

## **Biological Evaluation for Slinky**

### **Proposed, Endangered, Threatened, and Sensitive Fish Species**

Slinky Timber Sale  
Clackamas River Ranger District  
Oak Grove and Upper Clackamas River Watersheds

#### **Background**

This Biological Evaluation (BE) replaces the original version due to changes in the proposed action, removal of associated projects from the original analysis, and the addition of new alternatives.

#### **Summary of Changes**

- The proposed action will include only the regeneration harvest units. Thinning units 36 and 38 have been deleted.
- Alternatives have been adjusted and new ones added.
- The associated projects that had been part of the proposed action (close and obliterate parts of Rd 5730-120 and rehabilitation of the Kink Creek and K2 rock pits) have been separated from this analysis and are not considered connected actions.
- Design criteria and effects discussion related to the eliminated projects have been adjusted accordingly.

#### **Alternative A - No Action**

Under the No-action alternative, current management plans would continue to guide management of the project area. No timber harvest or other associated actions would be implemented.

#### **Alternative B - The Proposed Action**

The action proposed is to harvest trees from approximately 184 acres using the reserve shelterwood regeneration method. Northwest Forest Plan standards for green tree retention and coarse woody debris in regeneration harvest would be applied. Approximately 10% of the harvest area would be retained in patches. Scattered trees would be retained to meet the green tree retention standard and to achieve silvicultural and wildlife objectives. The scattered leave trees would be retained at the rate of 10 to 12 per acre and would primarily be selected from the largest component of trees present in the unit except where smaller trees are retained for spacing and species diversity. Snags and large logs would also be retained. The harvesting operation would generally remove most of the small trees as well as some of the large trees. Several temporary roads would be constructed to access landings, (approximately 0.4 mile total, of this distance 650 feet would be new construction and 1400 feet would be built on existing skidtrails). These temporary roads would be obliterated and revegetated by the timber sale purchaser after completion of the project. Several miles of road reconstruction along haul roads would also occur including spot rocking and brushing on 5710, addition of aggregate surfacing on 5720190, and deep patch repairs to 5720. Logging methods used would include

ground-based tractor and loader skidding and skyline yarding. Fuels reduction and site preparation would be accomplished through manual and machine piling and burning of logging slash prior to planting.

### **Alternative C**

Alternative C is similar to Alternative B except it would not construct any new temporary roads. Portions of proposed harvest units that are not accessed by existing roads would be harvested by helicopter or (on flatter ground) longer skidding distances would be used to transport logs from the harvest units to log landings on exiting roads. Unit 31 and part of unit 5 would be helicopter logged for a total of 63 acres. Part of Unit 5 would be tractor logged but with long skidding distances.

### **Alternative D**

Alternative D has the same unit boundaries as Alternative B but instead of the 10 -12 leave trees per acre with Alternative B, it would leave approximately 30 of the largest and oldest trees per acre. Stands harvested using this alternative would retain more of the older forest stand components needed for certain animal and plant species. As in Alternative B, leave trees would primarily be selected from the largest component of trees present in the unit except where smaller trees are retained for spacing and species diversity. The units would still be considered regeneration harvests and would include site preparation and planting. As with alternative C, portions of proposed harvest units that are not accessed by existing roads would be harvested by helicopter or (on flatter ground) longer skidding distances would be used to transport logs from the harvest units to log landings on exiting roads.

### **Effects of Project Implementation**

The effects of the implementation of the Slinky Project on any threatened, proposed, candidate, or sensitive fish stock will be based on local populations of resident cutthroat trout and populations of listed fish species downstream of the project area in the Oak Grove Fork and Clackamas River. No listed fish species occur in any of the streams within the project area. The migration of listed fish species in the Oak Grove Fork is blocked by Lake Harriet Dam located approximately two miles downstream from the closest proposed unit. The nearest proposed unit to listed fish species or habitat in the Upper Clackamas River is 1.7 miles. There will be no entry into Riparian Reserves under any of the alternatives proposed for the Slinky Project. Preliminary Riparian Reserve mapping shown on corporate geographic information system (GIS) maps was found to be inaccurate in the Slinky area. Based on field inspections, the actual locations of streams were remapped and Riparian Reserve boundaries have been refined according to the recommendations in the Watershed Analyses. A map of accurate streams and Riparian Reserve boundaries in the Slinky area is attached. The presence of Lake Harriet dam will negate impacts from any sediment that may be produced by project implementation on any fish species that occur below the project area in the Oak Grove Fork. At Harriet Dam, the entire flow of the river is diverted through a pipeline to the Oak Grove Powerhouse. The dam acts as a sediment barrier, to the lower Oak Grove Fork below the dam.

The no-action alternative would have ratings of “No Effect” for all of the fish stocks of concern. The following effects determinations apply to the action alternatives, all of the action alternatives will have the same effects to fishery resources.

