

**FINAL Meeting Notes  
Lewis River License Implementation  
Aquatic Coordination Committee (ACC) Meeting  
October 12, 2006  
Ariel, WA**

**ACC Participants Present (18)**

Diana Gritten-MacDonald, Cowlitz PUD  
 Adam Haspiel, USDA Forest Service  
 Shane Hawkins, WDFW (9:00am – 9:30am)  
 Josh Hollowatz, WDFW (9:00am – 9:30am)  
 LouEllyn Jones, USFWS  
 Eric Kinne, WDFW  
 George Lee, Yakama Nation (via teleconference)  
 Erik Lesko, PacifiCorp Energy  
 Kaitlin Lovell, Trout Unlimited (via teleconference 11:00am – 12:15pm)  
 Tammy Mackey, American River & Trout Unlimited  
 Jim Malinowski, Fish First  
 Kimberly McCune, PacifiCorp Energy  
 Todd Olson, PacifiCorp Energy  
 Frank Shrier, PacifiCorp Energy  
 Karen Thompson, USDA Forest Service (9:00am – 10:15am)  
 Richard Turner, NMFS (via teleconference)  
 Steve Vigg, WDFW  
 John Weinheimer, WDFW

**Calendar:**

Oct. 31, 2006	Merwin Engineering Subgroup Meeting	Merwin Hydro
Nov. 8, 2006	TCC Meeting	Merwin Hydro
Nov. 9, 2006	ACC Meeting	Merwin Hydro

<b>Assignments from October 12th Meeting:</b>	<b>Status:</b>
McCune: Email TCC Confidentiality Agreement to Jim Malinowski and Tammy Mackey.	Complete – 10/12/06
McCune: Email ACC Draft 9/14/06 meeting notes with revisions to Jim Malinowski for his review and approval.	Complete – 10/12/06
McCune: Email ACC 10/12/06 meeting materials to ACC who participated via conference call.	Complete – 10/13/06
Olson/MacDonald: Schedule a meeting with the Cowlitz County commissioners to discuss length of permitting process.	Pending
Shrier: PacifiCorp will write up a formal proposal for ACC review relating to acclimation pond siting then present to the USFS rangers.	Complete – 10/20/06
Shrier: Draft the Merwin Sorting Tanks Configuration recommendations in October and present to the ACC for their comments prior to proceeding with 30% design.	Complete – 10/19/06

Olson/Shrier: Provide a map where which illustrates where all the proposed Aquatic Funding projects are located.	Complete – 10/19/06
Keith Keown (WDFW): Bring the model to the November ACC meeting to illustrate a variety of scenarios for ACC review.	Pending
Lesko: As requested by George Lee (Yakama Nation), provide a summary sheet outlining ACC concerns with the H&S Plan and include description of acronyms to include the AHA model.	Complete – 10/27/06

<b>Assignments from September 14th Meeting:</b>	<b>Status:</b>
Shrier: Email revised Merwin trap data to ACC.	Complete – 9/18/06
George Lee: Discuss the tribes ceremonial and subsistence needs in more detail with the appropriate tribal staff person to determine the fish number they need annually and get information to Craig Burley (WDFW).	Pending
Burley: Email preliminary WDFW results to ACC relating to the <i>Hatchery &amp; Supplementation Plan Spring Chinook, Coho, and Steelhead</i> discussion. (provided verbally at 10/12/06 ACC meeting)	Complete – 10/12/06
McCune: Email to the ACC requesting comment on the <i>Fish Handling Process Diagram</i> on or before September 22, 2006.	Complete – 9/18/06

<b>Assignments from July 13th Meeting:</b>	<b>Status:</b>
Keown: Create a draft HGMP by the end of August or early September 2006 so the ACC can review prior to submitting the final version to NMFS.	ACC can expect to receive draft by approx. 12/01/06

### Opening, Review of Agenda and Meeting Notes

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 requested a round table introduction for those attendees participating via teleconference. Shrier asked if attendees had any changes to the Agenda; no changes were requested. Shrier requested comments and/or changes to the ACC 9/14/06 draft ACC meeting notes. Jim Malinowski (Fish First) requested to move the following text to page 3 under the topic, ATE Model and Merwin Tailrace Behavior Study:

*Malinowski expressed concern that the models being used for those forecasts were producing unrealistically low forecasts and questioned the wisdom of using forecasts from flawed models to plan for upper basin recovery programs.*

Malinowski requested Kimberly McCune (PacifiCorp Energy) to make the changes and email the revised draft to him for review and approval. Upon Malinowski's approval of the revised text, McCune will finalize the 9/14/06 meeting notes and post to the Lewis River website. The ACC attendees present accepted the 9/14/06 meeting notes with the requested changes at 9:25am.

### Review and discussion of preliminary WDFW results to ACC relating to the Hatchery & Supplementation Plan Spring Chinook, Coho, and Steelhead

Shane Hawkins (WDFW) led the discussion and provided a handout to the ACC attendees entitled, *2006 Spring Chinook scales from Merwin Dam Fish Collection Facility, as provided by WDFW*, (**Attachment A**). The review included discussion regarding scale samples taken. Hawkins indicated that 80% of the scales they took were read, however, nothing read was determined to be wild. Hawkins further communicated that with these findings, WDFW drew the conclusion that all were hatchery fish. They cannot explain 17 out of the roughly 177 read and that this time of year he uses scale pattern analysis. Hawkins recommendation was that we should move the fish upstream as Lewis River fish but not call them wild fish. Eric Kinne (WDFW) expressed that 90 of the fish returned to the Merwin Trap after being released downstream. Josh Hollowatz (WDFW) said that some could be unclipped hatchery production fish from out of the basin. Erik Lesko (PacifiCorp Energy) asked in reference to unknown origin fish, how do you know when it's a wild fish with no wild scales for comparison? Hollowatz said they have some wild scales to compare them to and Hawkins added that the scale reader had 25 + years of experience.

### **Acclimation pond siting and use of USFS campgrounds**

Shrier initiated discussion regarding a potential temporary site at the USFS Lower Falls campground located on the upper Lewis River mainstem. A temporary pond and facilities would minimize the USFS concern about disturbing late successional reserve habitat. The USFS campgrounds close after Labor Day and open on Memorial Day. Shrier communicated the idea of using a temporary pond set up in the Fall, bring fish into it around February or March for rearing, then when all done pack up the pond set-up and store it for use again the following year, which would be no impact on disturbing the grounds. Karen Thompson (USFS) said that she would go back and see if this is a workable option.

Thompson expressed that she has not had success in getting together with the Mt. St. Helens Monument managers due to conflicting schedules. She did say that the upper loop in the campground is an area that can be looked at more closely. However, all sites are in late successional reserve, which are the most restrictive in terms of development.

Regarding the considerations around siting of an acclimation pond on USFS land, Thompson provided handouts for ACC review and further discussion. The handouts listed below are included as **Attachment B**:

- Lewis River Acclimation GP National Forest Land and Resource Management Plan Management Area Categories
- Developed Recreation – Management Area Category 2 and 2L
- Wild and Scenic Rivers – Management Area Categories 8N, A7, 8D, W7, and NA
- General Late-Successional Reserve – Management Area Category L and LS
- Visual Emphasis – Management Area Category V and VL
- Chapter Two – Forest-wide Management Direction
- Chapter Five – Late-Successional Reserves and Managed Late-Successional Areas

McCune will email these handouts to the ACC members who participated via conference call.

Shrier expressed that at this point PacifiCorp will write up a formal proposal for USFS review. The ACC present agreed that they should review the proposal before presenting to the USFS.

### **Aquatic Fund – Brief overview of Pre-Proposals**

Todd Olson (PacifiCorp Energy) communicated to the ACC that the 2006/07 Aquatic Funding process deadline for Pre-proposals was October 6, 2006 and we received thirteen (13) pre-proposals. Olson provided two handouts (**Attachment C**) as indicated below for ACC review and discussion:

- Lewis River Aquatic Fund, 2006/2007 Pre-proposal List
- Table 4.1. Funding Process Timeline - Revised per ACC comments 9/14/06

In addition, Olson said that PacifiCorp will provide a map where all proposed projects are located. The next step is for PacifiCorp to review all Pre-proposals and evaluate for further consideration. The evaluation outcome will be presented to the ACC in November. Following ACC confirmation, PacifiCorp will notify the project proponents selected for further consideration and will request that project proponent provide additional information.

Break <10:15am>

Reconvene <10:30am>

### **Information needed for Decision on ATE at Merwin Trap**

Shrier asked the ACC if they have any questions that the Engineering subgroup needs to answer regarding getting to a 95% Adult Trap Efficiency (ATE) at the Merwin Trap. This issue continues and any feedback comment would be appreciated on or before the next engineering subgroup meeting on October 31, 2006. No comments or questions were provided at the meeting.

### **Merwin Sorting Tank Configurations**

Shrier informed the ACC that recommendations from the engineering design group will be coming to the ACC for review. Shrier will be drafting the recommendations in October and present to the ACC for their comments prior to proceeding with 30% design.

### **Review of Hatchery & Supplementation (H&S) Plan- (continued)**

Lesko provided handouts to the ACC regarding the H&S Timeline by Fish Species (**Attachment D**) for review and discussion. Olson expressed that we are nearing a point where PacifiCorp can begin to incorporate this information into the Service's Plan.

Lesko reviewed the spreadsheet with the ACC to include construction of fish passage facilities timeline, changes to hatchery operations, adult supplementation program with Natural Origin Broodstock fish, start of integration period for the hatcheries, fitness of hatchery fish and how do we make sure we have escapement goals met. Lesko stated that

among the Company's biggest concern is that natural returning fish be first used to meet passage goals as outlined in the Hatchery and Supplementation Plan (which are 500 steelhead, 2000 chinook and 9000 coho). When those goals are met, additional fish would be available for integration into the hatchery. Kinne expressed that they want to begin supplementation as soon as possible, when Natural Origin broodstock are first available.

LouEllyn Jones suggested that the specialist (subject matter experts) discuss the risks and benefits regarding at what point we start taking and beginning the integration program.

The ACC requested that Kinne speak with Keith Keown (WDFW) and have him bring the All-H Analyzer model to the next ACC meeting to illustrate a variety of scenarios for ACC review.

In response to Kaitlen Lovell (Trout Unlimited), Olson said that as far as the Spring Chinook (SPCH) program goes it's currently considered a segregated program and would not be considered integrated until we start taking in NORs and start using them as brood stock.

Lesko indicated that just because natural origin broodstock are brought into the hatchery it does not mean the program is truly integrated. Rather, several conditions need to be met including most importantly that the natural genetics drive the fitness of the population rather than the hatchery and that means reducing hatchery production.

Malinowski expressed concern about the success of integrated programs and that he would like to see hatchery genetics as close to the wild genetics as possible.

JohnWeinheimer (WDFW) said that he has yet to hear a definitive answer on this topic. The minute a wild fish is brought into a hatchery, domestication starts to impact the offspring of that fish. Integration of wild fish into a hatchery program is not a silver bullet to be used in all situations. It comes down to a case by case basis on what your management goals are and how you do the integration. Integration versus segregation of stocks is still a big debate in salmon and steelhead management.

Olson said that the new information from the HGMP on the issue of integration versus segregation will need to be considered by the ACC in the decision making process.

George Lee (Yakama Nation) requested a summary sheet outlining folks concerns with the H&S Plan. He also would like descriptions of acronyms including the All-H Analyzer (AHA) model.

## **Study Updates**

Shrier provided the following study updates:

*Yale Entrainment Study* – R2 Resources still analyzing data.

*Merwin Tailrace Behavior Study* – Comment period ended 10/6/06. PacificCorp to review and address comments received. Engineering team working on designs. For more

technical detail the engineering Subgroup meeting notes can be located at:  
<http://www.pacificorp.com/Article/Article61655.html>

*Merwin Sorting Facility Design – Merwin Sorting and Handling Facility Holding Tank Configuration* document to be sent to ACC in October 2006 by Shrier for their review. For more technical detail the engineering Subgroup meeting notes can be located at:  
<http://www.pacificorp.com/Article/Article61655.html>

*Speelyai Hatchery Expansion* – Ground broken; pipelines going in; approval received for waiver of permit. Pouring concrete later this week.

#### *Swift Surface Collector Design*

PacifiCorp emailed the ACC on 9/18/06 requesting comments relating to the Swift Downstream Fish Collector. PacifiCorp did not receive any comments so the engineering subgroup will proceed with preparing 30% designs for review.

#### **Other Topics**

PacifiCorp and Cowlitz PUD will schedule a meeting with the Cowlitz County Commissioners to discuss the extended period of time to acquire project permits. This is in response to counties response on the Pond # 15 permits, which were submitted by PacifiCorp in July 2006. Extended time for permitting may cause the Utilities to push out projects beyond Settlement Agreement due date. This is a concern to the Lewis River Settlement Agreement Parties.

