

# Salmon Anchor Habitats Strategy for Northwest Oregon State Forests

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## Introduction

The *Northwest Oregon State Forest Management Plan* identifies the anchor habitat approach as a strategy for managing species of concern. The “Salmon Anchor Habitats Strategy for Northwest Oregon State Forests” establishes salmon focus areas in the Tillamook and Clatsop state forests. Seventeen watersheds were identified as the core of salmon recovery efforts on the state forests. These watersheds are managed in accordance with a strategy that prioritizes salmonid recovery while balancing multiple purposes of state forests. This strategy is accomplished by lowering short term risk to salmonids in salmon anchor habitats while landscape strategies foster the development of properly functioning aquatic systems and suitable habitat forest-wide.

## Goals for the Salmon Anchor Habitat Strategy

The goals provide the foundations for the actual areas designated, and the management guidelines and adaptive management measures that are applied to these areas.

- *Provide a well distributed set of “anchor habitat” areas (watersheds) for key species of salmonids.*
- *Manage these areas to produce a variety of resource values in a manner that represents lower short-term risk to populations of key salmonid species.*
- *Identify and improve forest stream habitat factors limiting salmonid populations within individual salmon anchor habitats.*
- *Coordinate management assessments and activities with other landowners, watershed councils and agencies to address limiting factors on other lands within salmon anchor habitats.*

## Background and Rationale

The *Northwest Oregon State Forests Management Plan* (NW FMP) and the Draft *Western Oregon State Forests Habitat Conservation Plan* (HCP) contain integrated management strategies designed to create a more diverse landscape on state forests in the planning area. From the standpoint of aquatic resources, this set of integrated strategies relies on a blended approach of landscape level planning and management, combined with site-specific prescriptions applied when operations are conducted. The landscape component of this approach relies on active stand management to create a more diverse set of forest conditions that more closely emulate the historical conditions that provided habitat and functional processes for native species of fish and wildlife. The prescriptive elements are designed to minimize the potential for adverse effects on aquatic systems when operations are conducted, and to maintain key functional elements that contribute to properly functioning aquatic systems.

The active management scenario in the NW FMP and draft HCP is based on the hypothesis that given the current condition of forest stands in the planning area, this type of active management will more quickly restore forest conditions that support diverse wildlife habitats and properly functioning aquatic systems. This hypothesis is supported by forest stand growth modeling completed by Dr. John Sessions at OSU, and was also generally supported by the Independent Scientific Review (ISR) of the HCP. While it can be assumed that the proposed approach has a high likelihood of resulting in the anticipated outcomes, it can reasonably be argued that there is some level of risk and uncertainty associated with this strategy. Several of the ISR reviewers noted this concern. They suggested that some sub-set of areas on the landscape where a more conservative or “lower risk” approach is applied is warranted for some interim period, until the broader hypothesis can be better tested and validated. The areas of greatest concern in relation to active management in the short-term are those areas that currently support the most viable, healthy populations of key species of concern.

Through the development of the NW FMP and HCP, the concept of “anchor habitats” has become a key element of the strategies for specific species of concern, e.g. northern spotted owl and marbled murrelet. These are areas of habitat for species whose overall population or distribution is currently limited on state forest lands, species whose populations are highly dependent on state forest lands due to limited distribution, and/or species with low mobility that require longer time periods to colonize newly developed habitat. Specific “anchor habitat” areas and strategies have been developed for some of these species. The northern spotted owl “cluster” strategy is an example of this approach. The “anchor habitat” strategy is designed to protect the best existing habitat and most critical populations of owls on state forest land, until we have achieved the goal of more diverse, suitable habitats across the landscape. Thus, owl clusters will be subject to “lower risk” or more conservative management measures for a period of time, while the broader landscape is more actively managed. A similar set of areas has been identified for marbled murrelets, with more conservative management standards to be applied for an interim period.