**Summary of Effects to listed, proposed, candidate, and sensitive species occurring within the Clackamas River Basin.**

ESU Species/Status	Habitat Present	Species Present	Effects of Action By Alternative			
			A	B	C	D
<b><u>Threatened</u></b>						
<b>**Lower Columbia River steelhead</b> <i>(Oncorhynchus mykiss)</i>	Yes	Yes	NE	NE	NE	NE
<b>Columbia River Bull trout</b> <i>(Salvelinus confluentus)</i>	Yes	No	NE	NE	NE	NE
<b>**Upper Willamette River chinook</b> <i>(Oncorhynchus tshawytscha)</i>	Yes	Yes	NE	NE	NE	NE
<b>Lower Columbia River chinook</b> <i>(Oncorhynchus tshawytscha)</i>	Yes	No	NE	NE	NE	NE
<b>Lower Columbia River chum</b> <i>(Oncorhynchus keta)</i>	Yes	No	NE	NE	NE	NE
<b><u>Candidate</u></b>						
<b>**Lower Columbia River/Southwest WA coho</b> <i>(Oncorhynchus kisutch)</i>	Yes	Yes	NE	NE	NE	NE
<b><u>Sensitive</u></b>						
<b>**Southwestern WA/Columbia River coastal cutthroat trout</b> <i>(Oncorhynchus clarki clarki)</i>	Yes	Yes	NI	MIIH	MIIH	MIIH

NE – No Effect

NLAA – May affect not likely to adversely affect

LAA – May affect likely to adversely affect

NI - No Impact

MIIH - May Impact Individuals or habitat but will not likely cause a trend towards federal listing or cause a loss of viability of the species or its population.

\*\* Species known to occur on Clackamas River Ranger District

**Columbia River Bull Trout** (*Salvelinus confluentus*) - (Threatened) Bull trout were once prolific in the Clackamas River system. At present, they are believed to be extinct. Adult bull trout that occurred in the Clackamas River exhibited a fluvial life history character, maintaining residence in the main river and larger tributaries. It is quite likely that adult bull trout in the Clackamas River migrated to the Willamette and Columbia rivers prior to construction of River Mill Dam. Adult bull trout would reside in the mainstem and larger tributaries until their spawning period during mid-August through September, at which time they would migrate upstream to smaller tributaries to spawn.

U.S. Forest Service fisheries biologists conduct fisheries sampling on an annual basis on many streams throughout the Clackamas River watershed upstream of North Fork Reservoir. To date, these sampling efforts have never yielded capture of bull trout. After several years of intensive sampling, U.S. Forest Service fisheries biologists believe that bull trout in the Clackamas River are considered to be "functionally extinct." Since bull trout are not present in the Clackamas River system the effects determination for this species is "No Effect" for this project.

**Lower Columbia River Steelhead (*Oncorhynchus mykiss*) - (Threatened)** Adult steelhead migrate into the waters of the Clackamas River drainage above North Fork Dam primarily during April through June with peak migration occurring in May. Spawning occurs during the months of April thru June in the Upper Clackamas River and during the months of March thru June in the Oak Grove Fork. Steelhead use the majority of the mainstem Clackamas and the lower 3.7 miles of the Oak Grove Fork as spawning and rearing habitat. Winter steelhead fry emerge between late June and late July and rear in freshwater habitat for one to three years. Smolt emigration takes place March thru June during spring freshets. Steelhead occur more than two miles downstream from any proposed unit within the Oak Grove Fork watershed and approximately 1.7 miles downstream from any unit within the Upper Clackamas River. Because of the distance of the project area to any presence of Lower Columbia River steelhead or its habitat the effects determination for this species for the Slinky Project is "No Effect".

**Upper Willamette River Spring Chinook (*Oncorhynchus tshawytscha*) - (Threatened) -** Upper Willamette River spring chinook salmon occur in the Clackamas River. The ESU consists of both naturally spawning and hatchery produced fish. These spring chinook enter the Clackamas basin from April through August and spawn from September through early October with peak spawning occurring the 3rd week in September. These fish primarily spawn and rear in the mainstem Clackamas River and larger tributaries.

Adults in the Lower Clackamas drainage spawn in Eagle Creek, below River Mill Dam and between River Mill and Faraday diversion dams. Spawning in the upper Clackamas drainage has been observed in the mainstem Clackamas from the head of North Fork Reservoir upstream to Big Bottom, the Collawash River, Hot Springs Fork of the Collawash River, lower Fish Creek, South Fork Clackamas River and Roaring River. Spring chinook occur in the lower Oak Grove Fork more than two miles downstream from any proposed unit and approximately 1.7 miles downstream from any unit within the Upper Clackamas River. Because of the distance of the project area to any presence of Upper Willamette River chinook or its habitat, the effects determination for this species for the Slinky Project is "No Effect".

**Lower Columbia River Fall Chinook (*Oncorhynchus tshawytscha*) (Threatened)** The fall chinook within the Clackamas Subbasin are thought to originate from "tule" stock which was first released into the subbasin in 1952 and continued until 1981. Since 1981 no fall chinook have been released into the Clackamas River. However some adult fall chinook released as juveniles above Willamette Falls may have strayed into the Clackamas River.