#### **Agenda items for November 9, 2006**

- Further review of H&S Actions Spreadsheets
- Keith Keown HGMP presentation
- Aquatic Fund Recommendations
- ATE Decision Discussion
- Merwin Sorting Tank Recommendations
- Acclimation Pond Proposed Sites
- LWD - Request for qualifications (RFQ's)
- Study Updates

#### **Next Scheduled Meetings**

November 9, 2006	December 14, 2006
Merwin Hydro Facility	Merwin Hydro Facility
Ariel, WA	Ariel, WA
9:00am – 3:00pm	9:00am – 3:00pm

**Meeting Adjourned at 12:15p.m.**

#### **Handouts**

- Final Agenda
- Draft ACC Meeting Notes 9/14/06

- 2006 Spring Chinook scales from Merwin Dam Fish Collection Facility, as provided by WDFW, (Attachment A)
- Lewis River Acclimation GP National Forest Land and Resource Management Plan Management Area Categories, as provided by USDA Forest Service (Attachment B)
- Developed Recreation – Management Area Category 2 and 2L, as provided by USDA Forest Service, (Attachment B)
- Wild and Scenic Rivers – Management Area Categories 8N, A7, 8D, W7, and NA, as provided by USDA Forest Service, (Attachment B)
- General Late-Successional Reserve – Management Area Category L and LS, as provided by USDA Forest Service, (Attachment B)
- Visual Emphasis – Management Area Category V and VL, as provided by USDA Forest Service, (Attachment B)
- Chapter Two – Forest-wide Management Direction, as provided by USDA Forest Service, (Attachment B)
- Chapter Five – Late-Successional Reserves and Managed Late-Successional Areas, as provided by USDA Forest Service, (Attachment B)
- Lewis River Aquatic Fund, 2006/2007 Pre-proposal List, as provided by PacifiCorp Energy, (Attachment C)
- Table 4.1. Funding Process Timeline - Revised per ACC comments 9/14/06, as provided by PacifiCorp Energy, (Attachment C)
- Draft HS Timeline by Fish Species – October version (2), as provided by PacifiCorp Energy, (Attachment D)

Attachment A,  
as provided by WDFW

## 2006 Spring Chinook scales from Merwin Dam Fish Collection Facility

scales taken from 5/3-6/6

scales were taken from non-adipose clipped, negative CWT fish

Age	Hatchery		Age	unknown origin	
	Female	Male		Female	Male
4.2	21	27	unknown	16	10
5.2	26	23	5.2	1	0
6.2	0	1	6.2	1	0

Age	Female	Male
5.2 *	10	7

Unknown Origin: a scale that cannot be read as hatchery or wild

Age cannot always be identified on scales that are from unknown origin

\*: the scales origin could not be positively identified as hatchery or wild.

These scales did not look like a NFL hatchery or wild scale. The scales were separated from the unknown origin group since the scales could be read, although they could not be positively identified as hatchery or wild origin.



Lewis River Acclimation GP National Forest Land and Resource Management Plan  
Management Area Categories

Site 1. Muddy River Viewpoint (T. 7 N., R. 6 E., Section 1, W ½)

- Site specific: NA
- 25 Road approach: VL, Y8, NA

Site 2. Clear Creek - 93 Road crossing (T. 7 N., R. 7 E., Section 6, N ½)

- Site specific: NA
- 93 Road approach: LS, NA
- 25 Road approach: VL, Y8, NA

Site 3. Lewis River – 90 Road crossing (T. 8 N., R. 7 E., Section 25, SW ¼)

- Site specific: NA
- 90 Road approach: VL, NA

Site 4. Lewis River – Upper Falls Campground (T. 8 N., R. 7 E., Section 25, NE ¼)

- Site specific: NA, 2L (campground)
- 90 Road approach: VL, NA

NA: Wild and Scenic River FP recommendation

VL: Visual Emphasis

LS: Late successional; no special designation or Management Area Category (MAC)

Note: All sites are in Late Successional Reserve, and within Riparian Reserves.

# Developed Recreation

## Management Area Category 2

Includes Management Area 2L

**Goal** [FP IV-101>

Readily-accessible, appropriately-designed facilities will provide for concentrated visitation by people seeking a convenient recreational experience.

***Description of Lands Where This MAC is Applied***

Developed recreation sites are usually close to water bodies, berryfields, and other areas of scenic or special interest. Except for winter recreation areas, they are usually located on relatively flat land with slopes of less than ten percent. Soils and vegetation must be able to absorb heavy use. Camp and picnic grounds, ski areas, recreation residences, viewpoints, boat launches, and other facilities may be accommodated.

***Desired Future Condition***

Roads, buildings, ski lifts, tables, docks, and other physical facilities are evident, but design and construction will repeat the color, shapes and lines of the surroundings.

***Standards and Guidelines***

**Recreation**

***Planning and Inventory***

1. On selected sites, special facilities needed for the convenience of visitors, including the elderly, young, and handicapped, should be provided.
2. The Visual Quality Objective and Recreation Opportunity Spectrum classes assigned to these Management Areas are:

<b>Management Prescription</b>	<b>VQO</b>	<b>ROS</b>
2L	Retention	Roaded Natural

***Facility and Site Reconstruction, Construction, and Management Administration***

1. Site development and management should be guided by these considerations:
  - a) Public safety and sanitation.
  - b) Long-term protection of site and facilities.
  - c) Accommodation for groups and for the handicapped.

- d) Information services.
  - e) Aquatic Conservation Strategy
2. Operation and maintenance plans should be prepared.
  3. New camp units should be located away from the immediate foreground of lakes and streams. Those which are now in these locations should be moved whenever practicable. See "Riparian Reserve Standards and Guidelines for Recreation," in Chapter 2.
  4. Every site will be surveyed for hazard trees annually.

### ***Use Administration***

Off-road vehicle use on roads should be limited to ingress and egress. ORV use may be permitted on designated trails with the same limitation.

## **Range**

### ***Administration***

Livestock grazing should not be permitted.

## **Timber**

### ***Administration***

Trees should be felled when they may be a hazard to life or property. Methods least likely to produce lasting visual impacts should be employed. Trees may be felled to improve a ski area, provide a scenic view, or accomplish other recreational enhancements. Ordinary timber salvage should not be permitted.

In the foreground of areas adjacent to concentrated use:

1. Remove portions of downed trees which are not needed to meet recreation and Aquatic Conservation Strategy Objectives.
2. Flush-cut or remove stumps.
3. Remove logs and debris by methods which minimize ground and vegetative disturbance.

### ***Silvicultural Examination and Prescriptions***

As a basis for the Vegetative Management Plan, a silvicultural examination should be prepared for every developed recreation site. It should take into account crown closure, hazard trees, and the ability of the stand to withstand concentrated recreation.

### ***Genetic Forest Tree Improvement Program***

Genetic improvement program activities should be limited to select trees. Identification marks should be inconspicuous.

## **Water, Soil, and Air**

### ***Inventory, Planning, and Improvement***

Adverse impacts of recreation on soil, water, and air should be identified. Those impacts which may jeopardize public health and safety will be corrected immediately. Others should be treated before the opening of the next season (see "Riparian Reserve Standards and Guidelines for Recreation" in Chapter 2.

### ***Rights/Use Management***

Water rights should be acquired for all sources supplying or expected to supply domestic water to the recreation site.

## **Minerals and Geology**

### ***Evaluation and Development***

1. Common mineral material sources should not be developed.
2. Potential aquifers should be evaluated prior to well location and drilling.

## **Lands**

### ***Special Use Management***

Only those permits, leases, rights-of-way, and other special uses which are compatible with developed recreation and Late-Successional Reserve objectives should be permitted.

### ***Federal Energy Regulatory Commission License and Permits***

Feasibility studies may occur providing they are performed in a manner which does not impair recreational use of the area.

### ***Withdrawals, Modifications, and Revocations***

The recreation site or area should be withdrawn from mineral entry, subject to the determination of values, including mineral values, if required to protect the site.

### ***Landownership Planning***

All lands should be placed in Landownership Category II, acquire or retain.

## **Facilities**

### ***Transportation Planning***

Roads and other facilities inconsistent with developed recreation should be located away from the primary use areas, closed, removed, or decommissioned.

### ***Road Operation***

Access roads to developed sites should be managed to permit passenger car traffic.

When vandalism is a problem, the Prohibit traffic scheme can be applied to seasonally close sites. When vandalism is not a problem, road use may be seasonally discouraged by posting closure signs.

## **Protection**

### ***Fire Management***

Fire Suppression Strategy, Control, should be used at all developed sites.

Fire Hazard Reduction Priorities, utilize and dispose, should apply.

### ***Pest Suppression and Prevention***

Pest suppression and prevention methods should be used for maintaining the health of vegetation. This activity should be timed to avoid the recreation season if possible.

<FP IV-103]

## Wild and Scenic Rivers

### Management Area Categories 8, N

Includes Management Areas A7, 8D, W7, and NA FP IV-108b

#### ***Goal***

Protect the Wild or Scenic River characteristics pending possible addition to the National Wild and Scenic Rivers System.

#### ***Description of Lands Where This MAC is Applied***

Lands within 1/4 mile of designated rivers within the Forest boundary appearing to be both eligible and suitable for addition to the National Wild and Scenic Rivers System. Also included are those eligible river corridors for which suitability has not yet been determined. Suitability for those rivers will be determined after the Forest Plan is approved.

#### ***Desired Future Condition***

##### **Wild Rivers - A7, 8D, and W7**

Wild Rivers are generally inaccessible by road, but can be reached by trail or water. Vegetation is varied in size, species, and age, and is predominantly the product of natural succession. Vegetation may vary from natural openings through stands of mature and old-growth timber. Along Wild Rivers, the opportunity to interact with a natural environment, away from the sights and sounds of other people, is available. A high degree of challenge is offered.

##### **Scenic Rivers - NA**

Vegetation is varied in size, species, and age, and is predominantly the product of natural succession. Vegetation may vary from natural openings through stands of mature and old-growth timber. Some structures, farming, and evidence of timber harvest may be visible, but the shorelines are largely undeveloped. The rivers are accessed in some places by road and in some instances a major travel route parallels the river. A challenging interaction with the natural environment is available.

#### ***Standards and Guidelines***

The following direction applies to all management areas in MAC 8 and N unless otherwise indicated. Wild and Scenic Rivers within Wildernesses and the National Volcanic Monument are subject to the management direction for those areas. Additional Management Direction is described in the Wild and Scenic Rivers Act and guidelines for its implementation. All the following direction is subject to Aquatic Conservation Strategy and Forest-wide direction described in Chapter 2, which may be more restrictive.

**Recreation**

***Planning and Inventory***

- 1a. Those rivers determined to be suitable, and their immediate environment, are recommended for designation under the Wild and Scenic Rivers Act of 1968.

Rivers for which suitability has not been determined will require additional analysis. If the analysis finds one or more rivers or segments to be suitable, those will also be recommended for designation under the Act. Until the analysis is completed, no activities should be permitted that would alter the eligibility or potential classification of the stream.

- 1b. Many of the Wild and Scenic River corridors include lands which are actually extensions of other management areas outside of, but adjacent to, the river corridor. Included are lands having attributes needed to complete other prescriptions such as Special Interest Areas, Developed Recreation Sites, and Visual Emphasis Viewsheds. Where the management direction for these lands is more restrictive than that for the Wild, Scenic, or Recreational River corridor in which they occur, the more restrictive direction applies. These “included” management area prescriptions are considered to be a part of these recommendations for designation under the Act.
2. Cultural resource surveys for identification of significant resources are encouraged. Cultural resources and other features of interest which are not jeopardized by public exposure may be interpreted.

The Visual Quality Objectives and Recreation Opportunity Spectrum Classes assigned to these management areas are:

WILD RIVER

<b>Management Prescription</b>	<b>VQO</b>	<b>ROS</b>
A7 and 8D	Preservation	Semi-primitive Non-Motorized
W7	Preservation	Special Area

Within Wildernesses, the Wilderness Recreation Opportunity Spectrum is used. Prescription A7 is applicable only within the National Volcanic Monument. Prescription W7 is applicable only within Wilderness, MAC-W.

SCENIC RIVER

<b>Management Prescription</b>	<b>VQO</b>	<b>ROS</b>
NA	Retention	Roaded Natural

### ***Facility and Site Reconstruction and Construction***

Site design and facility selection should be compatible with the assigned ROS or WROS Level:

#### **Wild River**

Facilities are generally not permitted in wildernesses. Along other Wild Rivers, recreation sites should be limited to simple comfort and convenience facilities located outside the Riparian Reserve.

#### **Scenic River**

Subject to meeting the goals of the Aquatic Conservation Strategy, recreation sites may be established in close proximity to the river, but should be widely spaced, blend with the natural landscape, and be screened from the river. Recreation sites should consistent with the Aquatic Conservation Strategy.

### ***Facility and Site Management and Use Administration***

1. Off-road vehicles are not permitted in Wild River corridors; they may be permitted in Scenic River corridors on designated trails.
2. Guide service and other recreation concessions in keeping with the assigned ROS or WROS class may be permitted.

### **Wildlife**

#### ***Structural Habitat Improvement and Maintenance***

Structural habitat improvements should utilize native or natural-appearing materials.

### **Range**

#### ***Administration***

Livestock grazing may be permitted.

### **Timber**

#### ***Administration, Regeneration, and Intermediate Harvest***

Wild Rivers — Ordinary timber salvage is not permitted.

Scenic Rivers — Timber salvage is not permitted in the NA management area.

#### ***Firewood Cutting***

Firewood cutting for home or commercial use should not be permitted in areas recommended for Wild River classification. Gathering firewood for campfire use may be permitted.



### ***Genetic Forest Tree Improvement Program***

Genetic improvement activities in Wild and Scenic Rivers are limited to select trees.

## **Minerals and Geology**

### ***Development Proposals***

1. Common mineral material sources should not be developed.
2. A no-surface occupancy stipulation will be encouraged in mineral leases.
3. Prior to, and in some instances after designation under the 1968 Act, rivers are generally subject to mining claim location and mineral exploration. Approved plans will include reasonable mitigation and reclamation measures to minimize surface disturbance, sedimentation and visual impairment.

## **Lands**

### ***Special Use Management***

1. Utility corridors, dams, diversions and hydroelectric power facilities will be prohibited to the extent of Forest Service authority. Existing facilities may be maintained.
2. Locating new utility lines within Scenic River corridors should be discouraged. Where no reasonable alternative exists, routes should cross, not parallel, the river or be limited to the existing right-of-way.
3. Federal licenses or permits for water resource projects, including dams and transmission lines, will not be recommended unless the project will not have a direct and adverse affect on the Wild or Scenic River character.

### ***Landownership***

National Forest lands should be placed in Ownership Category II, Retain.  
Other ownerships should be in Category V, Additional Study.

### ***Wild and Scenic Rivers Study***

Encourage the participation and cooperation of public and private landholders, particularly in river corridors including other ownerships.