More recently, the issue of “anchor habitat” areas for salmonid species of concern has been raised in relation to the HCP and NW FMP. Salmon Anchor Habitats (SAHs) are

designed to protect areas of high salmonid production. In SAHs a primary focus is the restoration and/or maintenance of salmonid habitats. These SAHs are expected to act as refuges for salmon until the historically more important downriver spawning areas can return to productivity. The report of the Independent Multidisciplinary Science Team (IMST) (1999), while generally complimentary of the overall strategic approach described in the NW FMP, recommended modifying the plans to include “the immediate protection of all existing core habitat while implementation occurs...”. They cited the combination of factors that historically resulted in the ability of wild salmon stocks to accommodate change and persist in the broader aquatic system. One key element of this was occupation of refugia (higher quality habitat), allowing for recolonization of poor habitat as its condition improved over time. This same concept has been raised in several reviews of our HCP strategies including the ISR conducted by OSU.

The remainder of this document describes the approach to identify and manage SAHs.

## **Criteria for Designating Salmon Anchor Habitat Watersheds**

- Watersheds designated should be at a scale that is appropriate to meeting the specified goals. For the purpose of meeting the stated goals, sixth field watersheds were chosen to designate watersheds as anchor habitats. These are technically defined as subwatersheds and are nested within larger fifth field watersheds.
- Watersheds designated should be well distributed throughout the landscape, to reflect principles of conservation biology relative to key salmonids.
- Watersheds designated should reflect, in order of priority, 1) the most consistent presence and use by the key salmonid species of concern and 2) the highest quality habitat as determined with available information.
- Watersheds designated should contain an adequate proportion of state forest ownership to provide a meaningful basis for assessing the effects of alternative management intensities or prescriptions applied on state forests. Where possible, avoid watersheds where management approaches applied by other landowners would confound attempts to assess the effects of ODF approaches.

## **Methodology for Identifying and Selecting Salmon Anchor Habitat Watersheds**

A total of 17 basins have been selected as SAHs. All but two SAHs were selected by ODF from a larger pool of priority areas identified by ODFW. The Miami and Coal Creek basins were selected as a result of discussions with salmon interest groups and are important basins for salmonids.

A thorough description of the methodology as documented by Andrew Talabere and Kim Jones of ODFW, “*Pacific Salmon Conservation: Designing Salmon Anchor Habitat Areas – A Process to Set Priorities for Watershed Protection and Restoration*” (Draft July 6, 2001) is available. The description of the methodology in this summary draws freely from their work in an attempt to characterize the information. In many cases their specific language has been included in the summary, however while this author has tried to faithfully characterize their work, the reader is encouraged to read the document itself for the most accurate description.

## Methodology

SAHs are a subset of priority areas that ODFW has identified as part of their efforts under the Oregon Plan for Salmon and Watersheds. The priority areas are important for the short-term conservation of local salmon populations, and for the long-term persistence of salmon metapopulations in coastal drainages of Oregon. Priority areas were identified by ODFW without regard to ownership. For the purposes of this plan, SAHs were selected from priority areas that have greater than 20% ODF ownership.

The ODFW identification of priority areas was based upon the following criteria:

1. Identification of watersheds containing the highest abundance of coho, chinook and chum salmon. This was done through the use of data produced from extensive spawning surveys conducted over the past 12 years.
2. Identification of the historic centers of salmonid spawning abundance, and postulating on how the local populations currently and historically interacted across the landscape.
3. Determination of the quality of habitat in coastal basins of Oregon at the small watershed scale, and the relationship of quality watersheds to the distribution of core populations, and connectivity. Stream habitat data is collected and managed by the Aquatic Inventories Project of ODFW. This project has been active since 1990.

The SAH strategy identifies 6<sup>th</sup> code hydrologic units (HU) (catchments and small watersheds) that support core populations of salmonids on ODF lands in the Necanicum, Nehalem, Tillamook Bay, and Nestucca basins. ODF manages large blocks of the landscape within portions of these drainages. The strategy assumes that 6<sup>th</sup> code HUs contain the minimum amount of stream habitats needed to sustain local populations of coho salmon, chum, and chinook salmon.

SAHs identified on ODF land are assumed to be sufficient to maintain the local populations of salmon and steelhead, given continued recovery of the freshwater habitat. Monitoring and adaptive management strategies will be employed over the 10 year implementation period to evaluate these assumptions. Nickelson and Lawson (1998) modeled the viability (population viability model – PVA) of coho salmon within the Tillamook Bay basin and found that the coho salmon population within the basin has a significant probability for extinction under many model scenarios because of an overall poor freshwater habitat quality within the basin. Important habitat parameters were the amount, type, and quality of pool habitat. The ability of coho salmon populations to

maintain a core population within the moderate and good quality habitats, and to recolonize and maintain populations in the poor quality reaches will become critical for the long-term persistence of the metapopulation. Furthermore, the results of the PVA model suggested that if freshwater habitat were to improve incrementally, but at the landscape scale, significant increases in long-term population abundance could occur in basins with poor habitat and small populations.