Historically fall chinook spawned in the mainstem Clackamas River above the present site of the North Fork Dam before its construction. Currently the "tule" stock of fall chinook spawn below River Mill Dam and in the lower reaches of Clear Creek. Fall Chinook spawn late August through September. These fish primarily spawn and rear in the mainstem Clackamas River and larger tributaries and are not found on the Clackamas River Ranger District. Because of the distance of the occurrence of fall chinook from the project area (greater than 20 miles) the effects determination for this species is "No Effect".

**Lower Columbia River Fall Chum (*Oncorhynchus keta*) (Threatened)**

Fall chum historically have inhabited the lower portion of the Clackamas River but no current records are available to confirm any chum presence within the Clackamas River. The effects determination for this species is "No Effect".

**Lower Columbia River/Southwest Washington Coho Salmon (*Oncorhynchus kisutch*) (Candidate for listing)** The Clackamas River contains the last important run of wild late-run winter coho in the Columbia Basin. Coho salmon occupy the Clackamas River and the lower reaches of streams in the Upper Clackamas watershed including the lower two miles of the Oak Grove Fork. Adult late-run winter coho enter the Clackamas River from November through February. Spawning occurs mid-January to the end of April with the peak in mid-February. Peak smolt migration takes place in April and May. Coho occur more than two miles downstream from any proposed unit within the Oak Grove Fork watershed and approximately 1.7 miles downstream from any unit within the Upper Clackamas River. Because of the distance of the project area to any presence of Lower Columbia River/Southwest Washington coho salmon or its habitat, the effects determination for this species for the Slinky Project is "No Effect".

**Southwestern Washington/Columbia River Cutthroat Trout (*Oncorhynchus clarki clarki*) - (Sensitive).** Searun cutthroat have historically existed in the Clackamas River below River Mill Dam. Cutthroat have been observed going downstream over the dam complex by PGE biologists, but never observed migrating upstream. It is not known whether the Clackamas River above the hydro-complex was part of their historic range.

Coastal cutthroat trout exhibit diverse patterns in life history and migration behaviors. Populations of coastal cutthroat trout show marked differences in their preferred rearing environments (river, lake, estuary, or ocean); size and age at migration; timing of migrations; age at maturity; and frequency of repeat spawning. Resident coastal cutthroat trout inhabit the upper Clackamas River and its tributaries including the Oak Grove Fork. Because of the presence of resident coastal cutthroat trout in the streams within and downstream of the project area the effects determination for Southwestern Washington/Columbia River cutthroat trout is "May impact individuals but is not likely to cause a trend to federal listing or loss of viability of the species."

**Essential Fish Habitat**

Essential Fish Habitat (EFH) established under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) includes those waters and substrate necessary to ensure the production needed to support a long-term sustainable fishery (i.e., properly functioning habitat conditions necessary for the long-term survival of the species through the full range of environmental variation). EFH includes all streams, lakes, ponds, wetlands, and other water bodies currently, or historically, accessible to salmon in Washington, Oregon, Idaho, and California. Three salmonid species are identified under the MSA, chinook salmon, coho salmon and Puget Sound pink salmon. Chinook and coho salmon occur on the Mt. Hood National Forest in the Clackamas River, Hood River, and Sandy River basins. Implementation of the projects covered in this BE will not adversely effect essential fish habitat. These projects will not have any negative long-term effect on water or substrate essential to the life history of coho, chinook, or chum salmon that occur within the watersheds where projects will take place.

Updated 09/18/03

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Documentation for Fish Effects Determination  
Slinky Timber Sale

LCR Steelhead, Upper Willamette River Chinook (spring), LCR Chinook (fall),  
Columbia River Chum, Southwest Washington/Columbia River Cutthroat trout, and  
LCR/Southwest WA Coho

Clackamas River Ranger District, Mt. Hood National Forest  
Kink Creek 6<sup>th</sup> Field Watershed

### Water Quality

Temperature:

Temperature data for Kink Creek collected from stream surveyors is available for 1998. Temperatures recorded at measured units within and below reaches of the project area were between 9 and 11 degrees Celsius (48 to 50 degrees Fahrenheit). This data according to National Marine Fisheries Service (NMFS) criteria proves Kink Creek to be properly functioning at this indicator.

Environmental Baseline = "**Properly functioning**"

There would be no harvest activity within the riparian reserves. There would be no effect to water temperatures a result of these actions.

Effects of Actions = "**Maintain**".

Sediment:

No data is available on percent fines in spawning gravel or turbidity. According to Kink Creek stream survey reports, sediment is being introduced by an eroding road that runs along Kink Creek and by two rock quarries that lie adjacent to Kink Creek and its tributary. The road and rock quarries have been identified for restoration. This indicator is not properly functioning.