## **Facilities**

### ***Transportation Planning and Inventory***

1. Roads should not be permitted in Wild River corridors.
2. In Scenic River corridors, roads may occasionally cross or come near the river, but they should be infrequent and inconspicuous.

## Wild and Scenic Rivers

3. Roads and other facilities are also limited due to the "included" prescriptions described under Standards and Guidelines, Recreation, No. 1(b).

### ***Road Operation***

Roads accessing developed recreation sites within Scenic and Recreation River corridors should be managed to accommodate passenger car traffic.

Local roads not required for a specific recreational objective should be closed using the Eliminate or Prohibit traffic management schemes, or decommissioned.

Major through roads should be managed using the Encourage traffic management scheme.

## **Protection**

### ***Fire Management***

Heavy equipment should not be used in the foreground as seen from the river.

### ***Fire Suppression***

1. The Fire Suppression Strategy, Control, should be used.
2. In Wild River Corridors use suppression techniques which result in the least possible evidence of human activity.

### ***Pest Suppression and Prevention***

1. Strategies which protect the Wild or Scenic character of these areas and avoid the degradation of water quality should be used to suppress the outbreak of pests.
2. Unacceptable damage to sensitive visual areas should be prevented with Integrated Pest Management strategies; cultural methods should be preferred.
3. Pest suppression and prevention methods which maintain the visual and recreation attributes of these areas and protect adjacent resource values should be emphasized. <FP IV-112>

# General Late-Successional Reserve

## Management Area Category L

Includes Management Area LS [FP-IV-136]

### **Goal**

The objective of General Late-Successional Reserve is to protect and enhance conditions of Late-Successional and old-growth forest ecosystems.

### **Description of Lands Where This MAC is Applied**

In the past these lands were primarily timber producing lands and deer and elk habitat. They also include areas with such market values as minerals, energy, and forage for livestock grazing. Where they occur within Late-Successional Reserves, these lands are no longer suitable for timber management or habitat manipulation to benefit early successional related species such as deer and elk.

### **Desired Future Condition**

Late-successional and old-growth forest ecosystems will develop over time. Destructive fires seldom occur. Recreational opportunities are available for hunters, fishermen, off-road vehicle operators, and other motorists, although many roads will be closed in the winter months in the biological deer and elk winter range.

### **Standards and Guidelines**

#### **Recreation**

#### **Planning and Inventory**

1. The Visual Quality Objectives and Recreation Opportunity Spectrum class assigned to these Management Areas are:

Management Prescription	VQO	ROS
LS	Retention	Roaded Natural

2. Where appropriate, recreational activities compatible with Late-Successional Reserve objectives may continue. Driving for pleasure, hunting, dispersed camping, wildlife viewing, berrypicking, cross-country skiing, the use of off-road vehicles, and interpretation of cultural or other features of interest are examples of possible activities.

## Range

### ***Administration***

In the biological winter range, conflicts between deer and elk and livestock will be resolved in favor of deer and elk.

### ***Nonstructural Improvement and Maintenance***

Plant species selected for range improvement should not significantly compete with Forest tree species. <FP -IV-136]

## Visual Emphasis

### Management Area Category **V**

Includes Management Area VL [FP-IV-98]

#### **Goal**

Provide a visually natural or near-natural landscape as viewed from the designated travel route or use area.

#### **Description of Lands Where This MAC is Applied**

Scenic viewsheds which are sensitive because they are viewed by many people from major roads, trails, and recreation sites, including lakes and streams.

#### **Desired Future Condition**

These areas accommodate a variety of activities which, to the observer, are either not evident or visually subordinate to the natural landscape. Management of the visual attributes of the corridor provides a continuing opportunity to appreciate scenic worth. Vegetation is diverse and includes a wide variety of tree species and sizes, living and dead. Stands exhibiting mature and old-growth characteristics are common. Viewing scenery, hiking, and camping occur, and access to other recreational facilities is provided.

#### **Standards and Guidelines**

The following direction applies to all management areas in MAC V, unless indicated otherwise.

#### **Recreation**

##### **Planning and Inventory**

1. Viewing opportunities may be enhanced by opening views to such features as distant peaks, unique rock forms, and unusual vegetation.
2. The Visual Quality Objectives (viewed from the designated travel route or site) and Recreation Opportunity Spectrum class assigned to these Management Areas are:

Management Prescription	VQO	ROS
VL	Retention	Roaded Natural

### ***Facility and Site Reconstruction and Construction***

1. Parking areas should be screened from the designated travel route or recreation site except where visibility might deter vandalism.
2. Industrial camps should not be allowed within the foreground of the designated route or site.

### ***Use Administration***

Off-road vehicles should be limited to specified trails.

## **Range**

### ***Structural Improvement and Maintenance***

Structures such as loading ramps, stock tanks, fences, and holding pens, should be located away from the immediate foreground.

## **Timber**

### ***Genetic Forest Tree Improvement Program***

Genetic improvement activities should be limited to select trees within the immediate foreground of the designated route or sites. Select trees should be inconspicuously marked. Beyond the immediate foreground, genetic activities should meet the assigned Visual Quality Objectives as viewed from the designated route or sites.

## **Minerals And Geology**

### ***Development Proposals and Administration***

1. Common mineral material sources should not be developed within the foreground of the designated travel route or recreation site. Visible sources existing in these areas should be identified and programmed for rehabilitation.
2. Within the foreground of the designated travel route or recreation site and to the extent reasonable and operationally feasible, surface mining and geothermal activities should not be visible unless there is no practicable alternative. Where visible, mitigation measures should be applied

## **Lands**

### ***Landownership Planning***

Lands should be placed in Ownership Category II, Retain or Acquire.

## Facilities

### *Transportation Planning*

1. In planning and designing the designated travel route, location of the route parking areas, viewpoints, etc. should be identified and analyzed with the visual resource in mind. Preference should be given to blending the road into the landscape rather than emphasizing speed and efficiency.
2. Material stockpiles and other facilities should not be visible in the foreground from the designated travel route.

### *Road Operation*

Dust abatement should be considered on the designated travel route.

Vegetation adjacent to the designated travel route or recreation site should be controlled in a visually inconspicuous manner, primarily by hand or machine methods. Any use of chemicals should be timed to avoid vegetative brownout (e.g., a dormant spray used in the fall).

Local roads should be managed using the Discourage, Eliminate, or Prohibit traffic management schemes. Roads providing access to a specific recreation destination may be managed to allow passenger car use and should be maintained at a level commensurate with the recreation opportunity.

## Protection

### *Fire Management*

Fire Hazard Reduction should apply. Residues from thinning or harvesting activities remaining in the immediate foregrounds of areas seen from the designated travel route or recreation site should be left in the following condition:

1. Less than two feet above the ground.
2. Screened by shrubs, grasses, or other understory vegetation.
3. Sparsely distributed and behind large diameter, dead material as opposed to tangles of small limbs. <FP-IV-100]

## Chapter Two

# Forest-wide Management Direction

---

As explained in Chapter 1, direction contained in this document applies at three scales—Forest-wide, designated area and management area. This chapter describes direction which applies Forest-wide, in all designated areas and management areas. It begins with the Aquatic Conservation Strategy which includes direction for Riparian Reserves.

This chapter begins with an overview of the Aquatic Conservation Strategy. Following this overview is a description of Forest-wide programs and resource areas. Each program area addresses the Aquatic Conservation Strategy using standards and guidelines for Riparian Reserves, where applicable.

### **Aquatic Conservation Strategy** [ROD B-9]

The Aquatic Conservation Strategy was developed to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands. The strategy will protect salmon and steelhead habitat on federal lands managed by the Forest Service and Bureau of Land Management within the range of Pacific Ocean anadromy.

This conservation strategy uses several methods to further the goal of maintaining a “natural” disturbance regime. Land use activities need to be limited or excluded in those parts of the watershed prone to instability. The distribution of land use activities, such as timber harvest or roads, must minimize increases in peak streamflows. Headwater riparian areas need to be protected, so that when debris slides and flows occur, they contain coarse woody debris and boulders necessary for creating habitat farther downstream. Riparian areas along larger channels need protection to limit bank erosion, insure an adequate and continuous supply of coarse woody debris to channels, and provide shade and microclimate protection. Watersheds currently containing the best habitat or those with the greatest potential for recovery should receive increased protection and receive highest priority for restoration programs.

Any species-specific strategy aimed at defining explicit standards for habitat elements would be insufficient for protecting even the targeted species. The Aquatic Conservation Strategy must strive to maintain and restore ecosystem health at watershed and landscape scales to protect habitat for fish and other riparian-dependent species and resources and restore currently degraded habitats. This approach seeks to prevent further degradation and restore habitat over broad landscapes as opposed to individual projects or small watersheds. Because it is based on natural disturbance processes, it may take decades, possibly more than a century, to accomplish all of its objectives. Some improvements in aquatic ecosystems, however, can be expected in 10 to 20 years.



The important phrases in these standards and guidelines are:

*“meet Aquatic Conservation Strategy objectives”*

*“does not retard or prevent attainment of Aquatic Conservation Strategy objectives”*

*“attain Aquatic Conservation Strategy objectives.”*

These phrases, coupled with the phrase *“maintain and restore”* within each of the Aquatic Conservation Strategy objectives, define the context for agency review and implementation of management activities. Complying with the Aquatic Conservation Strategy objectives means that an agency must manage the riparian-dependent resources to maintain the existing condition or implement actions to restore conditions. The base line from which to assess maintaining or restoring the condition is developed through a watershed analysis. Improvement relates to restoring biological and physical processes within their ranges of natural variability.

The standards and guidelines are designed to focus the review of proposed and certain existing projects to determine compatibility with the Aquatic Conservation Strategy objectives. The standards and guidelines focus on *“meeting”* and *“not preventing attainment”* of Aquatic Conservation Strategy objectives. The intent is to assure that a decision maker must find that the proposed management activity is consistent with the Aquatic Conservation Strategy objectives. The decision maker will use the results of watershed analysis to support their finding. In order to make the finding that a project or management action *“meets”* or *“does not prevent attainment”* of the Aquatic Conservation Strategy objectives, the analysis must include:

- a description of the existing condition
- a description of the range of natural variability of the important physical and biological components of a given watershed
- how the proposed project or management action maintains the existing condition or moves it within the range of natural variability.

Management actions that do not maintain the existing condition or do not lead to improved conditions in the long term would not *“meet”* the intent of the Aquatic Conservation Strategy and thus, should not be implemented.

## **Aquatic Conservation Strategy Objectives**

National Forest lands within the range of the northern spotted owl will be managed to:

1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted.
2. Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include flood plains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.

3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.
4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.
5. Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.
6. Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.
7. Maintain and restore the timing, variability, and duration of flood plain inundation and water table elevation in meadows and wetlands.
8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.
9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.

## Components of the Aquatic Conservation Strategy

1. *Riparian Reserves*: Lands along streams and unstable and potentially unstable areas where special standards and guidelines direct land use.
2. *Key Watersheds*: A system of large refugia comprising watersheds that are crucial to at-risk fish species and stocks and provide high quality water.
3. *Watershed Analysis*: Procedures for conducting analysis that evaluate geomorphic and ecologic processes operating in specific watersheds. This analysis should enable watershed planning that achieves Aquatic Conservation Strategy objectives. Watershed analysis provides the basis for monitoring and restoration programs and the foundation from which Riparian Reserves can be delineated.
4. *Watershed Restoration*: A comprehensive, long-term program of watershed restoration to restore watershed health and aquatic ecosystems, including the habitats supporting fish and other aquatic and riparian-dependent organisms.

These components are designed to operate together to maintain and restore the productivity and resiliency of riparian and aquatic ecosystems. Late-Successional Reserves are also an important component of the Aquatic Conservation Strategy.

The standards and guidelines within which Late-Successional Reserves are managed provide increased protection for all stream types. Because these reserves possess late-successional characteristics, they offer core areas of high quality stream habitat that will act as refugia and centers from which degraded areas can be recolonized as they recover. Streams in these reserves may be particularly important for endemic or locally distributed fish species and stocks. <ROD B-12>

## **Riparian Reserves** [ROD B-17]

### **Summary of Aquatic Conservation Strategy for Riparian Reserves:**

- Involves portions of the landscape where riparian-dependent and stream resources receive primary emphasis.
- Riparian Reserves are designated for all permanently-flowing streams, lakes, wetlands, and intermittent streams.
- Riparian Reserves include the body of water, inner gorges, all riparian vegetation, 100-year flood plain, landslides and landslide prone areas.
- Reserve widths are based on some multiple of a site-potential tree or a prescribed slope distance, whichever is greater. Reserve widths may be adjusted based on watershed analysis to meet Aquatic Conservation Strategy objectives.
- Standards and guidelines prohibit programmed timber harvest, and manage roads, grazing, mining and recreation to achieve objectives of the Aquatic Conservation Strategy. <ROD B-17>

[ROD B-12]

Riparian Reserves are portions of watersheds where riparian-dependent resources receive primary emphasis and where special standards and guidelines apply. Standards and guidelines prohibit and regulate activities in Riparian Reserves that retard or prevent attainment of the Aquatic Conservation Strategy objectives. Riparian Reserves include those portions of a watershed directly coupled to streams and rivers. Riparian Reserves are required for maintaining hydrologic, geomorphic, and ecological processes that directly affect standing and flowing water such as lakes and ponds, wetlands, streams, stream processes, and fish habitats. Riparian Reserves include primary source areas for wood and sediment such as unstable and potentially unstable areas in headwater areas and along streams. Riparian Reserves occur at the margins of standing and flowing water, intermittent stream channels, ephemeral ponds and wetlands. Riparian Reserves generally parallel the stream network but also include other areas necessary for maintaining hydrologic, geomorphic, and ecological processes.

Under the Aquatic Conservation Strategy, Riparian Reserves are used to maintain and restore riparian structures and functions of intermittent streams, confer benefits to riparian-dependent and associated species other than fish, enhance habitat conservation for organisms that are dependent on the transition zone

between upslope and riparian areas, improve travel and dispersal corridors for many terrestrial animals and plants, and provide for greater connectivity of the watershed. The Riparian Reserves will also serve as connectivity corridors among the Late-Successional Reserves.