## Results

The Oregon Department of Forestry owns land in sixty-nine 6th code HUs within the study area. Thirty-two sub-watersheds met the criteria of greater than 20% ODF ownership. From this set, a total of seventeen 6<sup>th</sup> code HUs were selected as SAHs.

Abundance of spawning adult salmon was the primary factor in selecting eleven of the watersheds, habitat quality was the primary factor for three of the watersheds, and local knowledge (professional judgment) was the primary factor in three of the watersheds (Table 1).

**Table 1. List of SAHs with reason (spawning, habitat, or professional judgement) for selection and species with consistently high numbers of spawning adults present.**

<b>Watershed</b>	<b>Spawning</b>	<b>Habitat</b>	<b>Professional Judgement</b>	<b>Species</b>
Nehalem River				
Foley Creek	X			<b>Chum</b>
Cook Creek			X	<b>StW, ChF</b>
S.Fk. Salmonberry R.	X			<b>StW,</b>
Upper N. Fk. Nehalem R.	X	X	X	<b>Co, ChF</b>
Buster Creek		X		
Fishhawk Lake Creek	X	X		<b>Co</b>
Lousignont Creek	X			<b>Co</b>
Coal Creek			X	<b>Co, StW, Chum</b>
Upper Rock Creek		X		<b>Co</b>
Kilchis River				
Middle Kilchis R.	X			<b>Chum, ChF</b>
Wilson River				
Little N. Fk. Wilson R.	X	X		<b>Chum, ChF</b>
Cedar/ Ben Smith Creek	X			<b>ChF, Co</b>
Devils Lk. Fk. Wilson R.	X	X		<b>Co</b>
Trask River				
E. Fk. S. Fk. Trask R.		X	X	<b>Co</b>
Elkhorn Creek	X		X	<b>ChF, Co</b>
Miami River			X	<b>Chum, Co, StW, ChF</b>

The three species of salmon (chum, chinook, and coho) considered in the quantitative analysis have differing habitat requirements and co-occur only in some 6<sup>th</sup> code HUs. Of the seventeen watersheds selected, two have one species (coho salmon), nine have two species (coho and chinook salmon) and six have three species (coho, chinook, and chum salmon) (ODFW 2001). Additionally, steelhead and coastal cutthroat trout are either known or are considered to be present in all seventeen watersheds (ODFW 2001).

Peak counts of spawning adult salmon varied by species, subwatershed and year (Figures 1 and 2). Of the three species, chum had the highest average peak spawning count of 22.3 adults per kilometer (range 0 – 963); fall chinook averaged 18.2 (range 0 – 363) and coho averaged 8.1 (range 0 – 1097).

The selected SAHs had median peak spawning counts greater than 4 fish per kilometer. Some of the watersheds were selected based on more than one species of fish, or contained high densities of coho, chinook, and chum salmon (Table 1). Several areas with high proportions of hatchery-origin spawners were not selected as SAHs (e.g. South Fork Trask River and Middle North Fork Nehalem River). To provide adequate distribution of SAHs throughout the ODF landscape it was only necessary to include two of the three potential basins in the upper Nehalem River watershed – Lousignont, Upper Rock or Wolf Creek. Lousignont Creek and Upper Rock Creek were selected as SAHs. In addition, several potential 6<sup>th</sup> field HUs were not selected because these areas contained less than 20% ODF ownership (e.g. upper Tillamook River and lower Kilchis River in the Tillamook Bay basin and Bear Creek in the Nestucca basin).

The planning areas for the *Northwest* and the *Southwest Oregon State Forests Management Plans* were the geographic areas analyzed for selecting SAHs. ODF determined that the ownership pattern in the north coast of Oregon would allow ODF to make the most meaningful contribution to salmon conservation through SAHs. ODF ownership in the rest of the planning area is limited to relatively small contiguous blocks of land and scattered tracts.