Environmental Baseline = "**Not properly functioning**"

Proposed semi-permanent road systems do not lie within riparian reserves, and do not cross any streams. These roads are on flat ground. Since these overgrown roadbeds are located on gentle terrain and already to grade, it is likely that the re-opening of these roads would cause less soil disturbance than the construction of a new spur road. Impacts to water quality and aquatic habitat would not pose a substantial risk to water quality or aquatic resources. Road construction and log haul would only occur during dry periods. Mitigation measures designed to minimize the risk of sediments entering stream courses and Best Management Practices associated with road construction would be utilized.

Effects of Actions = "**Maintain**".

#### Chemical Contaminants/Nutrients:

No data is available for chemical contaminants/nutrients. It is unlikely that there are any effects to the stream from this indicator. This indicator is properly functioning.

Environmental Baseline = "**Properly functioning**"

There are no management activities on the National Forest that would increase chemical pollution. There is a low probability of accidental spill or a vehicle accident.

Contingency plans have been developed in case of an accidental chemical spill during harvest activities.

Effects of actions = "**Maintain**".

#### Habitat Access

##### Physical Barriers:

All culverts appear to be upstream from range of steelhead distribution. Steelhead and other anadromous species are blocked by a barrier falls at RM 3.75 in the mainstem of Oak Grove Fork. A Kink Creek stream survey shows a culvert at NSO 158 poses a possible fish barrier to all resident cutthroat trout at low flow. This culvert would be removed under a separate restoration project. This project would not create any barriers for steelhead, resident trout or any other anadromous species.

Environmental Baseline = "**Properly functioning**"

Project implementation scheduled for the Slinky sale area is not anticipated to create any new barriers.

Effects of actions = "**Maintain**".

#### Habitat Elements

##### Substrate:

Gravel/cobble are dominant and subdominant substrate types according to data collected during the 1998 Kink Creek stream survey. This indicator is properly functioning according to criteria presented by NMFS.

Environmental Baseline = "**Properly functioning**"

Project activities scheduled for the Slinky sale area are not anticipated to change substrate composition. Effects of actions = "**Maintain**"

##### Large Woody Debris:

Based upon stream survey information for Kink Creek, large woody debris did not meet the >80 pieces/mile standard desired by NMFS in any reach of the stream. The majority of the woody debris was below the small size category. Recruitment potential for large woody debris appears to be good. Many spanner logs were observed during the survey.

These logs would eventually be introduced into the stream and have the potential to intercept more woody debris as it moves down through the system. This indicator is not properly functioning.

Environmental Baseline = "**At risk**"

There would be no harvest activities within riparian reserves.

Effects of actions = "**Maintain**".

#### Pool Frequency:

Criteria developed by NMFS for this indicator are not properly functioning. NMFS standards were met only in Reach 1 of Kink Creek. No primary pools were identified during the survey.

Environmental Baseline = "**Not properly functioning**"

The proposed actions in the Slinky project area would have no effect on pool frequency in Kink Creek.

Effects of actions = "**Maintain**".

#### Pool Quality:

Pool quality in Kink Creek did not meet the >3 feet criteria desired by NMFS. There are no high quality pools in any reaches of Kink Creek. However, they still provide good habitat for small resident cutthroat trout and other forms of aquatic life that reside there.

Environmental Baseline = "**Properly functioning.**"

Harvest activities would not affect pool depths because there is little likelihood of detectable fine sediments entering the mainstem of Oak Grove Fork below Lake Harriet dam.

Effects of actions = "**Maintain.**"

#### Off-channel Habitat:

The 1998 stream survey of Kink Creek indicated that Side channels were present in Kink Creek but above where project activity would occur. Side channels were described as providing excellent areas for resting, rearing and spawning. These areas were described as poor fish habitat and provided little to no flow during the time of the survey. This indicator warrants a not properly functioning baseline.

Environmental Baseline = "**Properly functioning.**"

Channel forming processes are not expected to be altered by this timber sale.

Effects of actions = "**Maintain.**"

## Refugia:

Good habitat exists for resident and anadromous fish species. Riparian Reserves along Kink Creek below the project area are predominately mid to late seral stage. Floodprone and bankfull vegetation is providing excellent shade with foliar material contributing to slope stabilization.

Environmental Baseline = "**Properly functioning.**"

There would be no effect to refugia as the result of this timber sale.

Effects of actions = "**Maintain.**"

**Channel Condition & Dynamics**

## W/D Ratio:

Width to depth ratios was estimated at 12 in the 1998 stream survey of Kink Creek for Reach 1. This reach is below the project area and does not meet NMFS standards.

Environmental Baseline = "**Not properly functioning**"

This timber sale would not significantly increase peak flows, cause direct bank damage, or measurably affect sediment delivery to streams, which could potentially affect width to depth ratios.

Effects of Actions = "**Maintain**".

## Streambank Condition:

Survey data for Kink Creek indicated that only 40 feet of bank instability was observed. This condition exceeds the >90% stable NMFS criteria. Most bank instability along this stream was due to logging activities along the stream.

