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# Chapter 5

## Cumulative Effects

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- 5.1 Introduction
- 5.2 Context for Analysis
- 5.3 Analysis of Cumulative Effects





5. CUMULATIVE EFFECTS

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14

5. CUMULATIVE EFFECTS	5-1
5.1 INTRODUCTION .....	5-1
5.2 CONTEXT FOR ANALYSIS .....	5-2
5.2.1 Land Ownership and Past and Present Land Uses .....	5-2
5.2.2 Statutes, Regulations, Plans, and Programs.....	5-5
5.3 ANALYSIS OF CUMULATIVE EFFECTS .....	5-29
5.3.1 Air Quality .....	5-29
5.3.2 Land Ownership and Use .....	5-30
5.3.3 Aquatic Resources .....	5-31
5.3.4 Vegetation and Wildlife.....	5-41
5.3.5 Social and Economic Environment and Archeological, Historical, and Cultural Resources .....	5-47

5.1 INTRODUCTION

15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
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The National Environmental Policy Act (NEPA) defines cumulative effects as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR1508.7). This chapter presents an analysis of the cumulative effects (negative or beneficial) of the alternatives, including No Action, on the environment in the context of other local, State, tribal, and Federal management activities in the State of Washington.

The substantive scope of this cumulative effects analysis is predicated on a review of statutes, regulations, plans, and programs that may interact with the Washington Forest Practices Rules and/or pertain to forest environments, and that may have a direct or indirect effect on aquatic resources. These statutes, regulations, plans, and programs are described in subsection 5.2.2 (Statutes, Regulations, Plans, and Programs). Due to the large geographic scope of the analysis area, it is not feasible to analyze all habitat-specific activities that are occurring, have occurred in the past, or that will occur in the future in a quantitative manner. By reviewing applicable statutes, regulations, plans, and programs the analysis captures the intent of management activities that are occurring or are planned to occur that may interface with aquatic resources on lands regulated by the Washington Forest Practices Rules. It is assumed that no management activity is occurring or would occur outside of an implemented statute, regulation, plan, or program at the Federal, tribal, State, or local level. Although the analysis is necessarily qualitative, it provides a thorough review of other activities within the region that, when combined with the alternatives considered in this Draft Environmental Impact Statement (DEIS), could have a negative or beneficial effect on aquatic resources.

The chapter begins with a description of the context for the cumulative effects analysis; first providing an overview of land management and use within the State, then describing the statutes, regulations, plans, and programs with potential cumulative effects



## Chapter 5

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1 implications (for Federal, State, and local programs). The discussion of cumulative  
2 effects is grouped into the following categories:

- 3 • Air Quality
- 4 • Land Ownership and Use
- 5 • Aquatic Resources
- 6 • Vegetation and Wildlife
- 7 • Social, Economic, and Cultural Issues

### 8 **5.2 CONTEXT FOR ANALYSIS**

9 The analysis area for the project is the entire State of Washington, which contains  
10 approximately 43 million acres. Subsection 5.2.1 (Land Ownership and Past and Present  
11 Land Uses) provides context for the cumulative effects analysis by summarizing the  
12 present ownership of lands in the State, as well as the past and present uses of these  
13 lands. Subsection 5.2.2 (Statutes, Regulations, Plans, and Programs) provides further  
14 context by summarizing other ongoing and reasonably foreseeable future actions as  
15 statutes, regulations, plans, and programs. Additional actions and other programs that are  
16 relevant to the cumulative effects analysis of a specific resource area are identified in  
17 Section 5.3 (Analysis of Cumulative Effects) as appropriate.

#### 18 **5.2.1 Land Ownership and Past and Present Land Uses**

19 Land ownership and use is extremely varied within the State and is described in  
20 subsection 3.2 (Land Ownership and Use). This subsection provides a general overview  
21 as context for the reader. It also summarizes land uses from an historical perspective.  
22 Subsection 3.2 should be referred to for further discussion, but many other subsections of  
23 Chapter 3 (Affected Environment) include descriptions of past land use practices and  
24 their resulting effects on present conditions (e.g., subsection 3.4.2.3, History of Forest  
25 Practices Affecting Erosion and Sedimentation; subsection 3.7.1.6, Historic Protection of  
26 Riparian Areas; and subsection 3.7.2.5, Historic/Current Wetland Protection). Also,  
27 DEIS Appendix A (Regional Summaries) describes current conditions by analysis region,  
28 which represents the effects of past land use practices.

##### 29 **5.2.1.1 Land Ownership**

30 As discussed in subsection 3.2.1 (Introduction), Federal lands cover about 30 percent of  
31 the State and are dominant in the mountainous regions (Table 3-1). Slightly over one-  
32 third of the Federal land (11 percent of the State) is in a highly protected management  
33 status, such as wildernesses, national parks, and wildlife refuges. The majority of the  
34 remaining Federal land is in national forests outside of wilderness; a large portion of  
35 these National Forest lands are managed under a protected status identified by the  
36 Northwest Forest Plan (USDA Forest Service and USDI Bureau of Land Management  
37 1994) (subsection 5.2.1.2, Past and Present Land Uses). State lands cover about 10  
38 percent of Washington. The vast majority of these lands (about 8 percent of the State)  
39 are managed by Washington DNR. Most of the remainder is in State Wildlife Areas and  
40 State Parks. Counties and cities own less than 1 percent of the State, and tribal lands  
41 cover about 7 percent. The remaining 53 percent of the lands are in private ownership.



1 In western Washington, Federal lands comprise 34 percent of the area. Over half of this  
2 area (18 percent of western Washington) consists of Federal lands with a highly protected  
3 management status (i.e., wildernesses, national parks, and wildlife refuges). The majority  
4 of the remaining Federal land is in national forests outside of wilderness; a large portion  
5 of these National Forest System lands are managed under a protected status identified by  
6 the Northwest Forest Plan (USDA Forest Service and USDI Bureau of Land Management  
7 1994) (subsection 5.2.1.2, Past and Present Land Uses). State lands comprise about 12  
8 percent of western Washington, and Washington DNR manages the vast majority of these  
9 lands (about 11 percent of the westside). Counties and cities own about 1 percent, and  
10 tribal lands comprise about 2 percent of western Washington. Private lands make up the  
11 remaining 50 percent of westside lands.

12 About 27 percent of eastern Washington lands are in Federal ownership. About one-  
13 quarter of these lands (7 percent of the eastside) is comprised of Federal lands with a  
14 highly protected management status (i.e., wildernesses, national parks, and wildlife  
15 refuges). The majority of the remaining Federal land is in national forests outside of  
16 wilderness. State lands comprise about 9 percent of the eastside of the State, and  
17 Washington DNR manages the vast majority of these lands (about 7 percent of eastern  
18 Washington). Counties and cities own much less than 1 percent of the lands. Tribal  
19 lands (primarily the Yakama, Colville, and Spokane Indian Reservations) comprise 10  
20 percent of the eastside land area, and private lands make up 55 percent of eastern  
21 Washington lands.

### 22 **5.2.1.2 Past and Present Land Uses**

23 Washington State has a highly varied history of land development and use, but the major  
24 factors influencing present conditions have occurred in the past 100 years. Major factors  
25 have included conversion of lands to urban and industrial developments; diking,  
26 channelizing, hydropower development, and water withdrawals along rivers; conversion  
27 of lands to agriculture; forest management and associated road development;  
28 development of highways and road systems throughout the State; and mining activities.  
29 This development has produced the present distribution of land cover types in the State  
30 (Table 3-2), with major differences among regions of the State and between the west and  
31 eastsides. Descriptions of the historic development in the State are presented by analysis  
32 region in DEIS Appendix A. The information contained in these regional summaries has  
33 been considered throughout this cumulative effects analysis.

34 In western Washington, 83 percent of the land is presently forested, agricultural lands make  
35 up 5 percent, urban-industrial lands make up 4 percent, and the remaining 8 percent are  
36 comprised of water and wetlands, ice/snow and bare rock, shrubland, and grassland. Most  
37 of the development has occurred along Puget Sound and along the major river systems.

38 In contrast, eastern Washington is 36 percent forested; 26 percent agricultural; 35 percent  
39 shrubland and grassland; 1 percent urban-industrial; and the remaining 3 percent water,  
40 wetlands, ice/snow, and bare rock. Major hydroelectric and irrigation developments  
41 along the Columbia River system have resulted in the greatest change in eastern  
42 Washington, particularly in non-forested areas.



## Chapter 5

1 Development and land use in Washington State has been heavily affected by the  
 2 distribution and size of the human population, and the human population is expected to  
 3 continue growing at a rapid rate (subsection 3.14, Social and Economic Environment).  
 4 The State's population grew by 21 percent from 1990 to 2000 and is projected to  
 5 continue to grow at a fairly rapid rate over the next 20 years (Washington Office of  
 6 Financial Management 2004). Increasing population will increase urban and industrial  
 7 development and result in continued conversion of forestland to other types of land use.

8 The present ownership and management of Washington's forestlands are summarized in  
 9 Table 3-3. This table shows that 32 percent of the forestlands in western Washington are  
 10 in Federal or State protected status lands that are not primarily managed for timber  
 11 production. This includes lands that are in wildernesses, national and State parks, and  
 12 wildlife refuges, but also includes lands set aside by the Northwest Forest Plan in late  
 13 successional reserves and adaptive management areas (See below) (USDA Forest Service  
 14 and USDI Bureau of Land Management 1994). About 7 percent of the westside  
 15 forestlands are in other Federal or tribal ownerships. The remaining 62 percent of the  
 16 westside forests are subject to Washington Forest Practices Rules and consist of State  
 17 lands (13 percent), private lands (47 percent), and county and city lands (less than 2  
 18 percent). Many of these lands that are subject to the Washington Forest Practices Rules  
 19 are also managed under a Habitat Conservation Plan (HCP) agreement under the  
 20 Endangered Species Act that restricts forest management activities. For example, most of  
 21 the State forestlands in western Washington are managed under the State Trust Lands  
 22 HCP (12 percent of the westside forests) (Washington DNR 1997d), and a portion of the  
 23 private lands (3 percent of westside forests) and city/county lands (1 percent of westside  
 24 forests) are managed under individual HCPs (subsection 5.2.2.3, Local Statutes and  
 25 Regulations and Local and Private Plans and Programs) (Table 5-1). As a result, of the

26 **Table 5-1.** Habitat Conservation Plans in Washington State (as of June 1, 2004).

Name	Species	Approximate Start Date <sup>1/</sup>	Status	Acres <sup>2/</sup>
West Fork Timber <sup>3/</sup>	Spotted Owl	1992	Completed 1993	53,500
West Fork Timber	All Species	1994	Completed 1995	53,500
Scofield	Spotted Owl	1996	Completed 1996 <sup>4/</sup>	40
Plum Creek (Cascades)	All Vertebrates	1993	Completed 1996	170,000
Port Blakely (Robert B. Eddy)	All Species	1994	Completed 1996	7,500
Washington DNR	All Species	1993	Completed 1997	1,600,000
Seattle Public Utilities	Multiple Species	1994	Completed 2000	91,000
Green Diamond Resource Company <sup>5/</sup>	Multiple Species	1997	Completed 2000	262,000
Tacoma Water	Multiple Species	1997	Completed 2001	15,000
Boise Cascade	Spotted Owl	2001	Completed 2001	620
Day Break Mine (Storehdahl)	Aquatic Species	1999	Completed 2004	300

27 <sup>1/</sup> Start dates are approximate. Applicants often prepare in advance of initiating active involvement with the Services.

28 <sup>2/</sup> Acres presented here are rounded from acres reported in the original HCP documents. In some cases, lands have been added to or  
 29 subtracted from that reported in the original documents and actual acres managed presently under the HCPs may be slightly different.

30 <sup>3/</sup> Previously known as the Murray-Pacific Corporation, name was changed to the original company name.

31 <sup>4/</sup> The original documents were completed in 1996. However, unlike the other completed HCPs, this resulted in a short-term (1 year)  
 32 permit, which has since expired. The mitigation continues in the form of a perpetual deed restriction.

33 <sup>5/</sup> Previously known as the Simpson Resource Company.

34 Source: USFWS 2004a.



1 62 percent of westside forests subject to Washington Forest Practices Rules, almost one-  
2 quarter of them (15 percent of westside forests) are covered under existing HCPs. Figure  
3 5-1 gives a statewide view of the forestlands in Washington, along with broad categories  
4 of preservation and conservation.

5 In eastern Washington, about 24 percent of all forestlands are in Federal or State  
6 protected status that is not primarily managed for timber production. About 43 percent of  
7 the eastside forests are in other Federal or tribal ownerships. The remaining 34 percent of  
8 the eastside forests are subject to Washington Forest Practices Rules and consist of State  
9 lands (7 percent), private lands (26 percent), and a very small amount of city/county lands  
10 (much less than 1 percent). Of the 34 percent of eastside forests subject to Washington  
11 Forest Practices Rules, about 10 percent (3 percent of eastside forests) are covered under  
12 existing HCPs (Figure 5-1).