The final selection of 6<sup>th</sup> field HUs as SAHs was concentrated in the Nehalem and Tillamook Bay basins because of the predominance of ODF ownership. Within these basins, nine SAHs were selected in the Nehalem basin and eight in the Tillamook Bay basin. Within the Nehalem basin, two 6<sup>th</sup> field HUs were selected in the upper Nehalem, two in the mid-Nehalem, one in the North Fork Nehalem, one in the Salmonberry, and three in the lower Nehalem. Within the Tillamook Bay basin, one was selected in the Kilchis River, four in the Wilson River, two in the Trask River, and the Miami River.

The mainstem rivers provide critical habitat within each major basin. Sections of the rivers provide important spawning habitat for fall chinook, spring chinook, summer chinook (Nehalem), and chum salmon. The rivers also provide important rearing areas for juvenile salmon, cutthroat, and steelhead and are migration corridors for downstream migration of juvenile fish, and upstream migration of adult fish. The maintenance of high quality habitat within the rivers also maintains connectivity between SAHs.

# Management in Watersheds Designated as Salmon Anchor Habitats

The foundations for management in SAHs are the landscape and the aquatic/riparian strategies included in the forest management plan. These strategies are designed to maintain or restore properly functioning aquatic habitats currently and over time. In the short term, the prescriptive nature of the aquatic and riparian strategies is intended to protect existing habitat conditions. The restoration and landscape aspects of the strategies are intended to ensure that degraded habitats will improve, the resiliency of watershed function is maintained or improved, and the watershed processes that drive the functions are intact. It is anticipated that this combination of active, integrated management and resource-specific protection strategies will fully support the needs of aquatic and riparian-associated species, and native salmonids in particular. However, as with all passive or active management approaches, there is some risk and uncertainty.

The description of management approaches that will be implemented in SAH watersheds is presented in the next three sections of this document. First, a description of how management priorities or the aquatic and riparian strategies will be adjusted in SAH watersheds. Second, a perspective on the management activity level that is anticipated is presented. Finally, specific limitations on the level of timber harvest are described.

The adjustments focus on further minimizing risk of sediment delivery from roads or unstable slopes, potential water temperature problems, adverse effects on hydrologic flows, disruption of the large wood supply, and prioritizing anchor habitats for watershed assessments, eliminating existing conditions that pose risks to salmonids, and restoring aquatic habitats.

The Salmon Anchor Habitat strategy is intended to apply for a period of 10 years – from July 1, 2003 through June 30, 2013. A comprehensive review of all forest management plan strategies is scheduled for 2011. Changes to this strategy will be considered during the scheduled review. Since ODF district implementation plans are based on a time frame of July 1, 2001 through June 30, 2011, the harvest constraints described in this strategy will be measured on those time frames. All measures described in this document will be effective for all operations that are sold after July 1, 2003. They will remain in effect until June 30, 2013 unless modified through the NW FMP adaptive management process.

## Clarifications and Adjustments to the Aquatic and Riparian Strategies to be Applied Within Salmon Anchor Habitats

The NW FMP includes a comprehensive set of aquatic and riparian strategies (Appendix A). The heading for each of these strategies is listed in the following discussion. Following each heading is a description providing clarification for the application of the strategy within SAHs or in some cases describing additional requirements. *Consult the strategies as written in the forest management plan (attached*

*as Appendix A) for a complete description of these strategies. The points that follow are only the “adjustments” to those strategies.*

**1. Strategy 1 – Implement watershed assessment and analysis.**

- SAH watersheds and the fifth field watersheds within which they are located, will be high priority for completing comprehensive watershed assessments. The goal is to complete assessments in these watersheds within five-years of the adoption of the SAH strategy. The SAH strategy will be adopted concurrent with the State Forester’s approval of the district implementation plans. This is anticipated to be Spring 2003.

The purpose for adjusting the priority within this strategy is to assure that for SAHs the most current and complete information will be available to the department and to the public. This will enhance monitoring opportunities and provide managers with good information on which to apply all the strategies.