Environmental Baseline = "**Properly functioning.**"

The proposed actions would not have any impact on bank stability, nor would it contribute to bank failure downstream. Effects of Actions = "**Maintain**".

## Floodplain Connectivity:

No data is available on this indicator. However, during the stream survey, there were no functional wetlands or suitable side-channel habitat within the stream reach below the project area. Using my best professional opinion, I would classify this indicator as "not properly functioning".

Environmental Baseline = "**Properly functioning.**"

Floodplain connectivity would not be influenced by management actions.

Effects of Actions = "**Maintain**".

### **Flow/Hydrology**

#### Peak/Base Flows:

No data is available for peak/base flows on Kink Creek. However, no drainage network increases would occur to increase peak flows with the potential to damage fish habitat. By matrix document definition, this indicator is "properly functioning".  
Environmental Baseline = "**Properly Functioning.**"

ARP values of the proposed treatment of this sale show that the hydrologic recovery for this sale area would be maintained well above the Mt. Hood Land and Resource Management Plan threshold. Peak/base flows would not be measurably affected by the actions proposed with this timber sale.  
Effects of Actions = "**Maintain.**"

#### Drainage Network Increase:

No data is available for this indicator on Kink Creek. This project would create 2,550 feet of semi-permanent road that would be obliterated following project implementation. The concern for drainage network increases is higher peak flows and resultant potential for fish habitat or channel damage. By matrix document definition, this element is a "properly functioning."  
Environmental Baseline = "**Properly Functioning.**"

2550 feet of semi-permanent road would be built under the preferred alternative. Several existing roads would be re-opened. The re-opened roads would be closed and seeded following harvest activities. It is anticipated that these roads would be used for future entries into the project area.  
Effects of Actions = "**Maintain**"

### **Watershed Condition**

#### Road Density/Location:

Baseline road density calculations are not available in the Kink Creek subwatershed. However, there are some valley bottom roads. This puts it in the "at risk" category.  
Environmental Baseline = "**At risk.**"

2550 feet of semi-permanent road would be built to access landings under the preferred alternative. Several existing roads would be re-opened. The re-opened temporary roads would be closed and seeded following harvest activities. It is anticipated that these roads would be used for future entries into the project area. If the semi-permanent roads are in place over a winter, they will be water barred and mulched to prevent the risk of surface erosion. Effects of Actions = **Degrade** (short term)"**Maintain**" (long term).

## Disturbance History:

ARP values are currently at 71% in the Kink Creek watershed and will increase to 73% in 2004. Although ARP and ECA are not identical models, the intent is to determine the risk of watershed cumulative effects. The current ARP values are above the threshold of concern of 65% for cumulative effects within the watershed.

Environmental Baseline = "**Properly functioning.**"

Year 2004 is the expected harvest treatment of the sale. The proposed timber sale would result in a watershed recovery condition with an ARP of 70% in the Kink Creek watershed after harvest treatment. Harvest activity does not concentrate in riparian areas or unstable areas. ARP values would remain above the Mt. Hood National Forest Land and Resource Management Plan threshold of 65% for this sale.

Effects of Actions = "**Maintain.**"

## Riparian Reserves:

The riparian reserve system provides adequate shade, potential large woody debris recruitment, and habitat protection and connectivity in the Kink Creek watershed. A large percent of the riparian reserves greater than 80% intact are in mid seral stages. However, there is some sediment delivery indirectly into Kink Creek from an adjacent rock quarry in the riparian reserve. I would categorize the baseline as "at risk".

Environmental Baseline = "**At Risk**"

There would be no harvest activities within riparian reserves.

Effects of Actions = "**Maintain.**"

**CHECKLIST FOR DOCUMENTING ENVIRONMENTAL BASELINE AND EFFECTS OF PROPOSED ACTION(S) ON RELEVANT INDICATORS**

Forest: **Mt. Hood National Forest**  
ESU: **Lower Columbia River (LCR) Steelhead, Upper Willamette Chinook(spring), LCR Chinook(fall), Columbia River Chum, SW Washington/Columbia River Cutthroat trout, LCR/Southwest WA coho**  
Project: **Slinky Timber Sale**

Ranger District: **Clackamas River**  
6<sup>th</sup> Field Watershed: **Kink Creek**

PATHWAYS INDICATORS	ENVIRONMENTAL BASELINE			EFFECTS OF THE ACTION(S)		
	Properly Functioning <sup>1</sup>	At Risk <sup>1</sup>	Not Properly Functioning <sup>1</sup>	Restore <sup>2</sup>	Maintain <sup>2</sup>	Degrade <sup>2</sup>
<u>Water Quality:</u> Temperature	X				X	
Sediment			X		X	
Chem. Contam./Nut.	X				X	
<u>Habitat Access:</u> Physical Barriers	X				X	
<u>Habitat Elements:</u> Substrate	X				X	
Large Woody Debris		X			X	
Pool Frequency			X		X	
Pool Quality	X				X	
Off-channel Habitat	X				X	
Refugia	X				X	
<u>Channel Cond. &amp; Dyn.:</u> Width/Depth Ratio			X		X	
Streambank Cond.	X				X	
Floodplain Connectivity	X				X	
<u>Flow/Hydrology:</u> Peak/Base Flows	X				X	
Drainage Network Inc.			X		X	
<u>Watershed Conditions:</u> Road Dens. & Loc.		X			X(long Term)	X(short term)
Disturbance History	X				X	
Riparian Reserves		X			X	

<sup>1</sup> These three categories of function ("properly functioning," "at risk," and "not properly functioning") are defined for each indicator in the "Matrix of Factors and Indicators" table found in the document "Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale" (National Marine Fisheries Service 1996).