13 The present condition of most forestlands and associated riparian areas in Washington  
14 State is a function of historic timber harvest, associated road construction activities, and  
15 many other activities (See above). These activities have occurred over a period of more  
16 than 100 years, during which there were few environmental restrictions. Prior to the  
17 adoption of the Washington Forest Practices Act in 1974, there were no rules or  
18 regulations that protected public resources from the impacts of forest practices activities  
19 on State and private forestlands. The Washington Forest Practices Rules have become  
20 more restrictive ever since, culminating with the current Washington Forests Practices  
21 Rules adopted in 2001. In part, changes to the rules have been due to an evolving  
22 understanding of the scientific underpinnings associated with public resource protection.  
23 Also, in an effort to increase protection of the environment, public interest groups have  
24 identified areas for improvement in resource protection.

25 As a result of timber harvest and other activities during the periods with less restrictive  
26 regulations, the condition of riparian areas on State and private lands is now dominated by  
27 early and mid-seral vegetation (subsection 3.7.1.7, Current Condition of Riparian Areas).  
28 Similarly, as a result of extensive road development and harvest on unstable slopes,  
29 sediment-related impacts have occurred in many watersheds (subsection 3.4.2.3, History  
30 of Forest Practices Affecting Erosion and Sedimentation). In addition, many other land  
31 uses discussed above have added to adverse impacts that have occurred due to past  
32 actions. Although the sources of many of these problems have been corrected, many  
33 riparian areas and stream systems on forestlands have not yet fully recovered from forest  
34 practices conducted prior to the 1974 Washington Forest Practices Act. Some resources,  
35 such as large woody debris (LWD), may require many additional decades to fully recover.

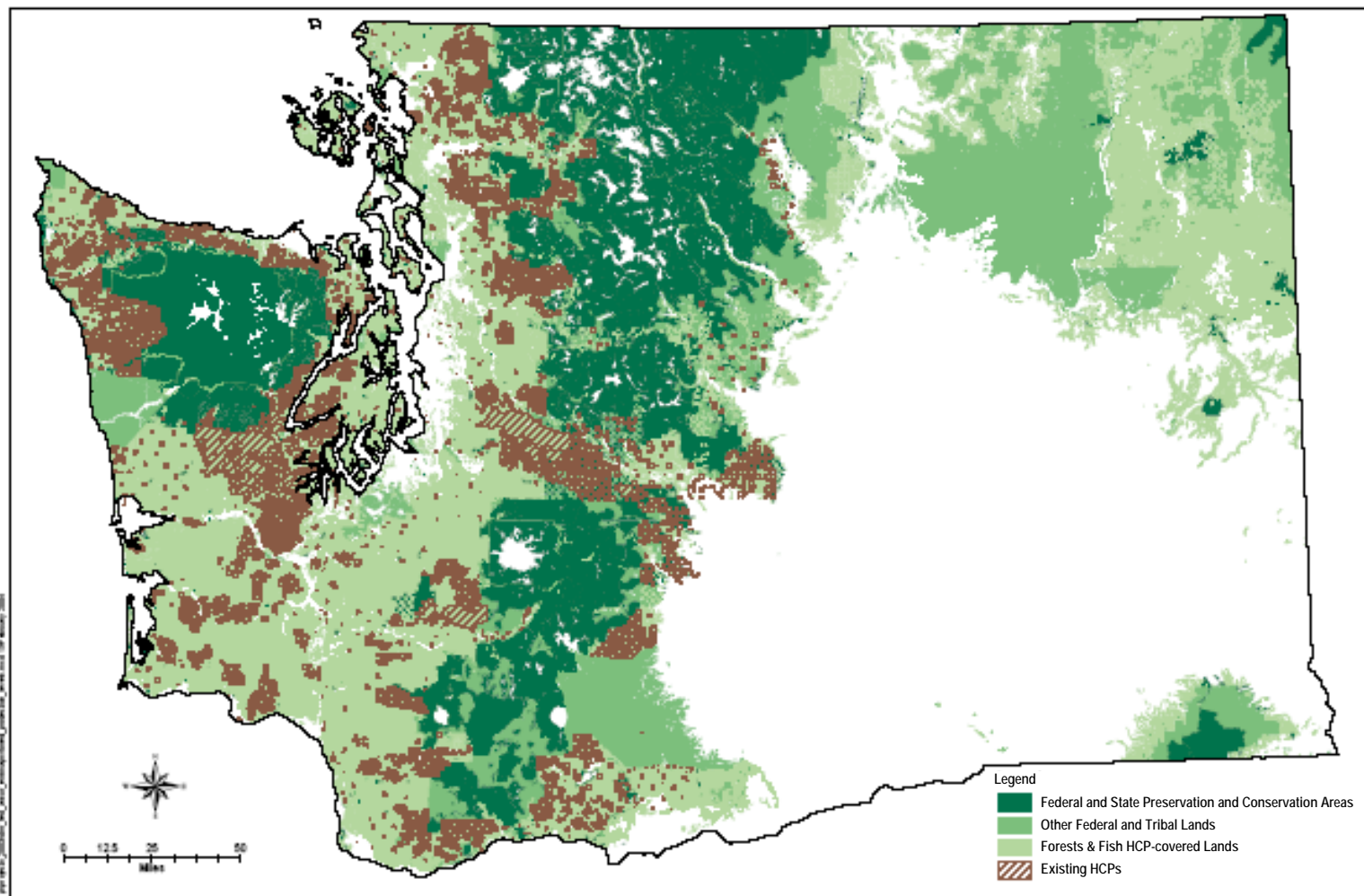
### 36 **5.2.2 Statutes, Regulations, Plans, and Programs**

37 This subsection presents a summary of the statutes, regulations, plans, and programs with  
38 cumulative effects implications for the proposed action and the alternatives. Federal,  
39 State, and local government statutes, regulations, plans, and programs may interact with  
40 the Washington Forest Practices Rules under all of the alternatives; working together to  
41 cumulatively affect species and their habitat, in either a positive or negative manner.



## Chapter 5

Figure 5-1. Forestlands in Washington State by Broad Protection/Conservation Category.







1 These statutes, regulations, plans, and programs are considered and factored into the  
2 effects analysis in subsection 5.3 (Analysis of Cumulative Effects). Following is a brief  
3 summary of those statutes, regulations, plans, and programs most relevant to forest  
4 practices activities. Others are discussed in subsection 5.3, as appropriate.

### 5 **5.2.2.1 Federal Statutes, Regulations, Plans, and Programs**

#### 6 **Endangered Species Act**

7 The Endangered Species Act (ESA) was passed in 1973 and is intended to protect and  
8 conserve species listed as endangered or threatened and conserve the habitats upon which  
9 they depend. Furthermore, the ESA mandates that all Federal agencies seek to conserve  
10 endangered and threatened species and use their resources and authorities to further such  
11 purposes. See subsection 1.5.1.1 (Endangered Species Act) for a description of the ESA  
12 and the sections of the Act related to this project. Of particular note here is Section 10 of  
13 the ESA. This section allows the Services to issue an Incidental Take Permit (ITP),  
14 which authorizes the take of listed species by non-Federal entities. To obtain an ITP,  
15 applicants must manage their lands under an approved HCP. The approved HCPs in  
16 Washington are discussed in subsection 5.2.2.2 (State Statutes, Regulations, Plans, and  
17 Programs) and 5.2.2.3 (Local Statutes and Regulations and Local and Private Plans and  
18 Programs).

19 The 1982 and 1988 amendments to the ESA require that recovery plans be developed and  
20 implemented to promote the conservation of listed species. Recovery plans have been  
21 developed for some threatened and endangered species in Washington. These are  
22 discussed in subsection 5.3 (Analysis of Cumulative Effects), where appropriate.

23 Specific forest practices conducted on or near critical habitat of State-designated  
24 threatened and endangered species are considered Class IV Special forest practices and  
25 must comply with the State Environmental Policy Act (SEPA) as well as other species  
26 specific protection measures listed in WAC 222-16-080.

27 Cumulatively, the proposed action and the ESA objectives would continue to protect  
28 listed species in the State of Washington through compatible resource management. As  
29 stated above, the objectives of the ESA are to protect and conserve species listed as  
30 endangered or threatened and to conserve the habitats upon which they depend.  
31 Implementation of the proposed action would be consistent with these objectives by  
32 furthering habitat protections on forestlands regulated by the Forest Practices Act in the  
33 State of Washington. This would be accomplished through measures aimed at protecting  
34 riparian and aquatic habitats such as Riparian Management Zones (RMZs), no-harvest  
35 buffers around unstable slopes, and implementation of road maintenance and  
36 abandonment plans.

#### 37 **Clean Water Act**

38 The Clean Water Act (33 U.S.C. 1251), under the jurisdiction of the Environmental  
39 Protection Agency (EPA), was enacted in 1972 and is the cornerstone of surface water  
40 quality protection in the United States. The statute employs a variety of regulatory and  
41 non-regulatory tools to reduce direct pollutant discharges into waterways, manage



## Chapter 5

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1 polluted runoff, and finance municipal wastewater treatment facilities and non-point  
2 source pollution control activities. These tools are employed to achieve the broader goal  
3 of restoring and maintaining the chemical, physical, and biological integrity of the  
4 Nation’s waters so that they can support “the protection and propagation of fish, shellfish,  
5 and wildlife and recreation in and on the water.”

6 For many years, the Clean Water Act’s focus was mainly on restoring and maintaining  
7 the chemical integrity of water bodies. During the last decade, however, more attention  
8 has been given to water’s physical and biological integrity. Evolution of Clean Water  
9 Act programs has also included a shift from a program-by-program, source-by-source,  
10 pollutant-by-pollutant approach to more holistic watershed-based strategies in which  
11 equal emphasis is placed on protecting healthy waters and restoring impaired ones. The  
12 Washington Department of Ecology is the agency responsible for carrying out the  
13 provisions of the Clean Water Act (See subsection 5.2.2.2, Washington Department of  
14 Ecology Water Quality Plans and Programs, for further elaboration on the Clean Water  
15 Act and how it interacts with the Washington Forest Practices Rules).

16 Cumulatively, the proposed action and the strategies of the Clean Water Act would  
17 continue to protect listed species in the State of Washington through compatible resource  
18 management. As stated above, the strategies of the Clean Water Act are to protect  
19 healthy waters and restore impaired ones. Implementation of the proposed action would  
20 be consistent with these strategies by protecting and restoring aquatic resources on  
21 forestlands regulated by the Washington Forest Practices Act. This would be  
22 accomplished through measures aimed at protecting riparian habitat and aquatic resources  
23 such as RMZs, no-harvest buffers around unstable slopes, and implementation of road  
24 maintenance and abandonment plans. Consistent with the Ecology’s policy guidance for  
25 Section 303(d) listings, the proposed action would also employ adaptive management as  
26 a primary component to reduce scientific uncertainty and to determine the effectiveness  
27 of the protection measures (Washington Department of Ecology 2002d).

### 28 **National Historic Preservation Act**

29 The National Historic Preservation Act (NHPA) was passed in 1966. The goal of the  
30 NHPA is for Federal agencies to act as responsible stewards of our Nation’s resources  
31 when their actions affect historic properties. The NHPA established the Advisory  
32 Council on Historic Preservation as the entity with the legal responsibility to encourage  
33 Federal agencies to factor historic preservation into Federal project requirements.  
34 Section 106 of the NHPA requires Federal agencies to take into account the effects of  
35 their undertakings on historic properties, and afford the Advisory Council on Historic  
36 Preservation a reasonable opportunity to comment. The historic preservation review  
37 process mandated by Section 106 is outlined in regulations issued by the Advisory  
38 Council on Historic Preservation (Protection of Historic Properties [36 CFR Part 800]).

39 As defined in the U.S. Department of Interior regulations, “undertaking” means a project,  
40 activity, or program funded in whole or in part under the direct or indirect jurisdiction of  
41 a Federal agency, including those carried out by or on behalf of a Federal agency; those  
42 carried out with Federal financial assistance; or those requiring a Federal permit, license



1 or approval. The issuance of a permit for an HCP is generally considered by the Services  
2 to be an undertaking subject to compliance with Section 106 of the NHPA, although each  
3 HCP is unique and may or may not have an affect on historic properties. Consultation  
4 with the Tribes and the public is emphasized, while consultation with the State Historical  
5 Preservation Officer is required. Section 106 review requires that agencies: 1) determine  
6 if their action is an undertaking; 2) if so, gather information to determine if any cultural  
7 or historic properties within the area of potential effect are eligible for the National  
8 Register of Historic Places; 3) determine how historic properties might be affected; 4)  
9 explore alternatives to avoid or reduce harm to historic properties; and 5) reach  
10 agreement with the State Historic Preservation Officer and Tribes affected by the action  
11 on measures to address any adverse effects.

12 The Services will comply with Section 106 of the NHPA by making a determination  
13 whether or not the proposed Federal action is an undertaking, as previously defined, and,  
14 if so, whether the proposed action has the potential to cause effects on historic properties,  
15 (i.e., change the characteristics of historic properties). The Federal review will focus on  
16 the proposed action of issuing a permit or approval for activities conducted according to  
17 requirements of the Washington Forest Practices Rules. Thus, the Services' NHPA  
18 Section 106 compliance responsibilities will be the same for all of the Action  
19 Alternatives.