Interim widths for Riparian Reserves necessary to meet Aquatic Conservation Strategy objectives for different water bodies are established based on ecologic and geomorphic factors. These widths are designed to provide a high level of fish habitat and riparian protection until watershed and site analysis can be completed. Watershed analysis will identify critical hillslope, riparian, and channel processes that must be evaluated in order to delineate Riparian Reserves that assure protection of riparian and aquatic functions.

Riparian Reserves are delineated during implementation of site-specific projects based on analysis of the critical hillslope, riparian, and channel processes and features. Although Riparian Reserve boundaries may be adjusted on permanently-flowing streams, the prescribed widths are considered to approximate those necessary for attaining Aquatic Conservation Strategy objectives. Post-watershed analysis Riparian Reserve boundaries for permanently-flowing streams should approximate the boundaries prescribed in these standards and guidelines. Post-watershed analysis Riparian Reserve boundaries for intermittent streams, however, may be different from the existing boundaries. The reason for the difference is the high variability of hydrologic, geomorphic and ecologic processes in a watershed affecting intermittent streams. At the same time, any analysis of Riparian Reserve widths must also consider the contribution of these reserves to other, including terrestrial, species.

Watershed analysis should take into account all species that were intended to be benefited by the prescribed Riparian Reserve widths. Those species include fish, mollusks, amphibians, lichens, fungi, bryophytes, vascular plants, American marten, red tree voles, bats, marbled murrelets, and northern spotted owls. The specific issue for spotted owls is retention of adequate habitat conditions for dispersal.

The prescribed widths of Riparian Reserves apply to all watersheds until watershed analysis is completed, a site-specific analysis is conducted and described, and the rationale for final Riparian Reserve boundaries is presented through the appropriate NEPA decision-making process. <ROD B-13>

## Riparian Reserve Descriptions (ROD C-30)

### *Riparian Reserve Widths*

Riparian Reserves are specified for five categories of streams or water bodies as follows:

1. *Fish-bearing streams* - Riparian Reserves consist of the stream and the area on each side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the

100-year flood plain, or to the outer edges of riparian vegetation, or to a slope distance equal to the height of two site-potential trees, or 300 feet slope distance (600 feet total, including both sides of the stream channel), whichever is greatest. (See Tables 2-1 and 2-2.)

2. *Permanently flowing nonfish-bearing streams* - Riparian Reserves consist of the stream and the area on each side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year flood plain, or to the outer edges of riparian vegetation, or to a slope distance equal to the height of one site-potential tree, or 150 feet slope distance (300 feet total, including both sides of the stream channel), whichever is greatest.
3. *Constructed ponds and reservoirs, and wetlands greater than one acre* - Riparian Reserves consist of the body of water or wetland and: the area to the outer edges of the riparian vegetation, or to the extent of seasonally saturated soil, or the extent of unstable and potentially unstable areas, or to a slope distance equal to the height of one site-potential tree, or 150 feet slope distance from the edge of the wetland greater than one acre or the maximum pool elevation of constructed ponds and reservoirs, whichever is greatest.
4. *Lakes and natural ponds* - Riparian Reserves consist of the body of water and: the area to the outer edges of the riparian vegetation, or to the extent of seasonally saturated soil, or to the extent of unstable and potentially unstable areas, or to a slope distance equal to the height of two site-potential trees, or 300 feet slope distance, whichever is greatest.
5. *Seasonally flowing or intermittent streams, and unstable and potentially unstable areas* - This category applies to features with high variability in size and site-specific characteristics. At a minimum, the Riparian Reserves must include:
  - The extent of unstable and potentially unstable areas (including earthflows),
  - The stream channel and extend to the top of the inner gorge,
  - The stream channel or wetland and the area from the edges of the stream channel or wetland to the outer edges of the riparian vegetation, and
  - Extension from the edges of the stream channel to a distance equal to the height of one site-potential tree, or 100 feet slope distance, whichever is greatest. (See Table 2-1.) [FP IV-65]
6. *Wetlands and meadows less than 1 acre in size.* On slopes 20 percent and less, marshes, wet meadows (ecoclasses MS, MT, MW), moist meadows (MM), wet shrublands (SW, SS) and forblands (F) are withdrawn from scheduled timber harvest. An influence area, typically 300 feet beyond the extent of riparian vegetation, shall be managed such that 85 percent of timber stands are in pole size or larger and 50 percent of the entire influence area, is in mature and older age classes to provide hiding cover.  
 On slopes greater than 20 percent, moist shrublands (SM, SS) wet shrublands (SW), moist meadows (MM) and forblands (F) are withdrawn from scheduled timber harvest. An influence areas, typically 300 feet beyond the extent of riparian vegetation, shall be managed to provide hiding cover such that no more than 10 percent of suitable timberland within the influence area is regeneration harvested in any decade. [FP IV-72]

NOTE: A site-potential tree height is the average maximum height of the tallest dominant trees (200 years or older) for a given site class. (See Table 2-2 and footnotes) (ROD C-31)

*Table 2-1 Interim Riparian Reserve widths*

(slope distance each side) by site tree height and distance for riparian types. Widths are the larger of the two measures. See text for other geomorphic and vegetative considerations.

Riparian Type	Site Tree Slope Widths (Tree Heights)	Slope Widths (feet)
Fish-bearing streams	2	300
Lakes and natural ponds	2	300
Perennial, nonfish-bearing streams	1	150
Constructed ponds, reservoirs and wetlands greater than 1 acre in size*	1	150
Wetlands less than 1 acre in size	N/A	See Text
Intermittent streams	1	100

\*See LSR protection buffers for great gray owls on page 2-79.

*Table 2-2 Riparian Reserve "Buffer" Widths<sup>1</sup>*

Site Class	Site Index Dominant Douglas-fir <sup>2</sup>	Riparian Reserve "Buffer" Width <sup>3</sup>
I	190' to 210'	244' to 257'
II	160' to 180'	208' to 232'
III	130' to 150'	170' to 195'
IV	100' to 120'	150' to 158'
V	80' to 90'	150' minimum for perennial streams; 100' for intermittent streams
VI	60' to 70'	150' minimum for perennial streams; 100' for intermittent streams

### *Intermittent Streams* (ROD B-14)

Intermittent streams are defined as any nonpermanently flowing drainage feature having a definable channel and evidence of annual scour or deposition. This includes what are sometimes referred to as ephemeral streams if they meet these two physical criteria.

Including intermittent streams and wetlands within Riparian Reserves is important for successful implementation of the Aquatic Conservation Strategy. Accurate identification of these features is critical to the correct implementation of the strategy and protection of the intermittent stream and wetland functions and processes. Identification of these features is difficult at times due to the lack of

<sup>1</sup> Adapted from Douglas-fir "Site Index Table for Douglas-fir Dominant Trees" by Stabler (1944), as formerly shown in the Silvicultural Examination and Prescription Handbook, and the REO-approved document "Determination of Site-Potential Tree Heights for Riparian Reserve Widths (1995).

<sup>2</sup> Site index is the height of trees at age 100. Site index needs to be measured (or interpolated) for the riparian part of the stand to determine the desired riparian reserve width. Use Douglas-fir site index table, without conversion, for all species.

<sup>3</sup> This is equivalent to the site-potential tree height, one side, slope distance, for a single site tree height. (A site-potential tree height is the average maximum height of the tallest dominant trees, 200 years or older, for a given site class.) When applied to a fishbearing stream, the reserve width should equal two site tree heights. All reserve widths have an expected precision of +/- 10% (per REO letter dated March 22, 1995).

Note: A site-potential tree height is the average maximum height of the tallest dominant trees (200 years or older) for a given site class. (See Table 2-2 Site-potential tree heights by tree species and riparian area site index.) <ROD C-31>

Table 2-1. Interim Riparian Reserve widths (slope distance each side) by site tree height and distance for riparian types. Widths are the larger of the two measures. See text for other geomorphic and vegetative considerations.

Riparian Type	Site Tree Slope Widths (Tree Heights)	Slope Widths (feet)
Fish-bearing streams	2	300
Lakes and natural ponds	2	300
Perennial, nonfish-bearing streams	1	150
Constructed ponds, reservoirs and wetlands greater than 1 acre in size*	1	150
Wetlands less than 1 acre in size	N/A	See Text
Intermittent streams	1	100

\*See LSR protection buffers for great gray owls on page 2-79.

Table 2-2. Site-potential tree heights by tree species and riparian area site index. (100-year base, use local site index)  
Earlier version may be applied to projects initiated prior to April 1, 1995.

Dominant/Codominant Tree species	SITE TREE HEIGHT IN FEET FOR BUFFER WIDTH CALCULATIONS									
	100	120	140	160	180	200	220	240	260	
	Site index	Site index	Site index	Site index	Site index	Site index	Site index	Site index	Site index	
Douglas-fir	< 78	79-94	95-110	111-126	127-142	143-159	160-175	176-191	192-208	
Lodgepole pine	< 89	90-109	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Mountain hemlock	< 64	65-78	79-92	93-106	107-120	121-134	135-148	149-162	163-175	
Noble fir	< 70	71-86	87-102	103-117	118-131	132-145	146-159	160-171	172-183	
Western hemlock	< 76	77-92	93-106	107-121	122-137	138-151	152-167	168-183	184-198	
Western redcedar										
White/grand fir	< 64	65-80	81-96	97-112	N/A	N/A	N/A	N/A	N/A	

**Intermittent Streams** [ROD B-14]

Intermittent streams are defined as any nonpermanently flowing drainage feature having a definable channel and evidence of annual scour or deposition. This includes what are sometimes referred to as ephemeral streams if they meet these two physical criteria.

Including intermittent streams and wetlands within Riparian Reserves is important for successful implementation of the Aquatic Conservation Strategy. Accurate identification of these features is critical to the correct implementation of the strategy and protection of the intermittent stream and wetland functions and processes. Identification of these features is difficult at times due to the lack of

surface water or wet soils during dry periods. The following discussion provides guidance on steps to identify these features for inclusion within Riparian Reserves.

Fish-bearing streams are distinguished from intermittent streams by the presence of any species of fish for any duration. Many intermittent streams may be used as spawning and rearing streams, refuge areas during flood events in larger rivers and streams or travel routes for fish emigrating from lakes. In these instances, the standards and guidelines for fish-bearing streams would apply to those sections of the intermittent stream used by the fish.

The following discussion pertains to Riparian Reserve widths on intermittent streams and wetlands necessary to meet Aquatic Conservation Strategy objectives. Other Riparian Reserve objectives, such as providing wildlife dispersal corridors, could lead to Riparian Reserve widths different than those necessary to protect the ecological integrity of the intermittent stream or wetland. These other objectives could yield wider Riparian Reserves than those necessary to meet Aquatic Conservation Strategy objectives. There can never be instances where Riparian Reserves would be narrower than the widths necessary to meet Aquatic Conservation Strategy objectives.

The width of Riparian Reserves necessary to protect the ecological integrity of intermittent streams varies with slope and rock type.

Watershed analysis provides the ecological and geomorphic basis for changing the size and location of Riparian Reserves.

The prescribed widths for Riparian Reserves apply to all streams, lakes, ponds and wetlands on lands administered by the Forest Service and BLM within the range of the northern spotted owl until a watershed analysis is completed. Watershed analysis is expected to yield the contextual information needed to define ecologically and geomorphically appropriate Riparian Reserves. Analysis of site-specific characteristics may warrant Riparian Reserves that are narrower or wider than the prescribed widths. Thus, it is possible to meet the objectives of at least the Aquatic Conservation Strategy portion of these standards and guidelines with post-watershed analysis reserve boundaries for intermittent streams that are quite different from those conforming to the prescribed widths. Regardless of stream type, changes to Riparian Reserves must be based on scientifically sound reasoning, and be fully justified and documented.

### ***Wetlands***

The combinations of hydrology, soils, and vegetative characteristics are the primary factors influencing the development of wetland habitats. There must be the presence of surface water or saturated soils to significantly reduce the oxygen content in the soils to zero or near zero concentrations. These low or zero soil oxygen conditions must persist for sufficient duration to promote development of plant communities that have a dominance of species adapted to survive and grow under zero oxygen conditions. These wetland characteristics apply when defining wetlands for regulatory jurisdiction or for technical analysis when conducting



inventories or functional assessments. Seeps and springs can be classified as streams if they have sufficient flow in a channel or as seasonal or perennial wetlands under the criteria defined in the 1987 Corps of Engineers "Wetlands Manual". The standards and guidelines for wetlands, which are based on the hydrologic, physical and biologic characteristics described in the manual, apply to seeps and springs regardless of their size.

The formal definition for implementing section 404 of the Clean Water Act, adopted by the Environmental Protection Agency is:

*The term wetlands means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas.*

Detailed technical methods have been developed to assist in identification of wetlands that meet the above definition. Currently, the field manual being used for implementing the Clean Water Act is the 1987 Corps of Engineers "Wetlands Manual."

For purposes of conducting the National Wetland Inventory, the Fish and Wildlife Service has broadly defined both vegetated and nonvegetated wetlands as:

*Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes, (2) the substrate is predominantly undrained hydric soil, and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year.*

Wetlands typically occur within and adjacent to riparian zones. It is frequently difficult to differentiate wetlands from riparian areas based on the definitions. Most typically, and particularly in forested landscapes, the riparian zone is defined by its spatial relation to adjacent streams or rivers. However, riparian zones are also commonly considered to be lands integrally related to other aquatic habitats such as lakes, reservoirs, intermittent streams, springs, seeps, and wetlands.

Because of such conceptual and definitional vagaries, there is spatial overlap between wetlands and riparian zones. This then results in only a portion of the riparian zone associated with rivers and streams being considered as wetlands. The extent of that portion will depend on the specifics of hydrologic, vegetation, and soil features. The functions of the wetland portion may also be distinct from the nonwetlands. For example, wetlands may provide habitat for specialized plant species or reproductive habitat for amphibians or other organisms that would not be provided by riparian areas.