<sup>2</sup> Effects are based on which way this project is likely to move the relevant indicator, but no change in baseline is expected.

Documentation for Fish Effects Determination  
Slinky Timber Sale

Lower Columbia River Steelhead, Upper Willamette River Chinook (spring), Lower Columbia River Chinook (fall), Columbia River Chum and Southwest Washington/Columbia River Cutthroat trout ESU

Clackamas River Ranger District, Mt. Hood National Forest  
Unnamed Tributaries of Upper Clackamas Watershed (Austin Segment)

**Water Quality**

Temperature:

No temperature data is available for the unnamed tributaries in the sale area. I have evaluated the potential effects of this project to cutthroat, steelhead and other anadromous fish species and determined that there would be no effect. This is based upon a consideration of the NMFS Matrix of Pathways and Indicators. This indicator will be maintained and there is no take. There will be no short-term, long-term, or cumulative effects to individuals of the population or to their habitat from implementation of the project. It has been noted that this area is predominately in late successional reserves (Upper Clackamas Watershed Analysis, 1995). These intermittent streams are small and located in very steep terrain and are unable to support healthy fish populations.

Environmental Baseline= **"Properly functioning"**

There would be no harvest activity within the riparian reserves. There would be no effect to water temperatures because of these actions.

Effects of Actions= **"Maintain"**.

Sediment/Turbidity:

No turbidity monitoring **data** is available for the unnamed streams in the project area. The short-term ground disturbing activities proposed within the sale area includes regeneration, thinning, and shelterwood harvest methods of timber stands with the construction of 200 feet of semi-permanent road. These actions have some potential to cause a small amount of soil erosion or runoff. Because these activities are located outside of Riparian Reserves, and approximately five miles upstream from anadromous or resident habitat this project would not have an impact on these species. Impacts to water quality and aquatic habitat would be avoided by following standards and guidelines called for by the Northwest Forest Plan and mitigation measures. The semi-permanent road would meet Aquatic Conservation Strategy objectives and would be located outside Riparian Reserves. The semi-permanent road would be obliterated after use.

Environmental Baseline= **"Properly functioning"**

The potential for surface erosion and silt to enter stream channels because of project activities would be unlikely. Only 200' of semi-permanent road would be built to access

unit 31. The road crosses no stream channels and would not be built in riparian reserves. This road would be obliterated and revegetated upon completion of the project. Adherence to BMP's and mitigation measures would reduce the risk of fine sediments entering stream courses.

Effects of Actions= "**Maintain**"

Chemical:

No data is available on known chemical pollution sites within these unnamed tributaries of the Upper Clackamas watershed. It is unlikely that project activity would affect this indicator because there are no stream crossings in the project area.

Environmental Baseline= "**Properly functioning**"

Project activities would not increase chemical pollution in the Upper Clackamas watershed. Only if an accidental spill occurred through a vehicle accident or other mishap.

Effects of Actions= "**Maintain**"

### **Habitat Access**

Physical Barriers:

I have evaluated the potential effects of this project to cutthroat, steelhead and other anadromous fish species and determined that there would be no effect. The culverts at the confluence of the Upper Clackamas River act as physical barriers to fish passage. The baseline would rate "at risk" based on the criteria developed in the National Marine Fisheries Service (NMFS) matrix.

Environmental Baseline= "**At Risk**".

Project activity near the unnamed tributaries of the Upper Clackamas watershed would not create fish barriers during project implementation. However, culverts at the mouth of the unnamed tributaries are inaccessible, making it impassable for anadromous fish.

Effects of Actions= "**Maintain**".

### **Habitat Elements**

Substrate/Sediment:

No data is available on the unnamed tributaries but data on the watershed indicates that cobble is the dominant substrate. Although there are localized exceptions, silt and sediment does not seem to be a major substrate factor.

Environmental Baseline= "**Properly functioning**"

Project activities are not anticipated to change substrate composition.

Effects of Actions= "**Maintain**"

## Large Woody Debris:

No data is available for this indicator but data on the watershed indicates that stands in this localized area are in late successional reserves. Information on presence of large woody debris in these streams is not available. Although much of the fisheries habitat appears to be low quality, I would rate this baseline as "not properly functioning" for the large woody debris parameter.

Environmental Baseline= **"Not properly functioning"**

There would be no affect to LWD by this project.