20 Cumulatively, the proposed action and the National Historic Preservation Act would  
21 continue to protect listed species in the State of Washington through compatible resource  
22 management. As stated above, the goal of the National Historic Preservation Act is to  
23 serve as responsible stewards of our Nation's historic resources when management  
24 actions could affect these resources. Implementation of the proposed action would be  
25 consistent with this goal by furthering protection of sensitive sites and riparian areas on  
26 forestlands regulated by the Washington Forest Practices Act. These areas are where  
27 cultural and historic resources are often found. Further, forest landowners and many  
28 Tribes in Washington have agreed to voluntary procedures, via the collaborative Forest  
29 and Fish Report (FFR) process, for identifying and protecting historic and cultural  
30 resources beyond what is required by State regulation.

### 31 **The Pacific Northwest Electric Power Planning and Conservation Act**

32 This Act passed by Congress in 1980 includes a compact of interstate agencies of Idaho,  
33 Montana, Oregon, and Washington directing the Northwest Power and Conservation  
34 Council (previously known as the Northwest Power Planning Council) to “protect,  
35 mitigate, and enhance fish and wildlife habitat, including related spawning habitat on the  
36 Columbia River and its tributaries affected by the development, operation, and  
37 management of [hydroelectric projects] while assuring the Pacific Northwest an  
38 adequate, effective, economical, and reliable power supply.” The Council is primarily a  
39 planning, policymaking, and review body for implementation of actions taken by Federal  
40 agencies relating to Federal hydropower in the Columbia River Basin.

41 Part of the Northwest Power and Conservation Council tasks include development of the  
42 Columbia River Basin Fish and Wildlife Program, which establishes goals, objectives,



## Chapter 5

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1 and mitigation relative to Federal hydroelectric and water storage projects in the basin.  
2 These directions have resulted in improvements to fish passage facilities on Federal  
3 mainstem dams on the Columbia River and its tributaries. Additionally under this  
4 program, habitat for both fish and wildlife has been and continue to be purchased and  
5 improved. This has included restoration of streams in forested regions along the  
6 Columbia River tributaries.

7 Currently there is a planning process that will result in development of a subbasin plan  
8 for each of the 50 subbasins in the Columbia River system, which would include  
9 recommendations for actions that should be taken in each of these subbasins to improve  
10 conditions for fish and wildlife. Results of these subbasin plans will help direct where  
11 Federal monies will be spent to enhance environmental conditions. These actions will  
12 have effects in all Columbia River subbasins, which will benefit fish in all of the  
13 Columbia River basins affected by the Washington Forest Practices Rules. This would  
14 include improvements in up to 6 of the 12 analysis regions. The specific details in each  
15 will vary but could include: wildlife habitat or streamside land purchases, instream  
16 structural enhancements, increased diversion screening for fish protection, improved  
17 water supply and improved water quality conditions, and improved hatchery management  
18 for the benefit of wild listed stocks. Additionally, funding would be supplied for research  
19 to determine the effects of actions taken in the subbasins.

20 Cumulatively, the proposed action and the objectives of the Pacific Northwest Electric  
21 Power Planning and Conservation Act would continue to protect listed species in the  
22 State of Washington through compatible resource management. As stated above, the  
23 objectives of the Pacific Northwest Electric Power Planning and Conservation Act are to  
24 primarily serve as a planning, policymaking, and review body for implementation of  
25 actions taken by Federal agencies relating to Federal hydropower in the Columbia River  
26 Basin. Implementation of the proposed action would be consistent with these objectives  
27 by furthering protection of aquatic resources on forestlands regulated by the Washington  
28 Forest Practices Act. This would be accomplished through measures aimed at protecting  
29 riparian and aquatic habitats such as RMZs, no-harvest buffers around unstable slopes,  
30 and implementation of road maintenance and abandonment plans.

### 31 **Magnuson-Stevens Fishery Conservation and Management Act**

32 This Federal act was created to restore and maintain harvestable numbers of fish,  
33 including salmon. Like the Salmon and Steelhead ESA Section 4(d) rule, it may have  
34 indirect benefits to bald eagles by providing an important source of food.

35 Cumulatively, the proposed action and the Magnuson-Stevens Fishery Conservation and  
36 Management Act would continue to protect listed species in the State of Washington  
37 through compatible resource management. As stated above, the objectives of the  
38 Magnuson-Stevens Fishery Conservation and Management Act are to restore and  
39 maintain harvestable numbers of fish, including salmon. Implementation of the proposed  
40 action would be consistent with these objectives by furthering protections of salmon  
41 habitat on forestlands regulated by the Washington Forest Practices Act. This would be  
42 accomplished through measures aimed at protecting riparian and aquatic habitats such as



1 RMZs, no-harvest buffers around unstable slopes, and implementation of road  
2 maintenance and abandonment plans.

### 3 **Northwest Forest Plan**

4 The Northwest Forest Plan was developed after years of controversy surrounding the  
5 management of Federal forestlands, including struggles over timber harvest, habitat needs  
6 of the Northern spotted owl and native salmon, old-growth preservation, and jobs.  
7 Implemented in 1994, the Northwest Forest Plan, an ecosystem approach to forest  
8 management, covers approximately 24 million acres of Federal forestland in western  
9 Washington, western Oregon, and northern California (USDA Forest Service and USDI  
10 Bureau of Land Management 1994). The Bureau of Land Management and the U.S.  
11 Forest Service jointly manage the Northwest Forest Plan. The lands under the Plan are  
12 divided into different areas according to allowable management activities:

- 13 • Congressional Reserves make up approximately 7 million acres or 30 percent of  
14 the total land in the Northwest Forest Plan and include National Parks and  
15 Monuments, Wilderness Areas, Wild and Scenic Rivers, National Wildlife  
16 Refuges, and Department of Defense lands. These lands have been reserved by  
17 act of Congress and are preserved from forest management. There are currently  
18 23 designated Wilderness Areas in Washington State.
- 19 • Late-Successional Reserves also make up approximately 7 million acres or 30  
20 percent of the total land under the Northwest Forest Plan and aim to provide and  
21 promote a “functional, interactive, late-successional old-growth forest  
22 ecosystem” for old-growth and late-successional dependent wildlife species such  
23 as the northern spotted owl. Commercial timber harvest is not allowed in late-  
24 successional reserves, although select silvicultural treatments (for example,  
25 thinning) may be permissible in stands up to 80 years of age if the activity  
26 furthers late-successional or old-growth forest conditions.
- 27 • Adaptive Management Areas represent 1.5 million acres or 6 percent of the land  
28 under the Northwest Forest Plan and are managed to explore and develop  
29 different methods of forestry management to achieve ecological, economic,  
30 social, and community objectives.
- 31 • Managed Late-Successional Areas are lands mapped and defined as known  
32 northern spotted owl activity centers and unmapped buffer areas set up to protect  
33 rare and locally endemic species. While their location may shift over time,  
34 managed late-successional areas make up 102,200 acres, or 1 percent of the land  
35 under the Northwest Forest Plan.
- 36 • Administratively Withdrawn Areas cover 1.5 million acres or 6 percent of the  
37 lands under the Northwest Forest Plan and are lands not scheduled for timber  
38 harvest, including recreational areas, visual areas, backcountry, and other lands  
39 not suitable for harvest.



## Chapter 5

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- 1       • Riparian Reserves make up approximately 2.6 million acres or 11 percent of the  
2       total land under the Northwest Forest Plan. They are riparian areas along  
3       streams, wetlands, ponds, and lakes, along with unstable areas and other areas  
4       that are designed to help maintain and conserve aquatic and riparian-dependent  
5       species habitat and riparian function, to improve travel and dispersal corridors for  
6       terrestrial plants and animals, and to provide a connection between late-  
7       successional forest habitats.
- 8       • Matrix Lands cover almost 4 million acres, or 16 percent of the land under the  
9       Northwest Forest Plan, and consist of Federal lands not assigned to one of the six  
10      land allocations described above.

11 Riparian Reserves range from 100 feet (seasonal streams) to 300 feet (fish-bearing  
12 streams) in width on each side of a stream. Consequently, streams on most Federal lands  
13 within Washington have more protection for aquatic and riparian-associated wildlife than  
14 any of the alternatives considered in this DEIS. A majority of Federal lands are located  
15 at higher elevations along the Cascade Crest and on the Olympic Peninsula.  
16 Consequently, on a broad-scale Federal lands include a higher proportion of low order,  
17 non-fish-bearing streams compared to State and private forestlands.

18 Although limited thinning and salvage activities may be allowed in the Reserves, only 5.5  
19 million acres or 22 percent of the lands under the Northwest Forest Plan are available for  
20 commercial timber harvest (USDA Forest Service and USDI Bureau of Land  
21 Management 1994). Most timber harvest occurs on Matrix Lands, and to a limited  
22 extent, on Adaptive Management lands. On lands available for commercial timber  
23 harvest, the U.S. Forest Service and U.S. Bureau of Land Management have established  
24 standards and guidelines to ensure a sustainable ecosystem and to protect known northern  
25 spotted owl activity centers (USDA Forest Service and USDI Bureau of Land  
26 Management 1994).

27 Additionally, the Northwest Forest Plan includes an Aquatic Conservation Strategy  
28 developed to restore and maintain the ecological health of aquatic ecosystems in the  
29 Northwest Forest Plan area (USDA Forest Service and USDI Bureau of Land  
30 Management 1994). The Aquatic Conservation Strategy sets up a system of Riparian  
31 Reserves, designates key watersheds in the Northwest Forest Plan area, describes  
32 requirements and procedures for conducting watershed analyses, and establishes  
33 watershed restoration programs for lands in the Northwest Forest Plan area. Riparian  
34 Reserves require that wide riparian buffers be maintained along all streams. The interim  
35 widths are designed to provide a high level of fish and riparian protection until watershed  
36 and site-specific analysis can be conducted. This strategy was recently clarified in a  
37 Record of Decision, which amended the Northwest Forest Plan in March 2004. This  
38 decision clarifies that the Aquatic Conservation Strategy objectives are intended to be  
39 met at the fifth-field watershed or larger scale, and not at the project-level scale. A fifth-  
40 field watershed ranges from approximately 30 to 150 square miles (20,000 to 100,000  
41 acres).



1 The standards and guidelines in the Northwest Forest Plan, which include riparian buffers  
2 and other protective measures, are designed to meet the Aquatic Conservation Strategy  
3 objectives over time (USDA Forest Service and USDI Bureau of Land Management  
4 1994). The Aquatic Conservation Strategy clarification allows projects that may have  
5 short term adverse effects, such as watershed restoration projects, to move forward as  
6 long as they comply with all of the protective measures specified in the Northwest Forest  
7 Plan standards and guidelines.

8 The combined effects of the Aquatic Conservation Strategy and allowable uses of the  
9 Northwest Forest Plan work together to maintain and improve habitats for aquatic and  
10 riparian-dependent species on Federal forestland. Over time, the Northwest Forest Plan  
11 will create millions of acres in additional late successional forest as younger stands are  
12 preserved and silvicultural treatments are limited to helping accelerate the development  
13 of older forest stand conditions (USDA Forest Service and USDI Bureau of Land  
14 Management 1994).

15 Approximately 7 million acres of Federal forestland are managed in accordance with the  
16 Northwest Forest Plan in Washington State (FEMAT 1993) (USDA Forest Service and  
17 USDI Bureau of Land Management 1994). This represents about 30 percent of all  
18 forestlands. The breakdown of lands within the Northwest Forest Plan by acres within  
19 each area and percent of total lands within the Northwest Forest Plan follows:

- 20 • Congressional Reserves – 4.2 million acres, or 60 percent
- 21 • Managed and Late-Successional Reserves – 1.5 million acres, or 22 percent
- 22 • Adaptive Management Areas – 292,000 acres, or 4 percent
- 23 • Administratively Withdrawn Areas – 250,100 acres, or 4 percent
- 24 • Riparian Reserves – 232,300 acres, or 3 percent
- 25 • Matrix Lands – 465,000 acres, or 7 percent

26 The majority of Washington forestland under the Northwest Forest Plan are protected in  
27 reserves and is not available for forest management activities, including commercial  
28 timber harvest. Silvicultural treatments are limited on lands within Managed and Late-  
29 Successional Reserves to those that foster older forest stand conditions. Commercial  
30 timber harvest occurs primarily within the Matrix Lands, or on only 7 percent of the lands  
31 under the Northwest Forest Plan in Washington State. There are additional protection  
32 measures in place on these lands that further restrict timber harvest, such as a 15 percent  
33 green tree retention requirement and special protection for sensitive species habitat and  
34 wildlife needs (FEMAT 1993).

35 Cumulatively, the proposed action and the Northwest Forest Plan would continue to  
36 protect listed species in the State of Washington through compatible resource  
37 management. As stated above, the purpose of the Northwest Forest Plan is to allow  
38 multipurpose management of Federal forestlands by balancing the need for timber  
39 harvest, habitat, old-growth preservation, and jobs. Implementation of the proposed  
40 action would be consistent with the purpose of the Northwest Forest Plan by furthering  
41 habitat protection while providing for a viable forest products industry on forestlands



## Chapter 5

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1 regulated by the Washington Forest Practices Act. This would be accomplished through  
2 measures aimed at protecting riparian and aquatic habitats such as RMZs, no-harvest  
3 buffers around unstable slopes, and implementation of road maintenance and  
4 abandonment plans, while also fostering a viable and responsible forest products  
5 industry.