Once the Riparian Reserve width is established, either based on existing widths or watershed analysis, then land management activities allowed in the Riparian Reserve will be directed by standards and guidelines for managing Riparian Reserves. The standards and guidelines for Riparian Reserves prohibit or regulate

activities in Riparian Reserves that retard or prevent attainment of the Aquatic Conservation Strategy objectives. <ROD B-17]

### **Standards and Guidelines for Riparian Reserves** [ROD C-31]

As a general rule, standards and guidelines for Riparian Reserves prohibit or regulate activities in Riparian Reserves that retard or prevent attainment of the Aquatic Conservation Strategy objectives. Watershed analysis and appropriate NEPA compliance is required to change Riparian Reserve boundaries in all watersheds. Standards and guidelines for Riparian Reserves are included as a sub topic in the standards and guidelines for each resource or program area, where applicable. <ROD C-31]

### **Key Watersheds** [ROD C-7]

Key Watersheds are not a designated area or Matrix, but overlay all of these allocations. All national forest lands within the range of the northern spotted owl are allocated to one of three watershed categories: Tier 1 Key Watersheds, Tier 2 Key Watersheds, or non-Key Watersheds (all others). Key Watersheds overlay portions of all six categories of designated areas and Matrix. Key Watersheds place the following additional management requirements: <ROD C-7]

[ROD B-19]

- Tier 1 Key Watersheds were selected for directly contributing to anadromous salmonid and bull trout conservation.
- Tier 2 Key Watersheds were selected as sources of high quality water and may not contain at-risk fish stocks
- No new roads will be built in roadless areas in Key Watersheds.
- Reduce existing system and nonsystem road mileage outside roadless areas. If funding is insufficient to implement reductions, there will be no net increase in the amount of roads in Key Watersheds.
- Key Watersheds are highest priority for watershed restoration.
- Watershed analysis is required prior to management activities, except minor activities such as those Categorical Excluded under NEPA (and not including timber harvest).
- Timber harvest cannot occur in Key Watersheds prior to completing a watershed analysis. <ROD B-20]

[ROD B-18]

Refugia are a cornerstone of most species conservation strategies. They are designated areas that either provide, or are expected to provide, high quality habitat. A system of Key Watersheds that serve as refugia is crucial for maintaining and recovering habitat for at-risk stocks of anadromous salmonids and resident fish species. These refugia include areas of high quality habitat as well as areas of degraded habitat. Key Watersheds with high quality conditions will serve as anchors for the potential recovery of depressed stocks. Those of lower quality habitat have a high potential for restoration and will become future sources of high quality habitat with the implementation of a comprehensive restoration program (see "Watershed Restoration" later in this chapter).

The Aquatic Conservation Strategy includes two designations for Key Watersheds. Tier 1 (Aquatic Conservation Emphasis) Key Watersheds contribute directly to conservation of at-risk anadromous salmonids, bull trout, and resident fish species. They also have a high potential of being restored as part of a watershed restoration program. Tier 1 Key Watersheds consist primarily of watersheds identified previously by the Scientific Panel on Late-Successional Forest Ecosystems (1991), and in the Scientific Analysis Team Report (1993). The network of Tier 1 Key Watersheds ensures that refugia are widely distributed across the landscape. While Tier 2 (other) Key Watersheds may not contain at-risk fish stocks, they are important sources of high quality water. <ROD B-18]

Long-term management within Key Watersheds requires watershed analysis prior to further resource management activity. In the short term, until watershed analysis can be completed, minor activities such as those that would be Categorically Excluded under National Environmental Policy Act regulations (except timber harvest) may proceed if they are consistent with Aquatic Conservation Strategy objectives and apply Riparian Reserves and standards and guidelines. Timber harvest, including salvage, can not occur in Key Watersheds without a watershed analysis. Key Watersheds that currently contain poor quality habitat are believed to have the best opportunity for successful restoration and will receive priority in any watershed restoration program (see "Watershed Restoration" on page 2-14).

### **Roadless Areas and Key Watersheds**

Management activities in inventoried roadless areas with unstable land will increase the risk to aquatic and riparian habitat, impair the capacity of Key Watersheds to function as intended, and limit the potential to achieve Aquatic Conservation Strategy objectives. Standards and guidelines that refer to inventoried roadless areas (or simply "roadless areas") apply only to those portions of such areas that would still qualify as roadless under the guidelines used to originally designate the areas under the second Forest Service Roadless Area Review and Evaluation (RARE II). Roadless areas on the Gifford Pinchot National Forest are described in Appendix C of the *Forest Plan Final Environmental Impact Statement*.

To protect the remaining high quality habitats, no new roads will be constructed in inventoried roadless areas in Key Watersheds. Watershed analysis must be conducted in all non-Key Watersheds that contain roadless areas before any management activities can occur within those roadless areas. (see Figure 6-1, "Steps to a Programmed Timber Sale.")

The amount of existing system and nonsystem roads within Key Watersheds should be reduced through decommissioning of roads. Road closures with gates or barriers do not qualify as decommissioning or a reduction in road mileage. If funding is insufficient to implement reductions, there will be no net increase in the amount of roads in Key Watersheds. That is, for each mile of new road constructed, at least one mile of road should be decommissioned, and priority given to roads that pose the greatest risks to riparian and aquatic ecosystems.

<ROD B-19]

**Standards and Guidelines for Key Watersheds** [ROD C-7]

Inside Roadless Areas - No new roads will be built in remaining unroaded portions of inventoried roadless areas.

Outside Roadless Areas - Reduce existing system and non-system road mileage. If funding is insufficient to implement reductions, there will be no net increase in the amount of roads in Key Watersheds.

Key Watersheds are highest priority for watershed restoration.

Watershed analysis is required prior to management activities, except minor activities such as those Categorically Excluded under NEPA (and not including timber harvest).

Watershed analysis is required prior to timber harvest. <ROD C-7]

## Managed Late-Successional Areas [ROD C-22]

### Description

Managed Late-Successional Areas are similar to Late-Successional Reserves but are identified for certain owl activity centers on the eastside where regular and frequent fire is a natural part of the ecosystem. Certain silvicultural treatments and fire hazard reduction treatments are permitted to help prevent complete stand destruction from large catastrophic events such as high intensity, high severity fires or disease or insect epidemics.

Managed Late-Successional Areas have been designated for these standards and guidelines based on two elements:

1. Managed pair areas for known owl pairs and resident singles in the Washington Eastern Cascades Provinces from the Final Draft Spotted Owl Recovery Plan, and
2. Protection buffers for specific endemic species identified by the Scientific Analysis Team (1993).

Details are as follows:

1. **Managed Pair Areas:** Managed Late-Successional Areas are specified as shown on the Amendment Map for northern spotted owl activity centers outside of other designated areas.
2. **Protection Buffers:** Unmapped Managed Late-Successional Areas result from the application of Protection Buffers (see “Managed Late-Successional Reserve Protection Buffers” in Chapter 2).

increased maintenance when dispersed and developed recreation practices retard or prevent attainment of Late-Successional Reserve objectives.

*Research* - A variety of wildlife and other research activities may be ongoing and proposed in late-successional habitat. These activities must be assessed to determine if they are consistent with Late-Successional Reserve objectives. Some activities (including those within experimental forests) not otherwise consistent with the objectives may be appropriate, particularly if the activities will test critical assumptions of these standards and guidelines, will produce results important for habitat development, or if the activities represent continuation of long-term research. These activities should only be considered if there are no equivalent opportunities outside Late-Successional Reserves.

*Rights-of-Way, Contracted Rights, Easements, and Special Use Permits* - Access to nonfederal lands through Late-Successional Reserves will be considered and existing right-of-way agreements, contracted rights, easements, and special use permits in Late-Successional Reserves will be recognized as valid uses. New access proposals may require mitigation measures to reduce adverse effects on Late-Successional Reserves. In these cases, alternate routes that avoid late-successional habitat should be considered. If roads must be routed through a reserve, they will be designed and located to have the least impact on late-successional habitat. Review all special use permits and when objectives of Late-Successional Reserves are not being met, reduce impacts through either modification of existing permits or education.

*Nonnative Species* - In general nonnative species (plant and animal) should not be introduced into Late-Successional Reserves. If an introduction of nonnative species is proposed, complete an assessment of impacts and avoid any introduction that would retard or prevent achievement of Late-Successional Reserve objectives. Evaluate impacts of nonnative species (plant and animal) currently existing within reserves, and develop plans and recommendations for eliminating or controlling nonnative species that are inconsistent with Late-Successional Reserve objectives. These will include an analysis of the effects of implementing such programs to other species or habitats within Late-Successional Reserves.

*Other* - Other activities should be evaluated by local interdisciplinary teams and appropriate guidelines should be written and documented. Activities deemed to have potentially adverse effects on Late-Successional Reserve objectives are subject to review of the Regional Ecosystem Office. The Regional Ecosystem Office may develop additional criteria for exempting some additional activities from review.

*Fire Suppression and Prevention* - Each Late-Successional Reserve will be included in fire management planning as part of watershed analysis. Fire management in Late-Successional Reserves will utilize minimum impact suppression methods. Fuels management will adhere to with guidelines for reducing risks of large-scale disturbances. Plans for wildfire suppression will emphasize maintaining late-successional habitat. During actual fire suppression activities, fire managers will consult with resource specialists (e.g., botanists, fisheries and wildlife biologists, and hydrologists) familiar with the area, these standards and guidelines, and their objectives, to assure that habitat damage is minimized. Until a fire management plan is completed for Late-Successional Reserves, suppress wildfire to avoid loss of habitat in order to maintain future management options.

In Late-Successional Reserves, a specific fire management plan will be prepared prior to any habitat manipulation activities. This plan, prepared during watershed analysis or as an element of province-level planning or a Late-Successional Reserve assessment, should specify how hazard reduction and other prescribed fire applications will meet the objectives of the Late-Successional Reserve. Until the plan is approved, proposed activities will be subject to review by the Regional Ecosystem Office. The Regional Ecosystem Office may develop additional guidelines that would exempt some activities from review. In all Late-Successional Reserves, watershed analysis will provide information to determine the amount of coarse woody debris to be retained when applying prescribed fire.

In Riparian and Late-Successional Reserves, the goal of wildfire suppression is to limit the size of all fires. When watershed analysis, province-level planning, or a Late-Successional Reserve assessment are completed, some natural fires may be allowed to burn under prescribed conditions. Rapidly extinguishing smoldering coarse woody debris and duff should be considered to preserve these ecosystem elements.

*Special Forest Products* - Special forest products include but are not limited to posts, poles, rails, landscape transplants, yew bark, shakes, seed cones, Christmas trees, boughs, mushrooms, fruits, berries, hardwoods, forest greens (e.g., ferns, huckleberry, salal, beargrass, Oregon grape, and mosses), and medicinal forest products. In all cases, evaluate whether activities have adverse effects on Late-Successional Reserve objectives. Sales will ensure resource sustainability and protection of other resource values such as special status plant or animal species. Where these activities are extensive (e.g., collection of Pacific Yew bark or fungi), it will be appropriate to evaluate whether they have significant effects on late-successional habitat. Restrictions may be appropriate in some cases.

*Recreational Uses* - Dispersed recreational uses, including hunting and fishing, generally are consistent with the objectives of Late-Successional Reserves. Use adjustment measures such as education, use limitations, traffic control devices, or

other restrictions) related to all phases of mineral activity. The guiding principle will be to design mitigation measures that minimize detrimental effects to late-successional habitat.

*Developments* - Development of new facilities that may adversely affect Late-Successional Reserves should not be permitted. New development proposals that address public needs or provide significant public benefits, such as powerlines, pipelines, reservoirs, recreation sites, or other public works projects, will be reviewed on a case-by-case basis and may be approved when adverse effects can be minimized and mitigated. These will be planned to have the least possible adverse impacts on Late-Successional Reserves. Developments will be located to avoid degradation of habitat and adverse effects on identified late-successional species. Existing developments in Late-Successional Reserves such as campgrounds, recreation residences, ski areas, utility corridors, and electronic sites are considered existing uses with respect to Late-Successional Reserve objectives, and may remain, consistent with other standards and guidelines. Routine maintenance of existing facilities is expected to have less effect on current old-growth conditions than development of new facilities. Maintenance activities may include felling hazard trees along utility rights-of-way, trails, and other developed areas.

*Land Exchanges* - Land exchanges involving Late-Successional Reserves will be considered if they provide benefits equal to or better than current conditions. Consider land exchanges especially to improve area, distribution, and quality (e.g., connectivity, shape, contribution to biodiversity) of Late-Successional Reserves, especially where public and private lands are intermingled (e.g., checkerboard ownership).

*Habitat Improvement Projects* - Projects designed to improve conditions for fish, wildlife, or watersheds should be considered if they provide late-successional habitat benefits or if their effect on late-successional associated species is negligible. Projects required for recovery of threatened or endangered species should be considered even if they result in some reduction of habitat quality for other late-successional species. For example, watershed rehabilitation projects, such as felling trees along streams, will be coordinated with a wildlife biologist and may include seasonal restrictions. Design and implement watershed restoration projects in a manner that is consistent with Late-Successional Reserve objectives.

*Range Management* - Range-related management that does not adversely affect late-successional habitat will be developed in coordination with wildlife and fisheries biologists. Adjust or eliminate grazing practices that retard or prevent attainment of reserve objectives. Evaluate effects of existing and proposed livestock management and handling facilities in reserves to determine if reserve objectives are met. Where objectives cannot be met, relocate livestock management and/or handling facilities.



## ***Standards and Guidelines for Multiple-Use Activities Other Than Silviculture***

The following standards and guidelines apply to Late-Successional Reserves and Managed Late-Successional Areas.