Effects of Actions= **"Maintain"**

## Pool Frequency:

No data is available on pool frequency for the unnamed tributaries in the sale area. Stream surveys have not been completed on these streams. The range of pools per mile varies from a low of 2.1 pools per mile on the Austin segment of the main Upper Clackamas River (Upper Clackamas Watershed Anal., 1995). Since these streams are located in steep terrain, I would rate this indicator as "not properly functioning".

Environmental Baseline= **"Not properly functioning"**

Activities in the project area are not anticipated to enhance pool frequency.

Effects of Actions= **"Maintain"**

## Pool Quality:

No data is available on pool quality for the unnamed tributaries in the sale area. These streams are relatively small and are located on steep terrain. I would rate this baseline as "not properly functioning".

Environmental Baseline= **"Not Properly functioning"**

Implementation of this project is not expected to result in any measurable sediment input into stream courses. Project activities would not have any effect on pool quality within these streams.

Effects of Actions= **"Maintain"**

## Off Channel Habitat:

No data is available for this indicator on these streams. The Upper Clackamas watershed has an abundance of high quality, off channel habitat in the Big Bottom segment of the main stem (Upper Clackamas Watershed Analysis, 1995). These steeper gradient headwater streams show the least amount of presence of off-channel habitat. On lower reaches of these streams near the confluence of the Upper Clackamas River, Road 4600 has either cut off or filled in much off channel habitat formerly connected to the main river. I would rate this baseline as "not properly functioning".

Environmental Baseline= **"Not Properly Functioning"**

Activities in the project area are not anticipated to affect off channel habitat.  
Effects of Actions= "**Maintain**"

Habitat Refugia:

No data is available on these streams. Fish bearing riparian reserves are mostly intact late seral forest (Upper Clackamas Watershed Analysis, 1995) and very high quality, characterized by low gradient, braided habitat. The streams in the sale area are at steeper gradients and have lesser potential to provide substantial habitat refugia for resident or anadromous fish. I would rate this baseline as "not properly functioning".  
Environmental Baseline= "**Not Properly functioning**"

Activities in the project area are not anticipated to affect habitat refugia.  
Effects of Actions= "**Maintain**"

### **Channel Conditions**

Width Depth Ratio:

There is no data available pertaining to this habitat parameter for these unnamed tributaries of the Upper Clackamas watershed. According to criteria from the NMFS matrix of pathways and indicators W/D ratios should be less than 10. Because these streams are at steep gradients, I would rate this baseline as "not properly functioning".  
Environmental Baseline= "**Not Properly Functioning**"

Activities in the project area are not anticipated to affect W/D ratios.  
Effects of Actions= "**Maintain**"

Streambank Condition:

There is no data available pertaining to this habitat parameter for these unnamed tributaries. However, landslides in the watershed are strongly associated with weak, pyroclastic rock formations and steep slopes (Upper Clack. Watershed Anal., 1995). These streams are located in steep terrain and do not promote a healthy fishery. I would rate this baseline as "at risk".  
Environmental Baseline= "**At Risk**"

Projects within the planning area are not anticipated to effect streambank conditions.  
Effects of Actions= "**Maintain**"

Floodplain Connectivity:

There is no data available pertaining to this habitat parameter for these unnamed tributaries. These streams are in steep terrain and are very narrow. I would rate this baseline as "not properly functioning".  
Environmental Baseline= "**Not Properly Functioning**"

Activities in the project area are not anticipated to affect floodplain connectivity.

Effects of Actions= "**Maintain**"

Change in Peak/Baseflow:

There has been some change to peak/baseflows from the building of roads and the interception of subsurface drainage networks, as well as removal of forest cover during timber harvest that would move the watershed away from hydrologic recovery. Although there is no information available for this parameter, I feel project implementation would not affect this parameter. I would rate this baseline as "at risk".

Environmental Baseline= "**At Risk**"

Projects within the planning area are not anticipated to affect peak/base flows. The regeneration harvest of 32 acres would only bring ARP values down by 1%. ARP values are currently at 81.1% in a 10,000-acre watershed. Thinning of 3 acres in the project area would not significantly change ARP values. Semi-permanent roads proposed to be constructed in the project area do not cross any stream channels and would be obliterated and revegetated following project implementation.

Effects of Actions= "**Maintain**"

Increase in Drainage Network:

There is no data available for this indicator on the unnamed tributaries in the sale area. There has been a 9% increase in drainage network due to the construction of roads in the watershed (Upper Clack. Watershed Anal., 1995). I would rate this baseline as "at risk".

Environmental Baseline= "**At Risk**".

Activities within the project area are not anticipated to cause an increase in drainage network. The 200 feet of semi-permanent road would be obliterated and seeded following project implementation.

Effects of Actions= "**Maintain**"

### **Watershed Condition**

Road Density and Location:

There is no data available for this indicator for the unnamed tributaries in the sale area. But the amount of roads within the Austin Segment of the Upper Clackamas River watershed 3.6 miles of road per square mile in the subwatersheds (Upper Clackamas River Watershed Analysis, 1995). This average road density exceeds the threshold level of 3.0 set forth in the matrix indicators. I would rate this baseline as "not properly functioning".