### 6 **Columbia River Gorge National Scenic Area**

7 The states of Oregon and Washington entered into a compact pre-authorized by Congress  
8 to implement the Columbia River Gorge National Scenic Area Act (16 U.S.C. §§ 544, et  
9 seq.; RCW Chapter 43.97; 16 U.S.C. § 544c). The Act established a national scenic area  
10 in 1986 to protect and enhance the scenic, cultural, recreational, and natural resources of  
11 the Columbia River Gorge; to support the economy of the area by encouraging growth to  
12 occur in urban areas; and to allow economic development consistent with resource  
13 protection. The Act encompasses 300,000 acres of scenic vistas; habitat for rare,  
14 threatened and endangered plants, animals, and anadromous fish; ancient Indian rock art  
15 and other cultural sites; and privately owned timber, farmland, and orchards.

16 A bi-state agency, the Columbia River Gorge Commission, was authorized by the Act to  
17 develop and adopt a land use and resource protection policy. The Columbia River Gorge  
18 Commission works closely with State and Federal agencies and tribal and community  
19 partners to accomplish its goals.

20 The Act's special management area guidelines were established and apply to all forest  
21 practices within the Columbia River Gorge National Scenic Area special management  
22 area, along with the Washington Forest Practices Rules. The Washington DNR consults  
23 with the U.S. Forest Service and the Columbia River Gorge Commission when reviewing  
24 forest practices applications or notifications within the Columbia River Gorge National  
25 Scenic Area special management area, and prior to making any determination.

26 Cumulatively, the proposed action and the Columbia River Gorge National Scenic Area  
27 Act would continue to protect listed species in the State of Washington through  
28 compatible resource management. As stated above, the purpose of the Columbia River  
29 Gorge National Scenic Area Act is to protect and enhance the scenic, cultural,  
30 recreational, and natural resources of the Columbia River Gorge; to support the economy  
31 of the area by encouraging growth to occur in urban areas; and to allow economic  
32 development consistent with resource protection. Implementation of the proposed action  
33 would be consistent with this purpose by fostering a viable and responsible forest  
34 products industry while also furthering aquatic resource protection on forestlands  
35 regulated by the Washington Forest Practices Act. This would be accomplished through  
36 measures aimed at protecting riparian and aquatic habitats such as RMZs, no-harvest  
37 buffers around unstable slopes, and implementation of road maintenance and  
38 abandonment plans.





1 **5.2.2.2 State Statutes, Regulations, Plans, and Programs**

2 **Washington Department of Ecology Water Quality Plans and Programs**

3 The Washington State Water Pollution Control Act (RCW Chapter 90.48) designates the  
4 Washington Department of Ecology (Ecology) as the agency responsible for carrying out  
5 provisions of the Clean Water Act using its own independent regulatory authority.

6 Ecology establishes Washington’s water quality standards, pursuant to review and  
7 approval by EPA, and may directly enforce provisions of the Clean Water Act, or may  
8 use the State’s water quality statutes and rules.

9 The Clean Water Act established a process to identify and clean up polluted waters.  
10 Every 2 years, states are required to prepare a list of water bodies that do not meet State  
11 water quality standards. This list is referred to as the 303(d) list because it is described in  
12 Section 303(d) of the Clean Water Act. Before compiling the list, Ecology develops,  
13 through a public process, a listing policy that describes how Ecology will determine  
14 which water bodies are included on the 303(d) list.

15 The Clean Water Act requires that a water cleanup plan, also known as a total maximum  
16 daily load (TMDL), be developed for each of the water bodies on the 303(d) list. A  
17 TMDL is the maximum amount of pollution or “pollutant load” that a water body can  
18 assimilate without violating water quality standards. A water body stays on the 303(d)  
19 list until a TMDL has been developed for it, its pollution problem is addressed through  
20 some other pollution control process, or it meets water quality standards. Ecology  
21 monitors the effectiveness of TMDLs and other pollution controls, and if found to be  
22 ineffective, can relist the water body and require more stringent pollution controls.

23 In response to litigation on TMDLs in 1992, EPA and Ecology developed a  
24 Memorandum of Agreement stipulating that TMDLs for all of the water bodies on the  
25 State’s 1996 303(d) list would be completed by 2013.

26 Each TMDL has five major components:

- 27 1. An identification of the type, amount, and sources of water pollution in a  
28 particular water body or segment;
- 29 2. A determination of the capacity of the water to assimilate pollution and still  
30 remain healthy;
- 31 3. An allocation showing how much pollution each source will be allowed to  
32 discharge;
- 33 4. A strategy to attain the allocations; and
- 34 5. Implementation of a monitoring plan to assess effectiveness as the TMDL.

35 For pollution coming from point sources, identifying sources and developing a TMDL  
36 implementation strategy is usually straightforward. “Point sources” are locations from  
37 which discharge occurs from a specific source(s), such as industrial plants or municipal  
38 wastewater treatment plants. Ecology permits regulate point sources, so the TMDL  
39 discharge limit is included in the permit.



## Chapter 5

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1 For pollution coming from non-point sources, implementing a TMDL is more  
2 complicated. “Non-point source” pollution is generated by a wide variety of land uses,  
3 including forest practices. Loss of shade to a stream, sediment-laden runoff from a  
4 poorly maintained forest road, or pesticide over spray reaching surface water are all  
5 examples of non-point pollution that can result from forest practices. For non-point  
6 sources, a TMDL must evaluate potential methods to control the pollutants and suggest  
7 an array of methods that can be used. These methods are referred to as best management  
8 practices (BMPs) Usually there are many BMPs that could be used to address a non-  
9 point source pollution problem. It is up to the landowner to select and implement the  
10 array of practices that will address the pollution generated on their property.

11 The process of identifying polluted waters, developing and implementing TMDLs, and  
12 monitoring 303(d) listed waters is not the only approach Ecology uses to maintain water  
13 quality in the State. Water quality is also protected through implementation of the  
14 Washington Forest Practices Rules.

15 Ecology has a unique role in adoption and implementation of the Washington Forest  
16 Practices Rules because the Washington Forest Practices Act and rules were designed and  
17 adopted, in part, to meet requirements of the Clean Water Act and State water quality  
18 standards. The Forest Practices Board is the agency responsible for adopting the  
19 Washington Forest Practices Rules. However, for those sections of the rules pertaining to  
20 water quality protection, the Forest Practices Board must reach agreement with the  
21 director of Ecology, or the director’s designee on the Forest Practices Board, prior to rule  
22 adoption (RCW Chapter 76.09.040(1)(e)). Washington DNR implements and enforces  
23 the rules. Ecology also has authority to independently enforce the “water quality”  
24 sections of the rules (RCW Chapter 76.09.100).

25 Cumulatively, the proposed action and the Washington State Water Pollution Control Act  
26 would continue to protect listed species in the State of Washington through compatible  
27 resource management. As stated above, the purpose of the Washington State Water  
28 Pollution Control Act is to establish a process to identify and clean up polluted waters.  
29 Implementation of the proposed action would be consistent with this purpose by  
30 protecting and restoring aquatic resources on forestlands regulated by the Washington  
31 Forest Practices Act. This would be accomplished through measures aimed at protecting  
32 riparian habitat and aquatic resources such as RMZs, no-harvest buffers around unstable  
33 slopes, and implementation of road maintenance and abandonment plans. Consistent  
34 with Ecology’s policy guidance for Section 303(d) listings (Washington Department of  
35 Ecology 2002d), the proposed action would also employ adaptive management as a  
36 primary component to reduce scientific uncertainty and to determine the effectiveness of  
37 the protection measures.

### 38 **Hydraulic Project Approvals**

39 The 1949 Hydraulic Code (RCW Chapter 75.20.100-160) gives regulatory authority to  
40 Washington Department of Fish and Wildlife (WDFW) to issue a Hydraulic Project  
41 Approval for any construction activity in or near State waters. A Hydraulic Project  
42 Approval is also required for work that will use, divert, obstruct, or change the natural



1 flow or bed of any waters of the State. The purpose of the law is to ensure that any  
2 construction carried out in or near waters, has minimal adverse impact to Washington  
3 State's fish, shellfish, and their habitat (Washington Department of Fish and Wildlife  
4 2003). The Hydraulic Project Approval may include site-specific mitigation measures.

5 A Hydraulic Project Approval is required for forest practices involving activities in or  
6 near many State waters. Examples of forestry activities in or near streams that may  
7 require a Hydraulic Project Approval include, but are not limited to: felling and yarding  
8 timber, the construction or repair of culverts and bridges, placement of LWD, dredging,  
9 debris removal, changes in channel structure, and the placement of outfall structures  
10 (Washington Department of Fish and Wildlife 2003).

11 Cumulatively, the proposed action and the Hydraulic Code would continue to protect  
12 listed species in the State of Washington through compatible resource management. As  
13 stated above, the purpose of Hydraulic Code is to ensure that any construction carried out  
14 in or near waters, has minimal adverse impact to Washington State's fish, shellfish, and  
15 their habitat. Implementation of the proposed action would be consistent with this  
16 purpose by furthering aquatic habitat protection on forestlands regulated by the  
17 Washington Forest Practices Act. This would be accomplished through measures aimed  
18 at protecting riparian and aquatic habitats such as RMZs, no-harvest buffers around  
19 unstable slopes, and implementation of road maintenance and abandonment plans.

### 20 **Wild Salmon Policy**

21 The Washington Fish and Wildlife Commission adopted the State of Washington's Wild  
22 Salmon Policy in 1997 in response to the proposed and final listings of several salmon  
23 stocks. Like comparable Federal programs, the document contains policy  
24 recommendations aimed at protecting, restoring, and enhancing fisheries in Washington.

25 Cumulatively, the proposed action and the Wild Salmon Policy would continue to protect  
26 listed species in the State of Washington through compatible resource management. As  
27 stated above, the Wild Salmon Policy contains policy recommendations aimed at  
28 protecting, restoring, and enhancing fisheries in Washington. Implementation of the  
29 proposed action would be consistent with these policy recommendations by furthering  
30 aquatic habitat protection on forestlands regulated by the Washington Forest Practices  
31 Act. This would be accomplished through measures aimed at protecting riparian and  
32 aquatic habitats such as RMZs, no-harvest buffers around unstable slopes, and  
33 implementation of road maintenance and abandonment plans.

### 34 **Comprehensive Watershed Planning Act**

35 The 1998 Comprehensive Watershed Planning Act complements the Salmon Recovery  
36 Act by providing for locally led, cooperative efforts to assess water resource needs and  
37 by developing effective solutions on a Water Resource Inventory Areas (WRIA) (or  
38 watershed) basis. These watershed plans assist the State's overall efforts to manage  
39 growth, protect threatened and endangered salmon runs, and improve water quality. The  
40 plans encourage the integration of existing laws, rules, or ordinances that protect, restore,  
41 or enhance fish habitat, including the Washington Forest Practices Rules (RCW Chapter



## Chapter 5

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1 90.82.100). See subsection 3.5 (Relationship to Other Plans) and DEIS Appendix A  
2 (Regional Summaries) for more information on regional watershed planning efforts in  
3 support of salmon recovery.

4 Cumulatively, the proposed action and the 1998 Comprehensive Watershed Planning Act  
5 would continue to protect listed species in the State of Washington through compatible  
6 resource management. As stated above, the 1998 Comprehensive Watershed Planning  
7 Act provides for locally led, cooperative efforts to assess water resource needs and allows  
8 for development of effective solutions on a WRIA basis. Implementation of the proposed  
9 action would be consistent with the 1998 Comprehensive Watershed Planning Act by  
10 furthering aquatic resource protection on forestlands regulated by the Washington Forest  
11 Practices Act. This would be accomplished through measures aimed at protecting  
12 riparian and aquatic habitats such as RMZs, no-harvest buffers around unstable slopes,  
13 and implementation of road maintenance and abandonment plans.

### 14 **State Listing of Endangered, Threatened, and Sensitive Species**

15 WDFW maintains a list of State endangered, threatened, and sensitive species (WAC  
16 232-12-014 and 232-12-011). In 1990, the Washington Fish and Wildlife Commission  
17 adopted procedures that identify how species are listed, criteria for listing and de-listing,  
18 and requirements for management and recovery plans (WAC 232-12-297). These lists  
19 are separate from the Federal ESA lists because they focus on a species' status exclusive  
20 to Washington State. Critical wildlife habitats associated with State or federally listed  
21 species are identified in WAC 222-16-080.

22 Forest practices that are proposed within critical wildlife habitats associated with State-  
23 listed species are considered Class IV Special activities. Compliance with SEPA  
24 guidelines and policies is required. Washington DNR is also required to consult with  
25 WDFW regarding the protection of listed species' habitats when reviewing forest  
26 practices applications.