**2. Strategy 2 – Apply management standards for aquatic and riparian areas, with the following additions:**

- For all harvest operations that border **Type F and Large and Medium Type N** streams – the inner zone (100 feet) will be a no-harvest area.
- For partial cut harvest operations retaining at least a 25% Stand Density Index (SDI) that border **Small Type N, perennial streams** – no ground based equipment operation is allowed within 50 feet of the aquatic zone.
- For clearcuts and any other harvest operation which reduces stand density below 25% SDI that border **Small Type N, perennial** streams – no harvest allowed within 50 feet of the aquatic zone and a minimum of 15-25 conifer trees and snags per acre will be retained in the area between 50 and 100 feet from the aquatic zone.
- For partial cut harvest operations retaining at least a 25% SDI that border **Small Type N, seasonal** streams – no ground based equipment operation is allowed within 50 feet of the aquatic zone.
- For clearcuts and any other harvest operation which reduces stand density below 25% SDI that border **Small Type N, seasonal** streams – no ground based equipment is allowed within 50 feet of the aquatic zone and 15-25 conifer trees and snags per acre will be retained within 50 feet of the aquatic zone.
- Avoid harvest on debris torrent fans.

For the purposes of this document, debris torrent fans are slide deposit areas usually found at the mouth of a stream. They are generally flat areas at the confluence of two streams. Typical size of the features addressed by this strategy may range from as small as 100 square feet up to an acre or more. The purposes of this strategy will frequently be achieved by applying the aquatic and riparian strategies. Where these features exist or extend outside of riparian management areas, the intent is to maintain the trees on the feature to provide for large wood in these old slide deposit areas and to provide the other associated values described in the aquatic and riparian strategies.

- Six Salmon Anchor Habitat basins have clearcut harvest activity maximums that exceed 10%. In these basins, apply the following additional standards:

For small, seasonal, type N streams which are direct tributaries to Type F streams – on “High Energy Reaches” and on “Potential Debris Flow Track Reaches,” as defined in the NW FMP – no harvest allowed within 50 feet of the aquatic zone.

Take all reasonable opportunities to enhance large wood recruitment or other aquatic and riparian functions by retaining large trees or extending no harvest buffers in specific areas. Areas to consider include seeps and springs within the riparian management areas (RMA), source areas of perennial streams, stream associated wetlands, inner gorges and stream junctions.

These adjustments provide for lower management activity levels in RMAs than occurs outside SAHs. This will further reduce the likelihood of sediment delivery or impacts to water temperature, and will retain even greater numbers of trees for down wood recruitment. However, without thinning in the inner zone of riparian management areas, the development of “large” wood may be less timely.

Comparison of the adjusted approaches with the approaches applied outside SAHs will provide monitoring and adaptive management information about the risks and benefits of the two approaches in achieving properly functioning aquatic habitats.

Consistent with the application of the aquatic and riparian strategies described in the NW FMP, the following apply to the standards for SAHs:

- **Operational Considerations.** As is stated in the standard aquatic and riparian standards, vegetative disturbance to provide for operational considerations (cable corridors, felling impacts, etc) will be limited to no more than 10 % of the riparian management area for Type F and large and medium Type N streams and 25% of the RMA area for small Type N streams. This is the same standard being applied outside SAHs.

The objective is to minimize disturbance due to operational considerations. However, there may be situations where removal of a portion of these RMAs will result in shorter roads or fewer landing locations. Where removal of a portion of a RMA will result in minimizing additional road building, landing locations, or other such conditions which pose a higher risk to aquatic habitat impacts – managers are encouraged to do so while staying within the 10% or 25% standards identified in this section.

- **Insects and Disease.** Where severe insect or disease situations have significantly reduced the likelihood that a riparian management area will promote “properly functioning aquatic habitats” over the next decade without active restoration, and watershed assessment information is available to determine the benefits of restoration through alternative vegetative treatments, portions of riparian management areas may be harvested to provide for the reestablishment of a healthy forest stand. Such activities will only be done upon completion of a restoration plan consistent with Aquatic and Riparian Strategy 4, which includes consultation with the ODFW.

### **3. Strategy 3 – Restore aquatic habitats.**

The only adjustment to this strategy is to set priorities. SAH watersheds or stream segments within the watersheds that have been determined to have high restoration potential will be high priority for implementation of habitat enhancement and restoration projects. In cooperation with ODFW, habitat restoration plans will be developed and implemented for each watershed determined to have high restoration potential.

Restoration may be an essential activity in watersheds where existing populations are using habitats that are severely depleted in certain habitat components. It is also important to acknowledge that restoration activities do alter existing habitats that are being used. Such alterations do pose some risk however doing nothing where habitats are poor also poses a risk to fish. Where, through analysis, restoration activities are determined to pose the lesser risk to the species using the stream restoration activities will be performed. Such analysis will be conducted by ODF in consultation with ODFW.