As a general guideline, nonsilvicultural activities located inside Late-Successional Reserves that are neutral or beneficial to the creation and maintenance of late-successional habitat are allowed.

While most existing uses and development are envisioned to remain, it may be necessary to modify or eliminate some current activities in Late-Successional Reserves that pose adverse impacts. This may require the revision of management guidelines, procedures, or regulations governing these multiple-use activities. Adjustments in standards and guidelines must be reviewed by the Regional Ecosystem Office.

***Road Construction and Maintenance*** - Road construction in Late-Successional Reserves for silvicultural, salvage, and other activities generally is not recommended unless potential benefits exceed the costs of habitat impairment. If new roads are necessary to implement a practice that is otherwise in accordance with these guidelines, they will be kept to a minimum, be routed through nonlate-successional habitat where possible, and be designed to minimize adverse impacts. Alternative access methods, such as aerial logging, should be considered to provide access for activities in reserves.

Road maintenance may include felling hazard trees along rights-of-way. Leaving material on site should be considered if available coarse woody debris is inadequate. Topping trees should be considered as an alternative to felling.

***Fuelwood Gathering*** - Fuelwood gathering for home or commercial use will be permitted only in existing cull decks, where green trees are marked by silviculturists to thin (consistent with standards and guidelines), to remove blowdown blocking roads, and in recently harvested timber sale units where down material will impede scheduled post-sale activities or pose an unacceptable risk of future large-scale disturbances. In all cases these activities should comply with the standards and guidelines for salvage and silvicultural activities.

***American Indian Uses*** - The exercise of tribal treaty rights will not be restricted by these standards and guidelines unless the Regional Interagency Executive Committee determines that the restriction is (1) reasonable and necessary for preservation of the species at issue, (2) the conservation purpose of the restriction cannot be achieved solely by regulation of non-Indian activities, (3) the restriction is the least restrictive available to achieve the required conservation purpose, (4) the restriction does not discriminate against Indian activities either as stated or as applied, and (5) voluntary tribal conservation measures are not adequate to achieve the necessary conservation purpose.

***Mining*** - The impacts of ongoing and proposed mining actions will be assessed and mineral activity permits will include appropriate stipulations (e.g., seasonal or

6. Some salvage that does not meet the preceding guidelines will be allowed when salvage is essential to reduce the future risk of fire or insect damage to late-successional forest conditions. This circumstance is most likely to occur in the eastern Washington Cascades. It is important to understand that some risk associated with fire and insects is acceptable because they are natural forces influencing late-successional forest development. Consequently, salvage to reduce such risks should focus only on those areas where there is high risk of large-scale disturbance.
7. Removal of snags and logs may be necessary to reduce hazards to humans along roads and trails, and in or adjacent to campgrounds. Where materials must be removed from the site, as in a campground or on a road, a salvage sale is appropriate. In other areas, such as along roads, leaving material on site should be considered. Also, material will be left where available coarse woody debris is inadequate.
8. Where green trees, snags, and logs are present following disturbance, the green tree and snag guidelines will be applied first, and completely satisfied where possible. The biomass left in snags can be credited toward the amount of coarse woody debris biomass needed to achieve management objectives.
9. These basic guidelines may not be applicable after disturbances in younger stands because remnant coarse woody debris may be relatively small. In these cases, diameter and biomass retention guidelines should be developed consistent with the intention of achieving late-successional forest conditions.
10. Logs present on the forest floor before a disturbance event provide habitat benefits that are likely to continue. It seldom will be appropriate to remove them. Where these logs are in an advanced state of decay, they will not be credited toward objectives for coarse woody debris retention developed after a disturbance event. Advanced state of decay should be defined as logs not expected to persist to the time when the new stand begins producing coarse woody debris.
11. The coarse woody debris retained should approximate the species composition of the original stand to help replicate pre-existing suitable habitat conditions.
12. Some deviation from these general guidelines may be allowed to provide reasonable access to salvage sites and feasible logging operations. Such deviation should occur on as small a portion of the area as possible. Deviations should not result in violation of the basic intent that late-successional forest habitat or the development of such habitat in the future should not be impaired. While exceptions to the guidelines may be allowed to provide access and operability, some salvage opportunities will undoubtedly be foregone because of access, feasibility, and safety concerns.

The following guidelines are general. Specific guidelines should be developed for each physiographic province, and possibly for different forest types within provinces.

1. The potential for benefit to species associated with late-successional forest conditions from salvage is greatest when stand-replacing events are involved. Salvage in disturbed sites of less than ten acres is not appropriate because small forest openings are an important component of old-growth forests. In addition, salvage should occur only in stands where disturbance has reduced canopy closure to less than 40 percent, because stands with more closure are likely to provide some value for species associated with these forests.
2. Surviving trees will provide a significant residual of larger trees in the developing stand. In addition, defects caused by fire in residual trees may accelerate development of structural characteristics suitable for associated species. Also, those damaged trees that eventually die will provide additional snags. Consequently, all standing live trees should be retained, including those injured (e.g., scorched) but likely to survive. Inspection of the cambium layer can provide an indication of potential tree mortality.
3. Snags provide a variety of habitat benefits for a variety of wildlife species associated with late-successional forests. Accordingly, following stand-replacing disturbance, management should focus on retaining snags that are likely to persist until late-successional conditions have developed and the new stand is again producing large snags. Late-successional conditions are not associated with stands less than 80 years old.
4. Following a stand-replacing disturbance, management should retain adequate coarse woody debris quantities in the new stand so that in the future it will still contain amounts similar to naturally regenerated stands. The analysis that determines the amount of coarse woody debris to leave must account for the full period of time before the new stand begins to contribute coarse woody debris. As in the case of snags, province-level specifications must be provided for this guideline. Because coarse woody debris decay rates, forest dynamics, and site productivity undoubtedly will vary among provinces and forest types, the specifications also will vary.
5. Province-level plans will establish appropriate levels of coarse woody debris and decay rates to be used. Levels will be "typical" and will not require retention of all material where it is highly concentrated, or too small to contribute to coarse woody debris over the long time frames discussed. This standard and guideline represents one item to be considered and may indeed result in no salvage following windthrow in low density stands. As for other management activities, it is expected that salvage standards and guidelines will be refined through the implementation and adaptive management processes.

3. The activities will not prevent the Late-Successional Reserves from playing an effective role in the objectives for which they were established.

Such activities in older stands may also be undertaken in Late-Successional Reserves in other provinces if levels of the risk are particularly high.

### ***Guidelines for Salvage***

Salvage of dead trees is based on the following standards and guidelines, and is subject to review by the Regional Ecosystem Office. The Regional Ecosystem Office may develop criteria that would exempt some activities from review. Salvage of dead trees is not generally considered a silvicultural treatment within the context of these standards and guidelines.

Salvage is defined as the removal of trees from an area following a stand-replacing event such as those caused by wind, fires, insect infestations, volcanic eruptions, or diseases. Salvage guidelines are intended to prevent negative effects on late-successional habitat, while permitting some commercial wood volume removal. In some cases, salvage operations may actually facilitate habitat recovery. For example, excessive amounts of coarse woody debris may interfere with stand regeneration activities following some disturbances. In other cases, salvage may help reduce the risk of future stand-replacing disturbances. While priority should be given to salvage in areas where it will have a positive effect on late-successional forest habitat, salvage operations should not diminish habitat suitability now or in the future.

Tree mortality is a natural process in a forest ecosystem. Diseased and damaged trees are key structural components of late-successional forests. Accordingly, management planning for Late-Successional Reserves must acknowledge the considerable value of retaining dead and dying trees in the forest as well as the benefits from salvage activities.

In all cases, planning for salvage should focus on long-range objectives, which are based on desired future condition of the forest. Because Late-Successional Reserves have been established to provide high quality habitat for species associated with late-successional forest conditions, management following a stand-replacing event should be designed to accelerate or not impede the development of those conditions. The rate of development of this habitat will vary among provinces and forest types and will be influenced by a complex interaction of stand-level factors that include site productivity, population dynamics of live trees and snags, and decay rates of coarse woody debris. Because there is much to learn about the development of species associated with these forests and their habitat, it seems prudent to only allow removal of conservative quantities of salvage material from Late-Successional Reserves and retain management opportunities until the process is better understood.

be considered beneficial include thinnings in existing even-age stands and prescribed burning. For example, some areas within Late-Successional Reserves are actually young single-species stands. Thinning these stands can open up the canopy, thereby increasing diversity of plants and animals and hastening transition to a forest with mature characteristics.

*East [Side] of the Cascades* - The following activities in older stands may also be undertaken in westside Late-Successional Reserves if levels of fire risk are particularly high. Given the increased risk of fire in these areas due to lower moisture conditions and the rapid accumulation of fuels in the aftermath of insect outbreaks and drought, additional management activities are allowed in Late-Successional Reserves. Guidelines to reduce risks of large-scale disturbance are as follows:

*Guidelines to Reduce Risks of Large-Scale Disturbance* - Large-scale disturbances are natural events, such as fire, that can eliminate spotted owl habitat on hundreds or thousands of acres. Certain risk management activities, if properly planned and implemented, may reduce the probability of these major stand-replacing events. There is considerable risk of such events in Late-Successional Reserves in the Washington Eastern Cascades. Elevated risk levels are attributed to changes in the characteristics and distribution of the mixed-conifer forests resulting from past fire protection. These forests occur in drier environments, have had repeated insect infestations, and are susceptible to major fires. Risk reduction efforts are encouraged where they are consistent with the overall recommendations in these guidelines.

Silvicultural activities aimed at reducing risk shall focus on younger stands in Late-Successional Reserves. The objective will be to accelerate development of late-successional conditions while making the future stand less susceptible to natural disturbances. Salvage activities should focus on the reduction of catastrophic insect, disease, and fire threats. Treatments should be designed to provide effective fuel breaks wherever possible. The scale of salvage and other treatments, however, should not generally result in degeneration of currently suitable owl habitat or other late-successional conditions.

In some Late-Successional Reserves in these provinces, management that goes beyond these guidelines may be considered. Levels of risk in those Late-Successional Reserves are particularly high and may require additional measures. Consequently, management activities designed to reduce risk levels are encouraged in those Late-Successional Reserves even if a portion of the activities must take place in currently late-successional habitat. While risk-reduction efforts should generally be focused on young stands, activities in older stands may be appropriate if:

1. The proposed management activities will clearly result in greater assurance of long-term maintenance of habitat,
2. The activities are clearly needed to reduce risks, and

3. A history and description of current land uses within the reserve,
4. A fire management plan,
5. Criteria for developing appropriate treatments,
6. Identification of specific areas that could be treated under those criteria,
7. A proposed implementation schedule tiered to higher order (i.e.; larger scale) plans, and
8. Proposed monitoring and evaluation components to help evaluate if future activities are carried out as intended and achieve desired results. Only in unusual circumstances would silvicultural treatments, including prescribed fire, precede preparation of this management assessment. Late-Successional Reserve assessments are subject to review by the Regional Ecosystem Office. Until Late-Successional Reserve assessments are completed, fire suppression activities should be guided by land allocation objectives in coordination with local resource management specialists.

*Occupied Marbled Murrelet Sites* - Timber harvest is prohibited within occupied marbled murrelet habitat at least until completion of the Marbled Murrelet Recovery Plan. Silvicultural treatments in nonhabitat within the 0.5-mile circle must protect or enhance the suitable or replacement habitat. When objectives of the Marbled Murrelet Recovery Plan have been identified, management direction will be amended or revised as appropriate.

### ***Silviculture***

Thinning or other silvicultural treatments inside reserves are subject to review by the Regional Ecosystem Office to ensure that the treatments are beneficial to the creation of late-successional forest conditions. The Regional Ecosystem Office may develop criteria that would exempt some activities from review. Stand and vegetation management of any kind, including prescribed burning, is considered a silvicultural treatment. Excepted from review are reforestation activities legally required by, and planned as part of, existing sold timber sales, where the reforestation prescription has been modified as appropriate to meet the objectives of the Late-Successional Reserve.

Activities permitted in the western and eastern portions of the northern spotted owl's range are described separately below. Salvage of dead trees is described separately below, and is limited to stand-replacing disturbance events exceeding ten acres.

*West [Side] of the Cascades* - There is no harvest allowed in stands over 80 years old. Thinning (precommercial and commercial) may occur in stands up to 80 years old regardless of the origin of the stands (e.g., plantations planted after logging or stands naturally regenerated after fire or blowdown). The purpose of these silvicultural treatments is to benefit the creation and maintenance of late-successional forest conditions. Examples of silvicultural treatments that may

(as of January 1, 1994) spotted owl activity centers located on federal lands in the Matrix and Adaptive Management Areas. These areas are mapped on the GIS system. There is no intent to add additional spotted owl activity centers after January 1, 1994. This is intended to preserve an intensively used portion of the breeding season home range. "Activity center" is defined as an area of concentrated activity of either a pair of spotted owls or a territorial single owl. Timber management activities within the 100-acre area should comply with management guidelines for Late-Successional Reserves. Management around this area will be designed to reduce risks of natural disturbance. Because these areas are considered important to meeting objectives for species other than spotted owls, these areas are to be maintained even if they become no longer occupied by spotted owls.

b) Protection Buffers

Unmapped Late-Successional Reserves result from the application of Protection Buffers (see Late-Successional Reserve Protection Buffers in Chapter 2).

## Standards and Guidelines for Late-Successional Reserves

See also Chapter 2, Forest-wide Management Direction.

*Objectives* - Late-Successional Reserves are to be managed to protect and enhance conditions of late-successional and old-growth forest ecosystems, which serve as habitat for late-successional and old-growth related species including the northern spotted owl. These reserves are designed to maintain a functional, interacting, late-successional and old-growth forest ecosystem.

*Exceptions* - Research Natural Areas and activities required by recovery plans for listed threatened and endangered species take precedence over Late-Successional Reserve standards and guidelines.