27 Cumulatively, the proposed action and the State listing of endangered, threatened, and  
28 sensitive species would continue to protect listed species in the State of Washington  
29 through compatible resource management. As stated above, State listing of endangered,  
30 threatened, and sensitive species includes criteria for listing and de-listing and  
31 requirements for management and recovery plans. Implementation of the proposed  
32 action would be consistent with State listing by furthering aquatic resource protection to  
33 limit impacts on threatened and endangered species on forestlands regulated by the  
34 Washington Forest Practices Act. This would be accomplished through measures aimed  
35 at protecting riparian and aquatic habitats such as RMZs, no-harvest buffers around  
36 unstable slopes, and implementation of road maintenance and abandonment plans

### 37 **Shoreline Management Act**

38 The Shoreline Management Act was passed by the Legislature in 1971 and is intended

39 *To provide for the management of the shorelines of the State by planning*  
40 *for and fostering all reasonable and appropriate uses. This policy is*



1           *designed to insure the development of these shorelines in a manner, which,*  
2           *while allowing for limited reduction of rights of the public in the navigable*  
3           *waters, will promote and enhance the public interest. This policy*  
4           *contemplates protecting against adverse effects to the public health, the*  
5           *land and its vegetation and wildlife, and the waters of the State and their*  
6           *aquatic life, while protecting generally public rights of navigation and*  
7           *corollary rights incidental thereto (RCW Chapter 90.58.020).*

8           The Shoreline Management Act applies to more than 2,300 miles of lakeshores, 16,000  
9           miles of streams, and 2,400 miles of marine shoreline all designated as “Shorelines of the  
10          State” (Washington Department of Ecology 1999b). The Shoreline Management Act  
11          establishes a balance of authority between local and State government and is  
12          implemented by Ecology and the relevant local governmental entity. Cities and counties  
13          are the primary regulators, but Ecology retains the authority to review local programs and  
14          permit decisions (Washington Department of Ecology 1999b). Shorelines of the State  
15          that are regulated by the Shoreline Management Act include (Washington Department of  
16          Ecology 1999b; RCW Chapter 90.58.030(20)):

- 17          • All marine waters
- 18          • Streams with greater than 20 cubic feet per second mean annual flow
- 19          • Lakes 20 acres or larger
- 20          • Upland areas called shorelands that extend 200 feet landward from the edge of the  
21                  ordinary high water mark and may include up to the entire 100 year floodplain, and  
22                  wetlands and river deltas when they are associated with one of the above

23          Cities and counties with waters that meet the definition under Shorelines of the State are  
24          required to develop a Shoreline Master Program that regulates uses of the shorelines and  
25          is consistent with the Shoreline Management Act (RCW Chapters 90.58.070 and  
26          90.58.080).

27          Type 1 waters are defined by the Washington Forest Practices Rules as those inventoried  
28          as Shorelines of the State under RCW Chapter 90.58 and regulated under the Shoreline  
29          Management Act (WAC 222-16-030(1)), including their wetlands. Forest practices  
30          operations must comply with the rules under the local city or county Shoreline Master  
31          Program, or the Washington Forest Practices Rules, whichever is the most protective of  
32          the resource. Substantial developments along these shorelines require a special permit  
33          from the local city or county responsible for administering the Shoreline Management  
34          Act (RCW Chapter 90.58.140(2)).

35          The Shoreline Management Act also designates certain waters as “Shorelines of  
36          Statewide Significance” where, in their management, “the interests of all the people shall  
37          be paramount” (RCW Chapter 90.58.020). These waters are defined in the Shoreline  
38          Management Act as (Washington Department of Ecology 1999b):

- 39          • Pacific Coast, Hood Canal, and certain Puget Sound shorelines
- 40          • All waters of Puget Sound and the Straight of Juan de Fuca



## Chapter 5

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- 1 • Lakes or reservoirs with more than 1,000 surface acres  
2 • Larger rivers (1,000 cubic feet per second or greater mean annual flow for rivers in  
3 Western Washington, 200 cubic feet per second and greater mean annual flow east of  
4 the Cascade crest)  
5 • Shorelands and wetlands associated with all of the above  
6 • All other areas of Puget Sound and the Strait of Juan de Fuca below extreme low  
7 water

8 Landowners wishing to harvest timber within 200 feet of Shorelines of Statewide  
9 Significance are permitted only selective commercial timber cutting, and may harvest no  
10 more than 30 percent of the merchantable trees within a 10 year time frame (RCW  
11 Chapter 90.58.150). Exceptions are provided only in limited cases where topography,  
12 soil conditions, or silvicultural practices necessary for regeneration render selective  
13 logging ecologically detrimental. Clearcutting may be permitted if it is solely incidental  
14 to the preparation of land for other uses authorized by the Shoreline Management Act  
15 (RCW Chapter 90.58.150).

16 Cumulatively, the proposed action and the Shoreline Management Act would continue to  
17 protect listed species in the State of Washington through compatible resource  
18 management. As stated above, the Shoreline Management Act provides for the  
19 management of shorelines of the State by planning for and fostering all reasonable and  
20 appropriate uses while protecting against adverse effects to public health, the land and its  
21 vegetation and wildlife, and the waters of the State and their aquatic life. Implementation  
22 of the proposed action would be consistent with the Shoreline Management Act by  
23 allowing for timber management activities while protecting against adverse effects to  
24 aquatic resources on forestlands regulated by the Washington Forest Practices Act. This  
25 would be accomplished through measures aimed at protecting riparian and aquatic  
26 habitats such as RMZs, no-harvest buffers around unstable slopes, and implementation of  
27 road maintenance and abandonment plans

### 28 **Washington Pesticide Laws and Regulations**

29 The Washington State Department of Agriculture regulates the distribution, use, and  
30 disposal of pesticides and fertilizers in Washington State (RCW Chapter 15.58).  
31 Landowners who apply pesticides for forest management are required to keep records of  
32 their applications pursuant to the applicator requirements of the General Pesticide Rules  
33 (WAC 16-228-1320). The Department of Agriculture may also require landowners to  
34 obtain a pesticide license to apply certain “restricted use” pesticides that pose a potential  
35 threat to humans or the environment (Washington State Department of Agriculture 2002;  
36 RCW Chapter 15.58.160(2)(a); RCW Chapter 7.21). Both the Washington DNR and  
37 Ecology enforce regulations regarding the handling, storage, and application of  
38 pesticides, fertilizers, and other forest chemicals to ensure compliance with all  
39 Washington Forest Practices Rules relating to forest chemicals (WAC 222-38).

40 Forest practices applications or notifications are not required for forest practices  
41 conducted to control exotic forest insect or disease outbreaks, when conducted by or



1 under the direction of the Department of Agriculture, and when ordered by the governor  
2 or the director of the Department of Agriculture. Forest practices applications or  
3 notifications are also not required when emergency pest control measures are conducted  
4 by the Washington DNR under a forest health emergency declaration by the  
5 Commissioner of Public Lands (RCW Chapter 76.09.060 (8)).

6 Cumulatively, the proposed action and the Washington Pesticide Laws and Regulations  
7 would continue to protect listed species in the State of Washington through compatible  
8 resource management. As stated above, the Washington Pesticide Laws and Regulations  
9 regulate the distribution, use, and disposal of pesticides and fertilizers in Washington  
10 State. Implementation of the proposed action would be consistent with Washington  
11 Pesticide Laws and Regulations as these requirements would continue to be enforced on  
12 forestlands regulated by the Washington Forest Practices Act. This would be  
13 accomplished through measures aimed at restricting the type and method of pesticide  
14 application near riparian areas and associated water bodies.

### 15 **Growth Management Act**

16 The Growth Management Act was passed in 1990 out of concern that population growth  
17 and suburban sprawl were threatening Washington's ecosystems and quality of life  
18 (Growth Management Services 1999). The Growth Management Act requires local  
19 governments to develop growth management plans for their communities including  
20 growth planning, the establishment of urban growth boundaries (or "Urban Growth  
21 Areas"), the designation and protection of critical areas (such as wetlands, unstable  
22 slopes, fish and wildlife habitat conservation areas, and floodplains), and the  
23 classification and designation of resource lands (forest, agricultural, and mineral lands)  
24 (Growth Management Services 1999). While the specific requirements under the Growth  
25 Management Act are different for cities and counties depending on their size and rate of  
26 growth, all local governments have some planning requirements and must develop their  
27 own regulations consistent with their Growth Management Act plans (Growth  
28 Management Services 1999).

29 Much of the forestland covered under the Forest Practices Habitat Conservation Plan  
30 (FPHCP) has been designated under the Growth Management Act as "resource lands,"  
31 which requires cities and counties to develop special policies for their use and  
32 conservation (Growth Management Services 1999). Forest practices activities that occur  
33 in designated urban growth areas must also comply with the local jurisdiction's critical  
34 areas ordinances, and these ordinances must be at least as protective as the current  
35 Washington Forest Practices Rules. If the local jurisdiction has assumed regulatory  
36 authority for all Class IV General Forest Practices, the local forest practices regulations  
37 must be as protective as the state Forest Practices Act and Rules at the time of adoption.

38 Cumulatively, the proposed action and the Growth Management Act would continue to  
39 protect listed species in the State of Washington through compatible resource  
40 management. As stated above, the Growth Management Act requires the designation and  
41 protection of critical areas and the classification and designation of resource lands.  
42 Implementation of the proposed action would be consistent with the Growth Management



## Chapter 5

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1 Act by furthering protection of many of these same critical areas on forestlands regulated  
2 by the Washington Forest Practices Act. In addition, forest practices conducted within  
3 Urban Growth Areas must comply with both the State Forest Practices Act and Rules as  
4 well as the local jurisdictions critical areas ordinance.

### 5 **State Conservation Areas**

6 Washington DNR's Natural Resource Conservations Areas and Natural Area Preserves  
7 include lands managed by the State to conserve important native ecosystems, rare plant  
8 and animal species, and unique natural features.

9 Natural Area Preserves protect the best remaining examples of many ecological  
10 communities including rare plant and animal habitat. The Natural Area Preserves system  
11 presently includes 26,400 acres on 47 sites distributed throughout the State. In eastern  
12 Washington, habitats protected on preserves include outstanding examples of arid land  
13 shrub-steppe, grasslands, vernal ponds, oak woodlands, subalpine meadows and forest,  
14 ponderosa pine forests, and rare plant habitats. Western Washington preserves include  
15 five large coastal preserves supporting high quality wetlands, salt marshes, and forested  
16 buffers. Other habitats include mounded prairies, sphagnum bogs, natural forest  
17 remnants, and grassland.

18 Twenty-five Natural Resource Conservation Areas, totally more than 80,500 acres in  
19 Washington, protect outstanding examples of native ecosystems, habitat for endangered,  
20 threatened and sensitive plants and animals, and scenic landscapes. Habitats protected in  
21 Natural Resource Conservations Areas include coastal and high elevation forests, alpine  
22 lakes, wetlands, scenic vistas, nesting birds of prey, rocky headlands, and unique plant  
23 communities. Critical habitat is provided for many plant and animal species, including  
24 rare species. Conservation areas also protect geologic, cultural, historic, and  
25 archeological sites.

26 Other conserved and protected State lands in Washington include lands managed by the  
27 Washington State Parks and Recreation Commission. The Washington State Parks and  
28 Recreation Commission enhances and protects a diverse system of recreational, cultural,  
29 historical, and natural sites, located in 120 State parks encompassing over 250,000 acres.

30 Cumulatively, the proposed action and the State Conservation Areas and Natural Area  
31 Preserves would continue to protect listed species in the State of Washington through  
32 compatible resource management. As stated above, the State Conservation Areas and  
33 Natural Area Preserves serve to conserve important native ecosystems, rare plant and  
34 animal species, and unique natural features. Implementation of the proposed action  
35 would be consistent with the State Conservation Areas and Natural Area Preserves by  
36 furthering protection of sensitive sites on forestlands regulated by the Washington Forest  
37 Practices Act.

### 38 **Washington DNR State Trust Lands Habitat Conservation Plan**

39 The largest HCP in Washington is the Washington DNR State Trust Lands HCP  
40 (Washington DNR 1997d). The multi-species HCP, one of the most comprehensive





1 HCPs in the Nation, covers approximately 1.6 million acres of State trust land. The HCP  
2 covers all Washington DNR-managed forestlands within the range of the northern spotted  
3 owl. This includes all of the western part of the State as well as lands on the east slopes  
4 of the Cascade Range, covering approximately 7 percent of all forestlands in Washington  
5 State.

6 The HCP minimizes and mitigates for the incidental take of all federally listed species  
7 within the range of the northern spotted owl, including the following listed species:  
8 northern spotted owl, marbled murrelet, Oregon silverspot butterfly, Aleutian Canada  
9 goose, peregrine falcon (which has since been federally delisted), bald eagle, gray wolf,  
10 grizzly bear, and the Columbia white-tailed deer. The HCP also provides protection for  
11 39 additional species, including various mollusks, arthropods, fish species (including all  
12 federally listed salmon, steelhead, and native trout), amphibians, reptiles, birds, and  
13 mammals (Washington DNR 1997d; USFWS 2003b).

14 The State Trust Lands HCP includes a riparian conservation strategy to protect salmonid  
15 habitat in western Washington (Washington DNR 1997d). The RMZ prescriptions  
16 consist of an inner riparian buffer and an outer wind buffer where needed. The primary  
17 purpose of the riparian buffer is to maintain or restore salmonid freshwater habitat and to  
18 contribute to the conservation of other aquatic and riparian-associated species, while the  
19 function of the wind buffer is to protect the riparian buffer (Washington DNR 1997d, p.  
20 56). The State Trust Lands HCP also includes measures that address wetlands, unstable  
21 slopes, roads, and rain-on-snow hydrology.