### **4. Strategy 4 – Apply alternative vegetation treatment to achieve habitat objectives.**

The stringent standards for application of alternative vegetation treatment in RMAs are not adjusted for SAHs.

It is important to acknowledge that alternative vegetation treatments do alter existing conditions around aquatic habitats that are being used. Such alterations do pose some risk however doing nothing where vegetative conditions are not likely to contribute to the development of high quality habitat also poses a risk to fish. Where, through analysis, alternative vegetation treatments are determined to pose the lesser risk to the species using the stream – restoration activities will be performed. Such analysis will be conducted by ODF in consultation with ODFW.

### **5. Strategy 5 – Apply specific strategies to other aquatic habitats.**

There are no adjustments to these strategies. They are designed to maintain the productivity, hydrologic function, and habitat values associated with sites such as wetlands, lakes, ponds, bogs, seeps, and springs.

### **6. Strategy 6 – Slope stability.**

The concepts and the approaches described in the slope stability strategy in the NW FMP will apply. Adjustments to this strategy are intended to further reduce the likelihood of sediment delivery to streams from management related landslides through closer scrutiny by geotechnical specialists. Steepness of slope is the criteria used for initial screening for High Landslide Hazard Locations. Geotechnical specialists review all proposed harvest operations as part of the Annual Operation Plan process. High Landslide Hazard Locations and high risk potential are identified through site specific analysis. Operations must avoid specific High Landslide Hazard Locations that pose the greatest risk to streams.

The adjustments to the strategies:

- All proposed road construction or improvement operations and all commercial harvest units within SAHs will be reviewed by the Geotechnical Specialist for the presence of High Landslide Hazard Locations and high risk to streams. Clearcut harvest and road construction operations will be avoided on sites that are determined by the Geotechnical Specialist to be both a High Landslide Hazard Location and that pose high risk to streams.
- Utilize a reporting system to identify when and where landslides occur. Adaptive management principles as described in the NW FMP will be applied.

## **7. Strategy 7 – Forest Roads Management**

The adjustments focus on further minimizing risk of sediment delivery from roads or unstable slopes or adversely affecting hydrologic conditions. This is achieved by expediting road repairs, allowing hauling activities only during weather conditions and use levels commensurate with the capabilities of road drainage systems to avoid sedimentation of streams, identifying the necessary and appropriate desired road network through transportation planning, closing existing roads or constructing new roads consistent with short term needs and the desired roads identified through transportation planning, and providing geotechnical review for harvesting and road operations as described in the slope stability section.

The adjustments to the strategy:

- ***Density of Road Network – Transportation Planning***

SAH watersheds are a high priority for completing transportation plans. All new road construction and road closures will be clearly evaluated through district transportation planning. This is done to assure a thorough and comprehensive analysis of the road network. Through such planning existing roads and legacy roads that require closure using appropriate techniques will be identified.

- ***New Road Construction***

New road construction within SAH watersheds will be restricted to the minimum necessary to conduct the more limited amount and type of activities generally allowed in SAHs, allow access to adjacent watersheds, or to accomplish important road repairs to existing or legacy roads.

New construction should be limited to the upper portions of slopes away from streams and whenever possible, designed to avoid perennial stream crossings. New construction will be limited to periods of low rainfall during spring, summer, or fall seasons and measures will be applied to stabilize any exposed soil prior to any reasonably predicted rain events.

- ***Road Repairs***

Road systems within SAH watersheds will be high priority for correcting road related problems (unstable sidecast, road drainage, fish passage barriers, etc.) identified

through road inventories completed by ODF. The goal is to correct all such problems within the implementation period of ten years.

SAH watersheds will be high priority for inventory of legacy roads, through watershed assessment, and for remediation work on legacy roads, where such work is determined not to pose a higher short-term risk to aquatic resources than the existing situation.

- ***Road Maintenance & Hauling***

Existing roads within SAH watersheds will be a high priority for maintenance and improvement to minimize the potential for sediment delivery to streams.