*Management Assessment for Late-Successional Reserves* - A management assessment should be prepared for each large Late-Successional Reserve (or group of smaller Late-Successional Reserves) before habitat manipulation activities are designed and implemented. Land management agencies may choose to develop these assessments as components of legally-mandated plans (e.g., Forest Plans), as part of province-level planning, or as stand-alone assessments. If developed to stand alone, the assessments should be closely coordinated with subsequent watershed analysis and province-level planning. Standards and guidelines should be refined at the province level, prior to development of Late-Successional Reserve assessments. Late-Successional Reserve assessments should generally include:

1. A history and inventory of overall vegetative conditions within the reserve,
2. A list of identified late-successional associated species known to exist within the Late-Successional Reserve and information on their locations,

a) LS/OG 1s and 2s

Where LS/OG status is used to define the boundaries of a Late-Successional Reserve, the boundaries are fixed regardless of the future condition of those (or other) stands.

b) Occupied Marbled Murrelet Sites

The area close to marine environments associated with most marbled murrelet activity is referred to as Marbled Murrelet Zone 1. Zone 1 extends approximately 40 miles inland in Washington. Zone 2 is defined for survey purposes and does not affect land allocations.

Preproject surveys of marbled murrelet habitat are required according to protocol currently used by the federal agencies. Current protocol requires two years of surveys to assure that no marbled murrelet nests exist in areas planned for timber harvest. If behavior indicating occupation is documented (described below), all contiguous existing and recruitment habitat for marbled murrelets (i.e., stands that are capable of becoming marbled murrelet habitat within 25 years) within a 0.5-mile radius will be protected. The 0.5-mile radius circle should be centered on either the behavior indicating occupation, or within 0.5 mile of the location of the behavior, whichever maximizes interior old-growth habitat. When occupied areas are close to each other, the 0.5-mile circles may overlap.

Behavior indicating marbled murrelet occupation includes at least one of the following:

- 1) discovery of an active nest or a recent nest site as evidenced by a fecal ring or eggshell fragments,
- 2) discovery of a chick or eggshell fragments on the forest floor,
- 3) birds flying below, through, into, or out of the forest canopy within or adjacent to a stand,
- 4) birds perching, landing, or attempting to land on branches,
- 5) birds calling from a stationary location within the stand, and
- 6) birds flying in small or large radius circles above the canopy.

2. Unmapped Late-Successional Reserves

a) Known Spotted Owl Activity Centers

This standard and guideline applies to known spotted owl activity centers that are not protected by Congressionally Reserved Areas, Late-Successional Reserves, Riparian Reserves, Managed Late-Successional Areas, or Administratively Withdrawn Areas. One hundred acres of the best northern spotted owl habitat will be retained as close to the nest site or owl activity center as possible for all known



Late-successional forest communities are the result of a unique interaction of disturbance, regeneration, succession, and climate that can never be recreated in their entirety through management. The structure, species composition, and function of these forests are, in their entirety, not fully understood. Silvicultural restoration in early-successional forests, however, can accelerate the development of some of the structural and compositional features of late-successional forests. Because early-successional forests will regenerate by different processes during a different time period than existing late-successional forests, silviculturally created stands may look and function differently from current old-growth stands that developed over the last 1,000 years. Consequently, conservation of a network of natural old-growth stands maintains biodiversity into the future.

Desired late-successional and old-growth characteristics that will be created as younger stands change through successional development include: (1) multispecies and multilayered assemblages of trees, (2) moderate-to-high accumulations of large logs and snags, (3) moderate to high canopy closure, (4) imperfections such as cavities, broken tops, and large deformed limbs, and (5) moderate-to-high accumulations of fungi, lichens, and bryophytes. Although they may not be duplicates of existing old-growth forests, these stands could provide adequate habitat for many species in the long term.

Late-Successional Reserves have been designated based on five elements: (1) areas mapped as part of an interacting reserve system; (2) LS/OG 1 and 2 areas within Marbled Murrelet Zone 1, and certain owl additions, mapped by the Scientific Panel on Late-Successional Forest Ecosystems (1991); (3) sites occupied by marbled murrelets; (4) known owl activity centers; and (5) Protection Buffers for specific endemic species identified by the Scientific Analysis Team (SAT)(1993). Additional areas, such as 600 acres around known sites of fungus species *Oxyporous nobilissimus*, are protected under the survey and management standards and guidelines in Chapter 2.

#### 1. Mapped Late-Successional Reserves

Most Late-Successional Reserves are shown on the accompanying map as the purple shaded areas. They were designed to incorporate Key Watersheds to the extent possible, while remaining consistent with other objectives. They also incorporate some or parts of LS/OG1s and LS/OG2s (most ecologically significant and ecologically significant late-successional and old-growth forests, respectively, from the Scientific Panel on Late-Successional Forest Ecosystems [1991]) and some or parts of the Designated Conservation Areas (DCAs) from the Final Draft Spotted Owl Recovery Plan in the western portion of the range of the northern spotted owl.

## Chapter Five

# Late-Successional Reserves and Managed Late-Successional Areas

---

The ROD created two allocations to protect and enhance late-successional ecosystems; Late-Successional Reserves and Managed Late-Successional Areas. While they are very similar in their goals and objectives, in Managed Late-Successional Areas management is prescribed to reduce the potential for catastrophic loss. Only one Managed Late-Successional Area was identified on the Gifford Pinchot National Forest. Because they are so similar, this chapter contains direction for both allocations. Direction for Late-Successional Reserves is followed by direction for the Managed Late-Successional Area, beginning on page 5-15. Direction for underlying management areas is common to both categories of reserves and begins on page 5-17

Key and non-Key Watersheds are specified for all areas, and therefore overlay all other land allocations. For the portion of Late-Successional Reserves located within Key Watersheds, standards and guidelines for Key Watersheds as well as standards and guidelines for Late-Successional Reserves apply.

See “Hierarchy of Standards and Guidelines” in Chapter 1, and “Key Watersheds” in Chapter 2.

## Late-Successional Reserves

### Description

The objective of Late-Successional Reserves is to protect and enhance conditions of late-successional and old-growth forest ecosystems, which serve as habitat for late-successional and old-growth related species including the northern spotted owl.

These standards and guidelines include reserves designed to maintain and enhance late-successional forests as a network of existing old-growth forest ecosystems, although their size, distribution, and management varies. These reserves represent a network of existing old-growth forests that are retained in their natural condition with natural processes, such as fire, allowed to function to the extent possible. The reserves are designed to serve a number of purposes. First, they provide a distribution, quantity, and quality of old-growth forest habitat sufficient to avoid foreclosure of future management options. Second, they provide habitat for populations of species that are associated with late-successional forests. Third, they will help ensure that late-successional species diversity will be conserved.

Lewis River Aquatic Fund  
-- 2006-2007 Pre-proposal List --

Applicant	Project	Cost
U.S. Forest Service	East Fork Lewis River Instream Structures Steelhead	<b>\$80,000 request</b> <u>\$80,000 nonFund</u> \$160,000 Total
U.S. Forest Service	Bull trout Restoration and Management Plan for the Lewis River	<b>\$40,000 request</b> <u>\$34,000 nonFund</u> \$74,000 Total
U.S. Forest Service	Dispersed Camping and Day Use Road Restoration	<b>\$45,000 request</b> <u>\$8,000 nonFund</u> \$53,000 Total
U.S. Forest Service	Muddy River Floodplain Nutrient Enhancement	<b>\$39,000 request (yr 1)</b> <b>\$39,000 request (yr 2)</b> <u>\$23,000 nonFund</u> \$101,000 Total
U.S. Forest Service	Scotch Broom Removal on the Muddy River Floodplain	<b>\$30,000 request (yr 1)</b> <b>\$18,000 request (yr 2)</b> <u>\$32,000 nonFund</u> \$80,000 Total
U.S. Forest Service	Pine Creek Nutrient Enhancement	<b>\$39,000 request</b> <u>\$14,000 nonFund</u> \$53,000 Total
U.S. Forest Service	PIT Tag Detectors for Bull Trout in Upper Lewis River	<b>\$57,000 request (yr 1)</b> <b>\$13,000 request (yr 2)</b> <u>\$23,000 nonFund</u> \$93,000 Total
U.S. Forest Service	9015 Culvert Replacement	<b>\$100,000 request</b> <u>\$5,000 nonFund</u> \$105,000 Total
U.S. Forest Service	Rush Creek Gravel Restoration	<b>\$20,000 request</b> <u>\$4,000 nonFund</u> \$24,000 Total

Cowlitz Indian Tribe	Martin Access Riparian Forest and Off-channel Habitat Enhancement	<b>\$26,000 request</b> <u>\$5,000 nonFund</u> \$31,000 Total
Cowlitz Indian Tribe	Plas Newyd Riparian Forest Enhancement	<b>\$29,300 request</b> <u>\$5,000 nonFund</u> \$34,300 Total
Cowlitz Indian Tribe	Two Forks Access Riparian Forest Enhancement	<b>\$26,200 request</b> <u>\$5,000 nonFund</u> \$31,200 Total
Stillwater Sciences, Inc.	Prioritizing bull trout habitat restoration for the Lewis River: Development of a decision support tool to guide identification and selection of cost effective restoration projects	<b>\$50,000 request</b> (per applicant subject to discussion) <u>\$0 nonFund</u> \$50,000 Total

## Attachment C

Table 4.1. Funding Process Timeline (Revised per ACC comments 9/14/06)

<b>Activity</b>	<b>Target Milestone Date</b>
Submit Request For Pre-Proposal Forms	Early September
Pre-Proposal Forms due	Early October
Pre-Proposal Listing and Evaluation Report Submitted to ACC	Early November
Pre-Proposal Report Comments due from ACC	Late November
Finalize List of Selected Projects for Additional Consideration ( <b>Send list to FERC</b> )	Early December
Submit Request For Proposals to Selected Applicants	Early December
Proposals due	<b>Late</b> January
Proposal Evaluation Report Submitted to ACC (30 day review)	Mid February
Proposal Report Comments due	Mid March
<b>Finalize List of Selected Projects and Submit Report to FERC</b>	<b>Early April</b>
<b>Notify Project Funding Recipients</b>	<b>May</b>
<b>Contract Procurement</b>	<b>May</b>
<b>Funding Available for Invoicing</b>	<b>June</b>

Lewis River Spring Chinook			Timeline of H&S Actions										NOTE: KEY ASSUMPTION -- THE RETURNING NOR NUMBERS ARE SUFFICIENT TO START SEGREGATED POPULATION ABOVE SWIFT			
	Pre 2002	2002 - 2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016 - Future				
Hatchery	All returning fish available for broodstock program at hatchery. No differentiation between hatchery and wild fish	Fish with adipose fin segregated from hatchery fish. Only hatchery-marked fish used for broodstock.	Returning hatchery-origin (HOR) fish available for hatchery broodstock program. Any natural-origin returns (NOR) collected to be released back into river. Begin additional hatchery egg take per table 8.4 of the SA for harvest opportunity <b>dependent on HGMP approval.</b>	Returning HOR fish available for hatchery broodstock program. Any NORs collected to be released back into river. Additional hatchery egg take per table 8.4 of the SA for harvest opportunity	Returning HOR fish available for hatchery broodstock program. Any NORs collected to be released back into river. Additional hatchery egg take per table 8.4 of the SA for harvest opportunity	Returning HOR fish available for hatchery broodstock program. Any NORs collected to be released back into river. Additional hatchery egg take per table 8.4 of the SA for harvest opportunity. Begin rearing juvenile supplementation fish from hatchery broodstock.	Returning HOR fish available for hatchery broodstock program. Any NORs collected to be released back into river. Additional hatchery egg take per table 8.4 of the SA for harvest opportunity. Rear juvenile supplementation fish from hatchery broodstock.	Returning HOR fish available for hatchery broodstock program. Any NORs collected to be transported above Swift dam. Additional hatchery egg take per table 8.4 of the SA for harvest opportunity. Rear juvenile supplementation fish from hatchery broodstock.	Returning HOR fish available for hatchery broodstock program. Any NORs collected to be transported above Swift dam. Additional hatchery egg take per table 8.4 of the SA for harvest opportunity. Rear juvenile supplementation fish from hatchery broodstock.	Returning HOR fish available for hatchery broodstock program. Any NORs collected to be transported above Swift dam. Additional hatchery egg take per table 8.4 of the SA for harvest opportunity. Rear juvenile supplementation fish from hatchery broodstock.	Returning HOR fish available for hatchery broodstock program. Any NORs collected to be transported above Swift dam. Additional hatchery egg take per table 8.4 of the SA for harvest opportunity. Rear juvenile supplementation fish from hatchery broodstock.	Returning HOR fish available for hatchery broodstock program. Any NORs collected to be transported above Swift dam. Additional hatchery egg take per table 8.4 of the SA for harvest opportunity. Rear juvenile supplementation fish from hatchery broodstock.				
Construction of Fish Passage Facilities				Begin construction of fish passage facilities			Merwin Upstream and Swift Downstream fish collectors, Acclimation Ponds upstream of Swift, and Stress Relief Pond downstream of Merwin are completed and put into operation	Fish passage facilities operational	Fish passage facilities operational	Fish passage facilities operational	Fish passage facilities operational	Fish passage facilities operational				
							Test Swift FCE with Hatchery Juveniles	Test Swift FCE with Hatchery Juveniles	Monitoring and Evaluation Program	Monitoring and Evaluation Program	Monitoring and Evaluation Program	Monitoring and Evaluation Program				
Supplementation						Begin adult supplementation using available NOR fish	Adult supplementation with available NOR fish; begin juvenile fish supplementation with 100,000 fish from hatchery. Mark X juvenile NOR fish collected at Swift as upper basin origin.	Adult supplementation with available NOR fish; begin juvenile fish supplementation with 100,000 fish from hatchery. Mark X juvenile NOR fish collected at Swift as upper basin origin.	Adult supplementation with available NOR fish; begin juvenile fish supplementation with 100,000 fish from hatchery. Mark X juvenile NOR fish collected at Swift as upper basin origin.	Adult supplementation with available NOR fish; begin juvenile fish supplementation with 100,000 fish from hatchery. Mark X juvenile NOR fish collected at Swift as upper basin origin.	Adult supplementation with available NOR fish; begin juvenile fish supplementation with 100,000 fish from hatchery. Mark X juvenile NOR fish collected at Swift as upper basin origin.	Adult supplementation with available NOR fish; begin juvenile fish supplementation with 100,000 fish from hatchery. Mark X juvenile NOR fish collected at Swift as upper basin origin.				
HPP		HPP program - goal x fish	HPP program - goal x fish	HPP program - goal x fish	HPP program - goal x fish					Yale HPP Program - goal X fish	Yale HPP Program - goal X fish	Yale HPP Program - goal X fish				