Environmental Baseline= "**Not Properly Functioning**"

The proposed action for the Slinky timber sale calls for 200 feet of semi-permanent road for stand access to be built. These roads would be obliterated and revegetated after project implementation. The risk of these roads causing damage to the watershed is nil. These roads are not near and do not cross any streams. Adherence to Best Management Practices would decrease the chances of sediment runoff and erosion.

Effects of Actions= "**Maintain**"

#### Disturbance History:

The Mt. Hood National Forest uses the Aggregate Recovery Percentage (ARP) model to model the potential risks due to rain on snow events. The ARP index is used to calculate cumulative effects of past and future harvest activities on hydrology. Although ARP and Equivalent Clear-cut Acres (ECA) are not identical models, the intent is to determine the risk of watershed cumulative effects. There is no data available for the individual unnamed tributaries in the sale area but there are ARP values for the Austin Segment. The current ARP values within that segment are above the Mt. Hood National Forest Land Resource Manage Plan (LRMP) threshold of 65%. At this time, the subwatersheds have ARP values above 70%. Values below 65% suggest a likelihood of increased magnitude and frequency of peak flows, and subsequent channel degradation. I would rate this baseline as "properly functioning".

Environmental Baseline= "**Properly Functioning**"

Current ARP values in the Austin Segment subwatershed are at 84%. Harvest activities would maintain ARP values well above the 65% threshold. Twenty-one acres would be harvested during the project from the Austin Segment. 300-400 trees/acre would be regeneration harvested in unit 31, 300-400 trees/acre would be thinned in unit 36. The ARP values following harvest activities scheduled for 2004 would be 83.9%. This project does not pose a risk to hydrologically disturb the area from rain on snow events.

Effects of Actions= "**Maintain**"

#### Riparian Reserves:

There is no data available for the unnamed tributaries in the sale area. But watershed-wide the Riparian Reserves have an average of 74% of their area (Upper Clackamas Watershed Analysis) in mature or mid and late seral stage forest (26% mid & 48% late seral). About 20% of the riparian reserves are early seral forest and 6% is occupied by non-forest (i.e. - talus). Riparian Reserves in the Austin Segment are not meeting criteria for NMFS matrix of pathways and indicators. I would rate this baseline as "at risk".

Environmental Baseline= "**At Risk**"

Activities in the project area would not cause any degradation in riparian reserves of the unnamed tributaries. There would be no project activity in riparian reserves.

Effects of Actions= "**Maintain**"

**CHECKLIST FOR DOCUMENTING ENVIRONMENTAL BASELINE AND EFFECTS OF PROPOSED ACTION(S) ON RELEVANT INDICATORS**

**Forest:** Mt. Hood National Forest  
**ESU:** Lower Columbia River (LCR) Steelhead, Upper Willamette River Chinook(spring), LCR Chinook(fall), Columbia River Chum,SW Washington/Columbia River Cutthroat trout  
**Project:** Slinky Timber Sale  
**Ranger District:** Clackamas River  
**6<sup>th</sup> FieldWatershed:** Unnamed tributaries of Upper Clackamas River (Austin Segment)

<b>PATHWAYS INDICATORS</b>	<b>ENVIRONMENTAL BASELINE</b>			<b>EFFECTS OF THE ACTION(S)</b>		
	<b>Properly Functioning<sup>3</sup></b>	<b>At Risk<sup>1</sup></b>	<b>Not Properly Functioning<sup>1</sup></b>	<b>Restore<sup>2</sup></b>	<b>Maintain<sup>2</sup></b>	<b>Degrade<sup>2</sup></b>
<b>Water Quality:</b>						
Temperature	X				X	
Sediment	X				X	
Chem. Contam./Nut.	X				X	
<b>Habitat Access:</b>						
Physical Barriers		X			X	
<b>Habitat Elements:</b>						
Substrate	X				X	
Large Woody Debris			X		X	
Pool Frequency			X		X	
Pool Quality			X		X	
Off-channel Habitat			X		X	
Refugia			X		X	
<b>Channel Cond. &amp; Dvn.:</b>						
Width/Depth Ratio			X		X	
Streambank Cond.		X			X	
Floodplain Connectivity			X		X	
<b>Flow/Hydrology:</b>						
Peak/Base Flows		X			X	
Drainage Network Inc.		X			X	
<b>Watershed Conditions:</b>						
Road Dens. & Loc.			X		X	
Disturbance History	X				X	
Riparian Reserves		X			X	

<sup>1</sup> These three categories of function ("properly functioning," "at risk," and "not properly functioning") are defined for each indicator in the "Matrix of Factors and Indicators" table found in the document "Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale" (National Marine Fisheries Service 1996).

<sup>2</sup> Effects are based on which way this project is likely to move the relevant indicator, but no change in baseline is expected.