In most situations, road use for rock hauling, log hauling or other heavy hauling operations should be limited to the summer season or extended periods without significant precipitation, except where such activity is necessary to address situations posing an immediate threat of adverse impacts to aquatic resources. For situations involving either low use (10 or fewer loads per day) or situations involving road systems where drainage systems are obviously adequate to preclude significant sedimentation either due to their position relative to water courses or due to engineering standards, hauling may occur as long as contract administrators closely observe the operation and halt operations in the event the road surface or drainage system begins to degrade or indications of potential sedimentation occur.

## **8. Guidelines for Monitoring**

SAHs are not necessarily intended to prescribe a permanent approach for managing aquatic and riparian landscapes, but rather to identify a working balance between fish and forest health. The strategies used to identify and manage these areas will continue to be evaluated and monitored. It will be necessary to monitor salmonid populations, habitat development, and silvicultural practices over time in the anchor habitat areas. An adaptive approach will be used to adjust prescriptions and strategies in response to new information.

Surveys and monitoring of the anchor habitat areas will be used to determine the status of salmonids and the effectiveness of management guidelines for these areas. SAHs will be monitored during the 10-year implementation period. It is likely that fish presence/absence surveys will be conducted more frequently in SAHs than on most other areas. Monitoring projects will be established in a sub-set of SAHs to determine and track development of stand structure and habitat suitability over time. The more passive management approaches used in SAHs present specific opportunities to compare the rate and extent at which habitat is developed and maintained with stands subject to more active management. Additionally, portions of SAHs will serve as "controls", or reference areas, when restoration activities are conducted in similar aquatic and riparian areas outside the SAHs. Monitoring projects will be included in the annual monitoring plans.

## **Context for Management Activity Levels**

A priority in SAHs is to complete management activities such as road repairs, improving fish passage, etc. as soon as possible and to accomplish aquatic restoration activities that are determined to be important to short term salmon survival within time frames that will be beneficial to existing salmon populations.

Also, the scale of silvicultural treatments to encourage the development of the various forest conditions described in the forest management plan will be subject to limitations.

Limitations are imposed on the amount and type of area within SAHs on which treatments involving timber harvest may be applied. Management activities such as precommercial thinning, controlling shrubs or unwanted trees in young stands through the use of herbicides or hand cutting, fertilization, and other such non-harvest activities will be applied in SAHs in the same manner as occurs outside of these areas.

As is typical for most ODF plans and operations, fisheries biologists from the Oregon Department of Fish and Wildlife will be consulted in the development of management plans and specific operations plans in SAHs.

Management activities within SAHs will include, but not be limited to:

- Actions necessary to ensure near-term health of the watershed for salmonids. Examples include repair of roads that have near-term potential for failure or that are currently causing excessive sedimentation of water courses;
- Aquatic restoration projects that have been identified as necessary to offer salmonid populations an improved chance for survival;
- Actions necessary for the long-term, timely, development of layered and older forest structure stands in the watershed. Examples include thinnings in conifer stands to encourage the development of larger trees that are important to supply large down wood to the landscape and riparian and aquatic habitats, thinnings in dense conifer stands that if left unthinned will become unsuitable for timely development into more complex stands, or clearcuts and other regeneration harvests in stands heavily impacted by insect or disease agents, large scale windthrow or other catastrophic events, or because the silvicultural potential for the stand to attain layered or older forest structure is poor; and
- Management for a range of other resources or uses in a manner consistent with protecting water quality for salmonids. Examples include recreation, cultural resources, and special forest products.

All activities in SAHs must be accomplished in accordance with the standards described in the forest management plan and in the “Clarifications and Adjustments to the Aquatic and Riparian Strategies” included in the previous section of this document.

## **Specific Limitations on Timber Harvest Activities**

The 17 SAHs are divided into three different groups for the purposes of describing the limitation on timber harvest that will be applied to them. The first group consists of three

salmon anchor habitats that are not significantly impacted by Swiss needle cast at this time. The second group consists of two basins that are located primarily above natural barriers to fish passage and a third basin where the amount of ODF managed lands is more limited and less contiguous. The third group consists of the majority of the anchor habitats and they are also the areas that are most heavily infected with Swiss needle cast.

For all the basins, maximum activity levels are set for clearcut harvests. These activity levels establish a cap on the amount of activity that could possibly occur over the 10 year period from July 1, 2001 through June 30, 2011.