22 Cumulatively, the proposed action and the Washington DNR State Trust Lands HCP  
23 would continue to protect listed species in the State of Washington through compatible  
24 resource management. As stated above, the Washington DNR State Trust Lands HCP  
25 minimizes and mitigates for the incidental take of all federally listed species within the  
26 range of the northern spotted owl. Implementation of the proposed action would be  
27 consistent with the Washington DNR State Trust Lands HCP by furthering the protection  
28 of aquatic and riparian habitat on forestlands regulated by the Washington Forest  
29 Practices Act. This would be accomplished through measures aimed at protecting  
30 riparian and aquatic habitats such as RMZs and no-harvest buffers around unstable  
31 slopes. The Washington DNR State Trust Lands HCP defers to the Forest Practices Act  
32 and Rules for road construction, maintenance, and abandonment requirements.

### 33 **State Salmon Recovery Strategy**

34 The 1998 Salmon Recovery Act represents a statewide effort to improve salmon habitat  
35 and is part of a statewide salmon recovery strategy. The Act creates the Governor's  
36 Salmon Recovery Office and a Salmon Recovery Funding Board to support salmon  
37 recovery, establishes and assigns regional councils as "Lead Entities" for salmon habitat  
38 improvement efforts, puts forth a critical timeline for salmon recovery, and establishes an  
39 Independent Science Panel to assist in oversight and scientific review.

40 The Salmon Recovery Act also recognizes that the Washington Forest Practices Rules,  
41 consistent with the FFR, contribute substantially to the recovery of salmonids and



## Chapter 5

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1 protection of water quality. The Salmon Recovery Act designated the Forests and Fish  
2 process as the “forestry module” of the statewide recovery strategy.

3 The primary purpose of the Governor’s Salmon Recovery Office is to coordinate and  
4 assist in the development of regional and local salmon recovery plans and efforts. In  
5 pursuit of this goal, the Governor’s Joint Natural Resource Cabinet published a 1999  
6 comprehensive report, *Statewide Strategy to Recover Salmon: Extinction is Not an*  
7 *Option*. The Statewide Strategy provides overarching goals and strategies for salmon  
8 recovery in all four factors that influence the health of salmon: habitat, harvest,  
9 hatcheries, and hydropower – commonly referred to as the “four H’s” (subsection 4.8.4,  
10 Synthesis by Analysis Region) (Federal Caucus 1999). It addresses land use issues,  
11 growth management plans, critical area ordinances, and shorelines programs to protect  
12 salmon, salmon habitat, water quality, and water quantity. The following paragraphs  
13 describe several of the larger regional planning efforts for salmon recovery.

14 Counties, Tribes, businesses, and other interested groups have joined forces across the  
15 State to support salmon recovery through regional watershed-based strategies. Many of  
16 these regional strategies implement the 1998 Watershed Planning Act and serve to assess  
17 the status of water resources within a WRIA or in a group of WRIsAs. Activities within  
18 the WRIsAs include: watershed studies, riparian revegetation projects, recruitment of  
19 LWD, fish barrier removal projects, and the facilitation of conservation easements. The  
20 goal of these planning efforts is to protect and preserve salmon habitat and water quality  
21 and, ultimately, to lead to the de-listing of threatened and endangered salmonid species.  
22 The Salmon Recovery Funding Board, established within the Governor’s Salmon  
23 Recovery Office, provides financial support for a number of the following regional  
24 salmon recovery planning efforts.

### 25 **Puget Sound**

26 The Shared Strategy for the Recovery of Salmon in Puget Sound (Shared Strategy)  
27 encompasses the watersheds surrounding Puget Sound. It is a collaborative effort  
28 involving local citizens, Tribes, watershed planning groups, large stakeholder groups  
29 working in the watersheds, State agencies, Federal agencies, and local government  
30 agencies to create a recovery plan to protect and restore salmon runs, recover listed  
31 species, and improve conditions in the entire ecosystem.

32 In addition, the Tri-County Salmon Recovery Initiative heads up recovery efforts in the  
33 central Puget Sound area covering the three most populous and urbanized counties -  
34 Snohomish, King, and Pierce. Along with the county governments, other contributors to  
35 the planning effort to protect and recover listed species include Federal and State  
36 agencies, Tribes, local communities, businesses, and environmental organizations  
37 (Salmon Info Center 2003; Joint Natural Resources Cabinet 1999). This group faces the  
38 particular challenge of protecting and restoring aquatic resources in an increasingly  
39 urbanized environment.



1    **Lower Columbia River**

2    The Lower Columbia Fish Recovery Board develops salmon recovery plans for all ESA-  
3    listed salmon (bull trout, chinook, chum, and steelhead) in Clark, Cowlitz, Lewis,  
4    Wahkiakum, and Skamania Counties and includes members from the Cowlitz Tribe,  
5    county commissioners, citizens, and private interests. The Lower Columbia Fish  
6    Recovery Board was created by the Legislature in 1998 and aims to implement watershed  
7    conservation strategies for waters from the White Salmon River to the mouth of the  
8    Columbia River (Lower Columbia Fish Recovery Board 2003; Joint Natural Resources  
9    Cabinet 2002).

10   **Upper Columbia River**

11   The Upper Columbia Salmon Recovery Board includes representatives of Chelan,  
12   Okanogan, and Douglas Counties, the Confederated Tribes of the Colville Reservation,  
13   and the Yakama Nation. The board is developing fish and wildlife plans for watersheds  
14   in north central Washington (Joint Natural Resources Cabinet 2002).

15   **Snake River**

16   The Snake River Salmon Recovery Board includes citizen and technical representatives  
17   from Walla Walla, Garfield, Asotin, Columbia, Franklin, and Whitman Counties, the Nez  
18   Perce Tribe, Confederated Tribes of Umatilla Indian Reservation, and partnerships with  
19   State and Federal agencies. The Snake River Salmon Recovery Board coordinates  
20   salmon recovery projects, and is developing an HCP for the Walla Walla watershed  
21   (Snake River Salmon Recovery Board 2001; Joint Natural Resources Cabinet 2002).

22   **Middle Columbia River**

23   The Yakima Subbasin Fish and Wildlife Planning Board includes counties, cities, and the  
24   Yakama Nation, and is working on draft regional fish and wildlife plans that address  
25   ESA-listed fish.

26   **Other Groups**

27   In addition, the WDFW administers and funds, with support from the U.S. Fish and  
28   Wildlife Service (USFWS), groups known as Regional Fisheries Enhancement Groups.  
29   The Regional Fisheries Enhancement Groups develop and implement habitat projects  
30   including habitat restoration, fish passage barrier removal, erosion control, along with  
31   projects for salmon production, stream nutrient enrichment, watershed monitoring, and  
32   education and outreach to encourage watershed stewardship (Joint Natural Resources  
33   Cabinet 2002). The groups include the Nooksack Salmon Enhancement Association,  
34   Skagit Fisheries Enhancement Group, Stilly-Snohomish Fisheries Enhancement Task  
35   Force, Mid-Sound Regional Fisheries Enhancement Group, Hood Canal Salmon  
36   Enhancement Group, South Puget Sound Salmon Enhancement Group, North Olympic  
37   Salmon Coalition, Pacific Salmon Coalition, Chehalis Basin Fisheries Task Force,  
38   Willapa Regional Fisheries Enhancement Group, Lower Columbia River Fisheries  
39   Enhancement Group, Eastern Washington Fisheries Enhancement Group, Tri-State  
40   Steelheaders Regional Fisheries Enhancement Group, and Upper Columbia Fisheries  
41   Enhancement Group.



## Chapter 5

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1 Cumulatively, the proposed action and the State Salmon Recovery Strategy would  
2 continue to protect listed species in the State of Washington through compatible resource  
3 management. As stated above, the State Salmon Recovery Strategy represents a  
4 statewide effort to improve salmon habitat. Implementation of the proposed action would  
5 be consistent with the State Salmon Recovery Strategy by furthering aquatic habitat  
6 protection on forestlands regulated by the Washington Forest Practices Act. This would  
7 be accomplished through measures aimed at protecting riparian and aquatic habitats such  
8 as RMZs, no-harvest buffers around unstable slopes, and implementation of road  
9 maintenance and abandonment plans.

### 10 **Salmon and Steelhead Habitat Inventory and Assessment Program**

11 In 1991, WDFW and the western Washington Treaty Indian Tribes began the Wild Stock  
12 Restoration Initiative to catalog and inventory salmon and steelhead stocks to determine  
13 their population status. The first product of this partnership was the Salmon and  
14 Steelhead Stock Inventory (also known as the SASSI Report), which delineated fish  
15 stocks, and determined their origin and status.

16 In 1995, as a continuation of the Wild Stock Restoration Initiative and the work  
17 completed in SASSI, the Salmon and Steelhead Habitat Inventory and Assessment  
18 Program began. The program is co-managed by the WDFW and the Northwest Indian  
19 Fisheries Commission. With the help of partner organizations throughout the Pacific  
20 Northwest, and funding from the Governor's Salmon Recovery Office, the Salmon and  
21 Steelhead Habitat Inventory and Assessment Program collects information about habitat  
22 conditions and fish stocks and consolidates it into a single database. It is an important  
23 tool that assists resource managers in identifying habitat restoration projects having the  
24 greatest benefit to fish. Computer generated maps are available that allow the user to  
25 view salmon conditions over a large geographic area, or to find information on a single  
26 stream segment. It helps those working to restore salmon habitat to:

- 27 • Analyze habitat conditions
- 28 • Identify barriers to salmon migration
- 29 • Identify and prioritize habitat protection and restoration projects
- 30 • Develop recovery plans

31 The Salmon and Steelhead Habitat Inventory and Assessment Program currently covers  
32 WRIAs 1-23 (western Washington). Work is partially funded and underway to extend  
33 program coverage to WRIAs 24-62 (eastern Washington). Twenty-nine partner  
34 organizations throughout the Pacific Northwest include colleges and universities; Federal,  
35 State, and local governments; conservations groups; western Washington Treaty Indian  
36 Tribes; the Yakama Nation; and the Confederated Tribes of the Colville Reservation.

37 Cumulatively, the proposed action and the Salmon and Steelhead Habitat Inventory and  
38 Assessment Program would continue to protect listed species in the State of Washington  
39 through compatible resource management. As stated above, the Salmon and Steelhead  
40 Habitat Inventory and Assessment Program establishes a partnership between the WDFW  
41 and the western Washington Treaty Indian Tribes to catalog and inventory salmon and



1 steelhead stocks to determine their population status. Implementation of the proposed  
2 action would be consistent with the Salmon and Steelhead Habitat Inventory and  
3 Assessment Program by furthering aquatic habitat protection on forestlands regulated by  
4 the Washington Forest Practices Act. This would be accomplished through measures  
5 aimed at protecting riparian and aquatic habitats such as RMZs, no-harvest buffers  
6 around unstable slopes, and implementation of road maintenance and abandonment plans.

7 **5.2.2.3 Local Statutes and Regulations and Local and Private Plans and**  
8 **Programs**

9 **Private and Local Government Habitat Conservation Plans**

10 Several private timber companies and local government entities have completed HCPs  
11 that include aquatic species (Table 5-1). Most of the HCPs prepared in Washington  
12 address issues concerning multiple listed wildlife and/or aquatic species. Through  
13 cooperation with USFWS and National Marine Fisheries Service (NMFS), the plans  
14 allow for management of lands for various uses while ensuring the conservation and  
15 protection of threatened and endangered salmon, trout, and steelhead species. The  
16 following forest landowner HCPs represent efforts across the State to maintain  
17 compliance with the ESA while continuing land management activities.

- 18 • Green Diamond Resource Company (formerly Simpson Resource Company) has an  
19 HCP for operations on 261,575 acres of forestland in Grays Harbor, Mason, and  
20 Thurston Counties in western Washington. The HCP provides coverage for 24  
21 species, among them a number of aquatic species including chinook, chum, and coho  
22 salmon, bull trout, coastal cutthroat trout, and steelhead (USFWS 2003b). Aquatic  
23 resource protection is based on 49 different geomorphological stream channel  
24 classifications.
- 25 • Plum Creek Timber Company implements an HCP for bull trout and 25 other species  
26 on 169,177 acres of its lands along the Interstate-90 corridor between Seattle and  
27 Ellensburg (Plum Creek 1996). The Plum Creek Timber HCP includes a riparian  
28 management strategy that consists of five parts: 1) compliance with the Washington  
29 Forest Practices Rules, 2) Watershed Analysis, 3) maintenance and protection of over  
30 12,000 acres of riparian habitat areas and wetlands, 4) deferred harvest on stream  
31 segments listed as impaired on the Clean Water Act 303(d) list and Wetland  
32 Management Zones, and 5) an aquatic resources monitoring program (Plum Creek  
33 1996, p. 259).
- 34 • West Fork Timber HCP (formerly Murray Pacific) covers multiple terrestrial and  
35 aquatic species including bull trout on 53,527 acres in Lewis County (USFWS  
36 2003b). The HCP calls for the creation and maintenance of riparian buffers and no-  
37 harvest zones. It also calls for road maintenance and abandonment in accordance  
38 with the Washington Forest Practices Rules (Murray Pacific 1995).
- 39 • Port Blakely HCP covers the 7,486-acre Robert B. Eddy Tree Farm in Grays Harbor  
40 and Pacific Counties. The HCP covers multiple terrestrial and aquatic species  
41 including bull trout, coastal tailed frog, Cascades frog, and Van Dyke's salamander.