Lewis River Spring Chinook			Timeline of H&S Actions										NOTE: KEY ASSUMPTION -- THE RETURNING NOR NUMBERS ARE INSUFFICIENT TO START SEGREGATED POPULATION ABOVE SWIFT			
	Pre 2002	2002 - 2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016 - Future				
Hatchery	All returning fish available for broodstock program at hatchery. No differentiation between ad and ad-clipped fish	Fish with adipose fin segregated from hatchery fish. Only hatchery fish used for broodstock.	All returning fish available for hatchery broodstock program. No differentiation between hatchery origin and natural origin fish. Natural origin fish used will be tracked within broodstock program. Begin additional egg take per table 8.4 of the SA for harvest opportunity	All returning fish available for hatchery broodstock program. No differentiation between hatchery origin and natural origin fish. Natural origin fish used will be tracked within broodstock program. Additional egg take per table 8.4 of the SA for harvest opportunity	All returning fish available for hatchery broodstock program. No differentiation between hatchery origin and natural origin fish. Natural origin fish used will be tracked within broodstock program. Additional egg take per table 8.4 of the SA for harvest opportunity	All returning fish available for hatchery broodstock program. No differentiation between hatchery origin and natural origin fish. Natural origin fish used will be tracked within broodstock program. Additional egg take per table 8.4 of the SA for harvest opportunity. Begin rearing juvenile supplementation fish.	All returning fish available for hatchery broodstock program. No differentiation between hatchery origin and natural origin fish. Natural origin fish used will be tracked within broodstock program. Additional egg take per table 8.4 of the SA for harvest opportunity. Rear fish for juvenile supplementation program.	All returning fish available for hatchery broodstock program. No differentiation between hatchery origin and natural origin fish. Natural origin fish used will be tracked within broodstock program. Additional egg take per table 8.4 of the SA for harvest opportunity. Rear fish for juvenile supplementation program.	All returning fish available for hatchery broodstock program. No differentiation between hatchery origin and natural origin fish. Natural origin fish used will be tracked within broodstock program. Additional egg take per table 8.4 of the SA for harvest opportunity. Rear fish for juvenile supplementation program.	Returning NOR fish will be transported upstream with X % retained for hatchery broodstock. Additional egg take per table 8.4 of the SA for harvest opportunity. Rear fish for juvenile supplementation program.	Returning NOR fish will be transported upstream with X % retained for hatchery broodstock. Additional egg take per table 8.4 of the SA for harvest opportunity. Rear fish for juvenile supplementation program.	Returning NOR fish will be transported upstream with X % retained for hatchery broodstock. Additional egg take per table 8.4 of the SA for harvest opportunity. Rear fish for juvenile supplementation program per H&S Plan.				
Construction of Fish Passage Facilities				Begin construction of fish passage facilities			Merwin Upstream and Swift Downstream fish collectors, Acclimation Ponds upstream of Swift, and Stress Relief Pond downstream of Merwin are completed and put into operation	Fish passage facilities operational	Fish passage facilities operational	Fish passage facilities operational	Fish passage facilities operational	Fish passage facilities operational				
Supplementation						Begin adult supplementation using hatchery fish	Adult supplementation with hatchery fish; begin juvenile fish supplementation with 100,000 fish from hatchery. Mark X juvenile NOR fish collected at Swift as upper basin origin.	Adult supplementation with hatchery fish; juvenile fish supplementation with 100,000 fish from hatchery. Mark X juvenile NOR fish collected at Swift as upper basin origin.	Adult supplementation with hatchery fish; juvenile fish supplementation with 100,000 fish from hatchery. Mark X juvenile NOR fish collected at Swift as upper basin origin.	Transported adults are mix of hatchery and NOR returns; juvenile fish supplementation with 100,000 fish from hatchery. Mark X juvenile NOR fish collected at Swift as upper basin origin.	Transported adults are mix of hatchery and NOR returns; juvenile fish supplementation with 100,000 fish from hatchery. Mark X juvenile NOR fish collected at Swift as upper basin origin.	Transported adults are NOR returns only; juvenile fish supplementation with 100,000 fish from hatchery. Mark X juvenile NOR fish collected at Swift as upper basin origin.				
HPP		HPP program - 154 hatchery fish	HPP program - goal x fish	HPP program - goal x fish	HPP program - goal x fish					Yale HPP Program - goal X fish	Yale HPP Program - goal X fish	Yale HPP Program - goal X fish				

Lewis River Coho (Type S)		Timeline of H&S Actions										NOTE: KEY ASSUMPTION -- USE TYPE S HATCHERY STOCK TO START SEGREGATED POPULATION ABOVE SWIFT
	Pre 2002	2002 - 2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016 - Future
Hatchery	All returning fish available for broodstock program at hatchery. No differentiation between ad and ad-clipped fish	All returning HOR fish available for hatchery broodstock program. <b>NOR fish are returned to river.</b>	All returning HOR fish available for hatchery broodstock program. <b>NOR fish are returned to river.</b> Adjust egg take per table 8.4 of the SA for harvest opportunity.	All returning HOR fish available for hatchery broodstock program. <b>NOR fish are returned to river.</b> Adjust egg take per table 8.4 of the SA for harvest opportunity.	All returning HOR fish available for hatchery broodstock program. <b>NOR fish are returned to river.</b> Adjust egg take per table 8.4 of the SA for harvest opportunity.	All returning HOR fish available for hatchery broodstock program. <b>NOR fish are returned to river.</b> Adjust egg take per table 8.4 of the SA for harvest opportunity.	All returning HOR fish available for hatchery broodstock program. <b>NOR fish are returned to river.</b> Adjust egg take per table 8.4 of the SA for harvest opportunity.	All returning HOR fish available for hatchery broodstock program. <b>NOR fish are returned to river.</b> Adjust egg take per table 8.4 of the SA for harvest opportunity.	All returning HOR fish available for hatchery broodstock program. <b>NOR fish are returned to river.</b> Adjust egg take per table 8.4 of the SA for harvest opportunity.	All returning HOR fish available for hatchery broodstock program. <b>NOR fish are returned to river.</b> Adjust egg take per table 8.4 of the SA for harvest opportunity.	All returning HOR fish available for hatchery broodstock program. <b>NOR fish are returned to river.</b> Adjust egg take per table 8.4 of the SA for harvest opportunity.	All returning HOR fish available for hatchery broodstock program. <b>NOR fish are returned to river.</b> Adjust egg take per table 8.4 of the SA for harvest opportunity.
Construction of Fish Passage Facilities				Begin construction of fish passage facilities			Merwin Upstream and Swift Downstream fish collectors, Acclimation Ponds upstream of Swift, and Stress Relief Pond downstream of Merwin are completed and put into operation	Fish passage facilities operational	Fish passage facilities operational	Fish passage facilities operational	Fish passage facilities operational	Fish passage facilities operational
							Test Swift FCE with Hatchery Juveniles	Test Swift FCE with Hatchery Juveniles	Monitoring and Evaluation Program	Monitoring and Evaluation Program	Monitoring and Evaluation Program	Monitoring and Evaluation Program
Supplementation						Begin adult supplementation. Transport 9,000 (minumum) NOR and HOR adult coho to above Swift.	Transport all NORs collected then supplement with HOR adult coho to reach transport of 9,000 (minumum) adults to above Swift. Mark X juvenile NOR fish collected at Swift as upper basin origin.	Transport all NORs collected then supplement with HOR adult coho to reach transport of 9,000 (minumum) adults to above Swift. Mark X juvenile NOR fish collected at Swift as upper basin origin.	Transport all NORs collected then supplement with HOR adult coho to reach transport of 9,000 (minumum) adults to above Swift. Mark X juvenile NOR fish collected at Swift as upper basin origin.	Transport all NORs collected then supplement with HOR adult coho to reach transport of 9,000 (minumum) adults to above Swift. Mark X juvenile NOR fish collected at Swift as upper basin origin.	Transport all NORs collected then supplement with HOR adult coho to reach transport of 9,000 (minumum) adults to above Swift. Mark X juvenile NOR fish collected at Swift as upper basin origin.	Transport all NORs collected then supplement with HOR adult coho to reach transport of 9,000 (minumum) adults to above Swift. Mark X juvenile NOR fish collected at Swift as upper basin origin.
HPP		HPP program - goal 2,000 fish	HPP program - goal 2,000 fish	HPP program - goal 2,000 fish	HPP program - goal 2,000 fish					Yale HPP Program - goal 2,000 fish	Yale HPP Program - goal 2,000 fish	Yale HPP Program - goal 2,000 fish



Winter Steelhead

Lewis River Winter Steelhead		Timeline of H&S Actions											NOTE: KEY ASSUMPTION -- THE RETURNING NOR NUMBERS ARE SUFFICIENT TO IMMEDIATELY START SEGREGATED POPULATION ABOVE SWIFT				
	Pre 2002	2002 - 2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016 - Future					
Hatchery		Collect HOR adults for use as broodstock.	Collect HOR adults for use as broodstock. Adjust egg take per table 8.4 of the SA for harvest opportunity.	Collect HOR adults for use as broodstock. Adjust egg take per table 8.4 of the SA for harvest opportunity.	Collect HOR adults for use as broodstock. Adjust egg take per table 8.4 of the SA for harvest opportunity.	Collect HOR adults for use as broodstock. Adjust egg take per table 8.4 of the SA for harvest opportunity.	Collect HOR adults for use as broodstock. Adjust egg take per table 8.4 of the SA for harvest opportunity.	Collect HOR adults for use as broodstock. Adjust egg take per table 8.4 of the SA for harvest opportunity.	Collect HOR adults for use as broodstock. Adjust egg take per table 8.4 of the SA for harvest opportunity.	Collect HOR adults for use as broodstock. Adjust egg take per table 8.4 of the SA for harvest opportunity.	Collect HOR adults for use as broodstock. Adjust egg take per table 8.4 of the SA for harvest opportunity.	Collect HOR adults for use as broodstock. Adjust egg take per table 8.4 of the SA for harvest opportunity.					
Construction of Fish Passage Facilities				Begin construction of fish passage facilities			Merwin Upstream and Swift Downstream fish collectors, Acclimation Ponds upstream of Swift, and Stress Relief Pond downstream of Merwin are completed and put into operation	Fish passage facilities operational	Fish passage facilities operational	Fish passage facilities operational	Fish passage facilities operational	Fish passage facilities operational					
							Test Swift FCE with Hatchery Juveniles	Test Swift FCE with Hatchery Juveniles	Monitoring and Evaluation Program	Monitoring and Evaluation Program	Monitoring and Evaluation Program	Monitoring and Evaluation Program					
Supplementation			Collect NOR adults for use as supplementation broodstock; take eggs to produce 50,000 smolts (age 1+). Rear then release smolts into Lewis River.	Collect NOR adults for use as supplementation broodstock; take eggs to produce 50,000 smolts (age 1+). Rear then release smolts into Lewis River.	Collect NOR adults for use as supplementation broodstock; take eggs to produce 50,000 smolts (age 1+). Rear then release smolts into Lewis River.	Collect NOR adults for use as supplementation broodstock; take eggs to produce 50,000 smolts (age 1+). Rear then release smolts into Lewis River. Any Enhanced Natural stock returns (rtns from 50,000 smolts) will be transported above Swift dam.	Collect NOR adults for use as supplementation broodstock; take eggs to produce 50,000 smolts (age 1+). Rear then release smolts into Lewis River. Any Enhanced Natural stock returns (rtns from 50,000 smolts) will be transported above Swift dam. Mark juvenile NOR fish collected at Swift as upper basin origin.	Collect NOR adults for use as supplementation broodstock; take eggs to produce 50,000 smolts (age 1+). Rear then release smolts into Lewis River. Any Enhanced Natural stock returns (rtns from 50,000 smolts) will be transported above Swift dam. Mark juvenile NOR fish collected at Swift as upper basin origin.	Collect NOR adults for use as supplementation broodstock; take eggs to produce 50,000 smolts (age 1+). Rear then release smolts into Lewis River. Any Enhanced Natural stock returns (rtns from 50,000 smolts) will be transported above Swift dam. Mark juvenile NOR fish collected at Swift as upper basin origin.	Collect NOR adults for use as supplementation broodstock; take eggs to produce 50,000 smolts (age 1+). Rear then release smolts into Lewis River. Any Enhanced Natural stock returns (rtns from 50,000 smolts) will be transported above Swift dam. Mark juvenile NOR fish collected at Swift as upper basin origin.	Collect NOR adults for use as supplementation broodstock; take eggs to produce 50,000 smolts (age 1+). Rear then release smolts into Lewis River. Any Enhanced Natural stock returns (rtns from 50,000 smolts) will be transported above Swift dam. Mark juvenile NOR fish collected at Swift as upper basin origin.	Collect NOR adults for use as supplementation broodstock; take eggs to produce 50,000 smolts (age 1+). Rear then release smolts into Lewis River. Any Enhanced Natural stock returns (rtns from 50,000 smolts) will be transported above Swift dam. Mark juvenile NOR fish collected at Swift as upper basin origin.					
HPP		None	None	None	None						Yale HPP Program - goal X fish	Yale HPP Program - goal X fish	Yale HPP Program - goal X fish				