For the basins in group 3, the table identifies recently planned and maximum allowable clearcut harvest levels for the 10 year period. More detailed basin plans are required for the six basins in group 3 where the basin maximums exceed 10%. It is uncertain at this time how much conversion will actually occur during the 10 year period, however it cannot exceed the described maximum. As the plan is implemented, monitoring and research information on Swiss needle cast, and on the effects of harvesting on aquatic systems, will be important in determining the actual number of acres that undergo conversion harvests.

### **Group 1**

Group 1 includes Buster Creek, Lousignont Creek, and Devils Lake Fork of the Wilson River. A maximum of 20% of the state forests acreage within each of these SAH basins may be included in Annual Operations Plans for commercial thinning, regeneration harvests (includes clearcuts), or any other timber harvest activity during the 10 year period. Of the 20% total that may be subject to timber harvest, clearcut harvest will not exceed 5% of the total acreage in the SAH. Clearcut harvest will not be allowed where the percentage of stands that are 15 years old or less would exceed 15 percent of the ODF acreage in the SAH as a result of the harvest.

### **Group 2**

Upper North Fork of the Nehalem River, Fishhawk and Upper Rock are SAHs that have more limited amounts of state forest on those portions of the stream used by anadromous salmonids. In Fishhawk and Upper Rock, major waterfalls create natural barriers to fish passage near the boundaries and fish use is primarily downstream from state forests. The primary benefits state forests will provide to these salmon habitats are through downstream effects. Thus, providing sources for large wood and good water quality are the primary focus for state forests. State forests comprise about 47% of the ownership in Fishhawk and Upper Rock, and only about 42% in the Upper North Fork of the Nehalem River.

In the Upper North Fork of the Nehalem River, Fishhawk and Upper Rock there is no limit on thinning acreage, however Annual Operations Plans for clearcut harvests will not exceed 7% of the total state forests acreage in the salmon anchor habitat in each basin during the 10 year period. Clearcut harvest will not be allowed where the percentage of stands that are 15 years old or less would exceed 15 percent of the ODF acreage in the SAH as a result of the harvest.

### Group 3

Group 3 includes 11 SAH basins.

1. The amount of clearcut harvest included in annual operations plans to date and the maximum clearcut harvest levels that will be allowed in operations plans for the 10 year period in these basins are described in the following table:

<i>Basin</i>	<i>Total Acres in Basin</i>	<i>Acres (% Basin) Clearcut Harvests in 2002 and 2003 Annual Operations Plans</i>	<i>Maximum Allowable Acres (% Basin) Clearcut Harvests in Annual Operation Plans – July 2001 through June 2011</i>
Foley Cr.	4,403		10 %
S. Fk. Salmonberry	2,813		10 %
Middle Kilchis	14,155		10 %
Elkhorn	3,860		10 %
Miami	13,910		12 %
Coal Cr.	1,237		25 %
Cook Cr.	18,286		25 %
L. N. Fk. Wilson	10,310		16 %
E. Fk. S. Fk. Trask	15,627		25 %
Cedar Cr.	7,214		25 %
Ben Smith	3,602		10 %
<b>TOTAL:</b>	<b>95,417</b>		

2. Thinning in some stands may occur, primarily for the purposes of learning more about stand responses to thinning. For those basins where basin plans are required – any proposed thinning will be addressed. In the rest of the basins, no more than 5% of the acreage in each basin would be allowed, and all thinning will comport with SAH guidelines.

### 3. Basin Planning –

ODF will develop basin plans in consultation with ODFW – for ODF lands in the following basins: Little North Fork Wilson, Cedar Creek, East Trask, Cook Creek, Miami, and Coal Creek. The basin plans will be developed prior to June 30, 2004. Basin plans will include:

- Locations of existing regeneration harvests that have been conducted, thinning and regeneration harvest contracts that have been sold but not harvested, and all planned harvesting operations during the implementation plan period.
- Coarse scale assessment of slope stability issues/conditions in the basin.
- Transportation plans for the implementation period identify road locations that will be newly constructed or improved. Describe plans for vacating roads. Estimate lengths and general impacts from planned roadwork.
- General descriptions of the streams in the basin. Extent of type F/N streams. Special stream types such as inner gorges, etc.
- Specific descriptions of the streams and the aquatic and riparian approaches that will be used for the various stream types that are in the immediate vicinity of all planned operations.
- Description of the silvicultural prescriptions that will be applied to harvest units.