## Chapter 5

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1 Two local governments, the City of Seattle and Tacoma Water, have HCPs for  
2 watersheds within their jurisdictions.

- 3 • The City of Seattle manages the Cedar River Watershed HCP for 77 species,  
4 including bull trout, on 90,545 acres in King County (City of Seattle 1998). The  
5 HCP includes a number of riparian and aquatic strategies, including commitments to:  
6 eliminate timber harvest for commercial purposes on all land and to set aside that  
7 land into an ecological reserve; to commit approximately \$27.2 million for a fish and  
8 wildlife habitat restoration program; and to remove approximately 38 percent of the  
9 forest roads within the watershed in the first 20 years of the HCP (City of Seattle  
10 1998, Executive Summary).
- 11 • The Tacoma Water HCP stretches over 15,000 acres of the Green River Watershed  
12 and provides protection for 30 species including chum, sockeye, and chinook salmon,  
13 coastal cutthroat trout, steelhead, and bull trout.

14 Cumulatively, the proposed action and private and local government HCPs would  
15 continue to protect listed species in the State of Washington through compatible resource  
16 management. As stated above, the objectives of private and local government HCPs are  
17 generally to allow for the management of lands for various uses while ensuring the  
18 conservation and protection of threatened and endangered salmon, trout, and steelhead  
19 species. Implementation of the proposed action would be consistent with private and  
20 local government HCPs by furthering aquatic habitat protection on forestlands regulated  
21 by the Washington Forest Practices Act, while allowing for a viable forest products  
22 industry. This would be accomplished through measures aimed at protecting riparian and  
23 aquatic habitats such as RMZs, no-harvest buffers around unstable slopes, and  
24 implementation of road maintenance and abandonment plans.

### 25 **Land Exchanges and Purchases**

26 Other voluntary efforts that can promote natural resource conservation include land  
27 exchanges and purchases among private and public forest landowners. Land exchanges  
28 and purchases can serve a variety of purposes, including consolidation for protection of  
29 sensitive habitats and corridors, other environmental benefits, management efficiency,  
30 and economic benefits. The Interstate 90 land exchange and the Huckleberry land  
31 exchange are two of the largest and most recent land exchanges. Both involved a major  
32 private forest landowner and the U.S. Forest Service.

33 Cumulatively, the proposed action and voluntary land exchanges among private and  
34 public forest landowners would continue to protect listed species in the State of  
35 Washington through compatible resource management. As stated above, many of these  
36 exchanges are designed to protect and consolidate sensitive habitats and corridors.  
37 Implementation of the proposed action would be consistent with the intended benefits of  
38 land exchanges by furthering aquatic habitat protection on forestlands regulated by the  
39 Washington Forest Practices Act. This would be accomplished through measures aimed  
40 at protecting riparian and aquatic habitats such as RMZs, no-harvest buffers around  
41 unstable slopes, and implementation of road maintenance and abandonment plans.



1    **5.3    ANALYSIS OF CUMULATIVE EFFECTS**

2    **5.3.1    Air Quality**

3    The main sources of air pollution in western Washington are: motor vehicles (55  
4    percent), industrial (13 percent), and wood stoves (9 percent). Approximately 4 percent  
5    is generated from outdoor burning, a portion of which comes from forest management  
6    activities (Washington Department of Ecology 2003). Air quality in Washington is  
7    generally good or moderate, although some areas do not meet Federal standards on some  
8    days. Air quality has improved greatly since 1987 when Washington air violated air  
9    quality standards on 150 days. This figure dropped to 7 days in 1999 (Washington  
10    Department of Ecology 2003). However, air pollution in a number of communities in the  
11    State is within 10 percent of violating Federal standards for smog (ozone), carbon  
12    monoxide, and fine particles. Population growth and economic expansion, which result  
13    in more cars on the roads, may push emissions of air pollutants higher.

14   Smoke and dust pollution are still a problem in some areas, primarily in central and  
15   eastern Washington. To address these problems, Ecology implements a program that  
16   includes:

- 17   • Requiring permits for agricultural burning, land clearing, fire training, and other  
18    outdoor burning
- 19   • Setting conditions under which burning may be conducted
- 20   • Producing daily burn forecasts using local air quality, weather, and burning demand  
21    information
- 22   • Responding to and resolving complaints related to smoke and dust
- 23   • Providing technical assistance to manage and prevent dust and outdoor burning  
24    impacts
- 25   • Designing and delivering community-education programs, technical assistance,  
26    research and demonstration projects
- 27   • Fostering development and use of dust mitigation techniques and practical  
28    alternatives to burning

29   Ecology's goals for improving air quality in areas where smoke and dust are a problem  
30   include:

- 31   • Reducing emissions from cereal grain stubble burning by 50 percent of the 1998 level  
32    by 2005
- 33   • Improving and streamlining outdoor burning permit and smoke management systems
- 34   • Auditing local burn permit programs to ensure effective and efficient operations
- 35   • Fostering the development and use of practical alternatives and BMPs for burning  
36    and dust mitigation

37   Throughout most of Washington, burning on State and private lands to reduce harvest  
38   slash is a very minor contributor to air pollution. It is a small part of outdoor burning,  
39   which in turn is a very small component of total air pollution (4 percent). This is



## Chapter 5

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1 especially true in western Washington where little broadcast burning of slash occurs and  
2 where the normally wet weather contributes to dust control. In those portions of eastern  
3 Washington where smoke and dust are still a problem, forest operations on State and  
4 private land play a role in regional air quality. However, the alternatives do not directly  
5 affect the amount of burning or dust emissions, and the cumulative effects associated  
6 with the alternatives would be minor, at most.

7 As compared to No Action Alternative 1-Scenario 2, No Action Alternative 1-Scenario 1,  
8 Alternative 2, and Alternative 3 may have a slightly lower contribution to cumulative air  
9 quality problems from slash burning due to reduced harvest levels. Alternative 4 may  
10 reduce this contribution further due to additional harvest restrictions. However, the  
11 potential for increased wildfire activity associated with Alternative 4 may periodically  
12 offset these reductions.

### 13 **5.3.2 Land Ownership and Use**

14 The only potential for cumulative effects on land ownership or use that is associated with  
15 the alternatives is the issue of forestland conversion. As noted in subsection 4.2.3.2  
16 (Forestland Conversion), restrictions of forestland use, and in particular RMZ  
17 restrictions, can affect the rate of conversion of forestlands to other uses. While this  
18 factor would affect all forest landowners to some degree, it is especially important for  
19 small forest landowners in western Washington where population growth rates and  
20 development pressures are high (Washington DNR 1998).

21 It was noted that non-industrial private forestlands in Washington were converted from  
22 primary forestland to non-primary forest use between 1979 and 1989 at a rate of almost  
23 100 acres per day (Washington DNR 1998). Non-primary forest use in this study  
24 included other land uses, such as residential development, as well as conversion to  
25 smaller or less dense parcels of forestland. Most of this conversion occurred in western  
26 Washington typically within urban growth boundaries and on the fringes of the  
27 suburban/rural interface. Conversion information available from Washington DNR's  
28 Forest Practices Application Review System database indicates that 53,821 acres were  
29 converted from forestland to other uses between 1997 and 2003 (Table 3-11). A study  
30 conducted by The Wilderness Society that assessed changes in forest cover in King,  
31 Pierce, and Kittitas Counties from 1985 to 1999 found that approximately 96,000 acres  
32 had been converted from forest to urban development during that period in the three-  
33 county study area (Thomson et al. 2003).

34 Subsection 4.2.3.2 (Forestland Conversion) concluded that the rate of forestland  
35 conversion would remain similar to past rates under No Action Alternative 1-Scenario 2,  
36 and the rate of conversion would likely increase under the other alternatives. It was  
37 concluded that No Action Alternative 1-Scenario 1 would result in reduced stakeholder  
38 support and lower funding levels for adaptive management from current levels.  
39 Alternative 3 would also be expected to have lower funding levels from adaptive  
40 management compared to current levels. Alternative 2 would have stakeholder support  
41 and funding levels similar to current levels, which would be expected to be higher than





1 No Action Alternative 1-Scenario 1, and substantially higher than No Action Alternative  
2 1-Scenario 2. Small landowner mitigation viewed in terms of financial compensation  
3 would, therefore, be lowest under No Action Alternative 1-Scenario 1, higher under  
4 Alternative 3, and highest under Alternative 2.

5 This effect would likely result in the lowest rate of conversion under No Action  
6 Alternative 1-Scenario 2, due to the least RMZ restrictions. Alternative 2 would likely  
7 have the next lowest conversion rates even though RMZ restrictions under Alternative 2  
8 would be greater than No Action Alternative 1-Scenario 2. This is because small  
9 landowner compensation programs would likely be well funded under Alternative 2, and  
10 all forest landowners would be afforded substantially more regulatory certainty than  
11 under either scenario of No Action Alternative 1. No Action Alternative 1-Scenario 1  
12 and Alternative 3 are likely to result in increased conversion rates as compared to No  
13 Action Alternative 1-Scenario 2 due to restrictive RMZ rules (relative to No Action  
14 Alternative 1-Scenario 2), a lack of regulatory certainty, and a decrease in small  
15 landowner compensation programs.

16 RMZ restrictions would be substantially higher under Alternative 4 than under all other  
17 alternatives. As a result, it is likely that the economic viability for forest landowners,  
18 especially small landowners would be substantially lower under Alternative 4, and the  
19 potential for forestland conversion could be substantially higher than under any of the  
20 other alternatives. These types of effects would be particularly likely in the South Puget  
21 Sound and West Puget Sound Regions, as well as the North Puget Sound Region, where  
22 substantial urban development pressures exist, and non-industrial private forestlands are  
23 often located along the urban-wildland interface. Still, county regulations, the proximity  
24 of properties to urban areas, the current real estate market, and other factors would  
25 contribute to how fast conversion could take place under any alternative.

### 26 **5.3.3 Aquatic Resources**

27 This subsection is divided into three parts. The landscape-level cumulative effects on  
28 water resources and fish and fish habitat are addressed in the first two subsections. This  
29 is followed by a cumulative watershed effects analysis for aquatic resources in general.

#### 30 **5.3.3.1 Water Resources**

31 Forestlands cover approximately one-half of all lands in Washington State, and the  
32 Washington Forest Practices Rules apply to a substantial portion of these lands on both  
33 the east and westsides of the Cascade crest. Table 3-3 describes the ownership by region  
34 of these forested lands. The importance of the Washington Forest Practices Rules to  
35 regional water quality depends on the percentage of forestlands that are subject to these  
36 rules regionally, as well as to other land uses in the region. For example, the percentage  
37 of protected forestland that is not available for timber production varies substantially  
38 from region to region (subsection 4.8.4, Synthesis by Analysis Region); it ranges from 48  
39 percent in the North Puget Sound Region to less than 1 percent in the Columbia Basin.  
40 Additionally, the impact of forestland conversion would be more of a concern for some  
41 regions than others.



## Chapter 5

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1 The total percentage of forestland governed by the Washington Forest Practices Rules on  
2 the westside is approximately 62 percent (8.0 million acres) and on the eastside is  
3 approximately 34 percent (3.4 million acres) (these acreages include existing HCP lands).  
4 On the eastside, forestlands contain approximately 46 percent of all stream miles, and on  
5 the westside forestlands contain about 84 percent. Statewide, the percentage of forested  
6 lands that is subject to the Washington Forest Practices Rules and is available for timber  
7 management varies from 17 percent (Upper Columbia-Downstream of Grand Coulee  
8 Region) to 93 percent (Southwest Region) (almost 100 percent of the forestlands in the  
9 Columbia Basin Region are subject to the Washington Forest Practices Rules, but the  
10 Region has a very small acreage of forestlands [13,000 acres]).

11 Across the State, various statutes, regulations, plans, and programs cover forestland and  
12 adjacent lands and are designed to benefit water quality and flows, as well as associated  
13 aquatic resources (subsection 5.2.2, Statutes, Regulations, Plans, and Programs).  
14 Foremost among these are the Clean Water Act, Northwest Forest Plan, Washington  
15 Department of Ecology Water Quality Plans and Programs, and Washington Pesticide  
16 Laws and Regulations. The Washington Forest Practices Rules contribute to the  
17 protection of surface water resources in concert with these other regulations.

18 An evaluation of cumulative effects to water resources as a result of the adoption of any  
19 of the alternatives on water quality and peak flows can logically be assessed by region in  
20 terms of past land and water use and water resources impacts, current land use, and  
21 regulations. A description of historic practices and actions that produced the current  
22 resource conditions is presented by region in DEIS Appendix A (Regional Summaries).  
23 In effect, these regional summaries represent a summary of past and present cumulative  
24 effects by region.

25 The Snake and Columbia Basin Regions should experience the lowest potential for  
26 cumulative water quality and peak flow effects due to changes in the Washington Forest  
27 Practices Rules because these Regions have a small percentage of forestland, and  
28 agriculture is the dominant land use. The Middle Columbia and Upper Columbia  
29 Regions (Upstream and Downstream of Grand Coulee Dam) have substantial acreages of  
30 forestlands, but land use and land cover are mixed. Additionally, hydropower dams and  
31 alterations to surface water flow for agricultural uses are often the overriding concern  
32 related to water temperature, sediment, and peak flows.

