aquatic Risk</b>	<b>Deer and Elk Zone</b>	<b>Implementation Priority</b>
2573360	1.2	Mod	X	Mod
2573460	0.9	High	X	High
2573464	0.3	Low	X	High (connected to 2573460)
2575050	0.5	Mod	X	Mod
2575056	0.3	Mod	X	Mod
2575200	0.9	High	X	High
Total	4.1			High - 2.1 miles





High implementation priority was given to road decommissions which were also with Deer and Elk Winter Range.

Table X. Road decommission recommendations based on locality within drainages identified in previous watershed analysis with road densities increasing the extension of stream network greater than 25%.

Road Number	Length (miles)	High Peak Flow Risk	Deer and Elk Zone	Implementation Priority
2560400	2.7	X		Mod
2560404	0.4			Mod
2568351	1.2	X		Mod
2568350	2.8 (begin MP1.5)	X	X	High
Total	7.1			High - 2.8 miles

Table XX. Precommercial stands recommended for thinning within Drainages 16 and 20.

Stand Number	Stocking Level	Within Area With Increased Peak Flows	Access on Road Proposed to be Decommissioned	Priority
101368 101496 101360 101264 101235 101318 101406 101407 101409	High	Yes	2560400	High
101500 101498 101497 101437 101436 101439 101236 101238 101536	Optimal	Yes		High