33 On the westside of the State, all regions contain substantial amounts of forestland that is  
34 affected by the Washington Forest Practices Rules. Only the Olympic Coast and North  
35 Puget Sound Regions do not have a majority of the forestlands managed under the  
36 Washington Forest Practices Rules (both have 45 percent in forestland under the rules).  
37 In both the Islands and Southwest Regions, greater than 90 percent of the forestland is  
38 subject to the Washington Forest Practices Rules and, therefore, could experience a  
39 substantial local effect from changes in them. However, the Islands Region represents  
40 less than 1 percent of lands in the State.



1 West Puget Sound (57 percent), Lower Columbia (63 percent), and South Puget Sound  
2 (73 percent) Regions could experience moderate effects on water quality and peak flows  
3 relative to other westside regions. The issue of forestland conversion and urbanization is  
4 substantial on the westside, however. Compared to all other regions West Puget Sound  
5 contains the largest percentage of stream miles on exempt 20-acre parcels (approximately  
6 5 percent) (Rogers 2003), and presumably a substantial amount of other small forest  
7 landowners.

8 The North and South Puget Sound and Lower Columbia Regions contain urban growth  
9 areas associated with Bellingham, Everett, Seattle, Tacoma, Longview, and Vancouver,  
10 as well as agricultural lands on mainstem rivers. Forestland conversion to more intense  
11 land uses in these Regions and the often accompanying adverse effects of diminished  
12 water quality and altered hydrologic regimes would likely vary between the alternatives.  
13 Additionally, the potential for landslides varies by region (DEIS Appendix A). All  
14 regions in western Washington except the Islands Region have substantial areas of  
15 potentially unstable slopes on forestlands, which could affect water quality on a regional  
16 scale and vary between the alternatives.

### 17 **No Action Alternative 1-Scenario 2**

18 In terms of regional and statewide cumulative effects, No Action Alternative 1-  
19 Scenario 2 has the greatest likelihood of adverse effects to water quality and peak flows  
20 from rule changes in forested regions, but in some regions this alternative may slow the  
21 rate of forestland conversion, partially offsetting these effects (i.e., West, North, and  
22 South Puget Sound, and Lower Columbia Regions).

### 23 **No Action Alternative 1-Scenario 1**

24 No Action Alternative 1-Scenario 1 poses a minimal chance of cumulative effects on  
25 water quality and peak flows in the short term as compared to No Action Alternative 1-  
26 Scenario 2. However, over time, the potential for adverse cumulative effects increases  
27 due to the lack of an effective adaptive management program, as well as the potential for  
28 increased forestland conversion. There may be negative effects on water quality and  
29 peak flows, particularly in regions that contain a large percentage of small landowners  
30 and in close proximity to rapidly growing urban areas. A lack of regulatory certainty and  
31 decreases in financial mitigation funding for small landowners are expected to increase  
32 the rates of conversion, particularly in the West, North and South Puget Sound, and  
33 Lower Columbia Regions. Conducting Watershed Analysis would aid in addressing  
34 cumulative effects at the watershed scale, and there may be some incentive for private  
35 landowners to do so to gain some State level regulatory stability.

### 36 **Alternative 2**

37 Alternative 2 represents the current Washington Forest Practices Rules with the  
38 assurances of an HCP and, therefore, poses no increased potential for adverse cumulative  
39 effects to water quality or peak flows. Over time, the potential for adverse cumulative  
40 effects would likely decrease due to adaptive management. Due to long-term  
41 regulatory/funding stability, Alternative 2 likely results in the greatest potential for  
42 beneficial cumulative effects and the best opportunity to slow, or at least not increase, the



## Chapter 5

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1 rate of forestland conversion. Compared to No Action Alternative 1-Scenario 1, the  
2 likelihood of adverse cumulative effects would decrease over time under this alternative.  
3 This is due to a fully supported adaptive management program. Compared to No Action  
4 Alternative 1-Scenario 2, the likelihood of adverse cumulative effects would decrease  
5 immediately due to more restrictive protection measures, and would become much less of  
6 a concern over time due to a fully supported adaptive management program.

### 7 **Alternative 3**

8 Alternative 3 represents the current Washington Forest Practices Rules with the  
9 assurances of an ESA Section 4(d) rule limit and, therefore, poses no immediate  
10 increased potential for adverse cumulative effects on water quality or peak flows. Over  
11 time the potential for adverse cumulative effects would likely decrease compared to No  
12 Action Alternative 1-Scenario 1 due to a more functional adaptive management program,  
13 and particularly compared to No Action Alternative 1-Scenario 2 due to more restrictive  
14 protection measures and a more functional adaptive management program. However,  
15 adaptive management is likely to be less well supported under Alternative 3 compared to  
16 current levels and, therefore, would present less certainty in preventing future adverse  
17 cumulative effects.

### 18 **Alternative 4**

19 Alternative 4 would have the lowest potential for adverse cumulative effects on water  
20 quality and peak flows in the short term compared to all other alternatives, particularly  
21 No Action Alternative 1-Scenario 2. The regions that would likely benefit the most in  
22 terms of reduced adverse impacts to water quality and hydrology under Alternative 4 are  
23 Islands, Southwest, and Olympic Coast Regions, followed by South and West Puget  
24 Sound, Lower Columbia, and North Puget Sound Regions due to competing land use  
25 effects. Eastern Washington regions would be expected to see less of an effect on water  
26 quality and peak flows due to competing land use effects, a smaller percentage of land  
27 under the Washington Forest Practices Rules, and fewer areas of steep or potentially  
28 unstable slopes as compared to western Washington.

29 Over the long term, forestland conversion rates would be expected to increase due to the  
30 economic impacts to forest landowners, especially small landowners. Also, adaptive  
31 management would not be well supported under Alternative 4. Forestland conversion,  
32 especially in rapidly growing areas and with high numbers of small landowners (i.e.,  
33 West, North and South Puget Sound, and Lower Columbia Regions) has the potential to  
34 override the benefits of more restrictive rules. Further, a less functional adaptive  
35 management program would increase the uncertainty associated with rule effectiveness  
36 and may not provide a mechanism for identifying and correcting ineffective management  
37 prescriptions. This would likely result in an increasing potential for adverse cumulative  
38 effects in the future, or at least uncertainty about the effectiveness of the protection  
39 measures over the long term.



1    **5.3.3.2 Fish and Fish Habitat**

2    Washington’s salmon, steelhead, trout, and other species of fish represent an important  
3    part of the culture, economy, biology, and history of the State. A host of factors have  
4    contributed to the decline of salmon, steelhead, and trout (and some other species) across  
5    the State that resulted in the listing of many salmonids as threatened and endangered  
6    under the ESA. These factors include agricultural practices, urbanization, forest  
7    practices, hydropower dams, barriers to fish movement (such as road crossings),  
8    commercial and recreational fish harvest, and hatcheries along with natural factors such  
9    as predation and ocean conditions (Joint Natural Resources Cabinet 1999). Many of the  
10   factors that have contributed to the decline of salmon, steelhead, and trout are a result of  
11   historic practices that have and/or will continue to be improved as knowledge of land use  
12   impacts to habitat and species improves. While some practices require much more  
13   improvement than others to lessen or halt adverse impacts, they all are important  
14   components to salmon recovery.

15   In addition, the Washington State’s Forest Practices Act rules and Forest Practices  
16   Regulatory Program represents only one of many other regulations and protection or  
17   conservation strategies for salmon and other aquatic and riparian-dependent species in the  
18   State. Plans that benefit fish habitat and water quality in Washington include large,  
19   multi-State Federal forest management plans (Northwest Forest Plan), State and private  
20   landowner Habitat Conservation Plans, local watershed planning, individual conservation  
21   and management efforts, and a number of others (subsection 5.2.2, Statutes, Regulations,  
22   Plans, and Programs). These are contributing cumulatively to the protection and  
23   conservation of Washington’s fish and their habitats.

24    **Western Washington**

25    A very high portion of western Washington (13,008,000 acres or 83 percent) is forested.  
26    The Washington Forest Practices Rules regulate commercial timber activities for private  
27    holdings on a moderate portion, about 40 percent (6,289,000 acres) of lands, which  
28    includes 48 percent of all forestlands in western Washington. The State also manages an  
29    additional 11 percent of all lands (13 percent of all forests) primarily under the  
30    Washington DNR State Trust Lands HCP (Washington DNR 1997d). Federal and State  
31    protected forestlands, not managed for timber harvest, include a moderate portion (about  
32    26 percent) of all westside lands and a moderate portion (32 percent) of all forestlands.  
33    Also, Federal and tribal forestlands, available for timber harvest, equal about 6 percent of  
34    all westside lands (7 percent of all forestlands).

35    The portion of streams on affected lands can influence overall cumulative effects to fish  
36    and fish habitat. The amount of streams in western Washington is relatively high for the  
37    State (125,820 stream miles), having 47 percent of all State streams, but only 36 percent  
38    of the land area. But within the western Washington regions, a high portion of all  
39    streams (47 percent) is protected under the Washington Forest Practices Rules. So the  
40    alternative actions have the potential to affect a large portion of all western Washington  
41    aquatic habitats.



## Chapter 5

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1 Other land use activities have a major influence on aquatic habitat and fish within  
2 western Washington. Currently about 4 percent of the land base is  
3 residential/commercial, and 5 percent is agricultural (Table 3-2). Much of this area is  
4 along lower reaches of streams that have traditionally been the most productive, so the  
5 overall adverse effect of these activities has been much greater than their relative area due  
6 to higher intensity land uses (e.g., agricultural, residential, commercial). These lower  
7 basin areas, especially along portions of Puget Sound, where the intensity of both urban  
8 and agricultural development has been relatively high, have a great influence, typically  
9 much more so than forestry, on streams and the aquatic environment. Some of these and  
10 additional basin activities, such as hydroelectric projects and past estuary modifications,  
11 will likely continue to have cumulative negative effects on aquatic resources, independent  
12 of the Washington Forest Practices Rules.

13 As noted earlier, many of the Federal and State plans and programs will have cumulative  
14 positive effects on aquatic habitat and fish resources within western Washington  
15 (subsection 5.2.2, Statutes, Regulations, Plans, and Programs). These include the  
16 Northwest Forest Plan (especially in western Washington) and many others (USDA  
17 Forest Service and USDI Bureau of Land Management 1994). As the Aquatic  
18 Conservation Strategy under the Northwest Forest Plan is implemented in the long-term,  
19 stream protection strategies on Federal lands will complement the strategies under No  
20 Action Alternative 1-Scenario 1, and Alternatives 2, 3, and 4, particularly in watersheds  
21 with substantial amounts of Federal and private mixed ownership in the Cascades and  
22 Olympics. Under No Action Alternative 1-Scenario 2 and the less restrictive protection  
23 measures, maintenance of properly functioning streams and recovery of degraded streams  
24 may not be possible in forested watersheds with high proportions of private ownership.

### 25 **Eastern Washington**

26 Due to the arid nature of much of eastern Washington a much smaller portion of the area  
27 (9,939,000 acres or 36 percent) is designated as forestlands relative to the westside. The  
28 Washington Forest Practices Rules regulate commercial timber activities for private,  
29 Washington DNR, and other State holdings on a low portion (about 12 percent or  
30 3,365,000 acres) of all eastside lands, which includes a moderate portion (34 percent) of  
31 eastside forestlands. Federal and State protected forestlands, not managed for timber  
32 harvest, include a small portion of all lands (9 percent) but a moderate portion (24  
33 percent) of all forestlands. Also, Federal and tribal forestlands available for timber  
34 harvest equal about 15 percent of all lands, a relatively high portion (43 percent) of all  
35 forestlands.

36 The portion of streams on affected lands can influence overall cumulative effects to fish  
37 resources. The number of streams in eastern Washington, although abundant (139,310  
38 stream miles), is low relative to the westside due to the dry climate, with 53 percent of all  
39 streams, but on 64 percent of all lands. Additionally the eastside of the State has a low  
40 portion of all streams (16 percent) under the Washington Forest Practices Rules.  
41 However, streams covered under the rules make up 35 percent of all forested streams. So  
42 while the alternatives have a relatively low potential to cumulatively affect a large



1 portion of aquatic habitat in eastern Washington, they can affect a moderate portion of  
2 forested streams, where much of the habitat for listed salmonids is found.

3 Land use practices on the eastside differ from the westside, but also can have marked  
4 cumulative effects on aquatic habitat and resources. Overall, 26 percent of the area is  
5 designated as agriculture, 10 percent grasslands, and 25 percent shrubland, with a small  
6 portion, about 1 percent, residential/commercial. Outside of forestry, the major land use  
7 effects on the eastside are centered on agricultural practices. These include the historical  
8 conversion of low-lying areas within river valleys to agricultural lands and a high level of  
9 water diversion for irrigation. These practices will be mostly maintained into the future  
10 over much of the landscape.

11 Almost all of the forestlands are upstream of the major agricultural areas and serve as  
12 refuge for many of the native fish species. Additional cumulative effects have included  
13 extensive hydroelectric and water storage development, which continue to impede the  
14 passage of many of the listed anadromous fish stocks in eastside areas. Most stocks will  
15 migrate past four to nine dams on the Columbia and Snake Rivers on their migration to  
16 and from the ocean.

17 As with the westside, there are many ongoing Federal and State plans and actions that  
18 have cumulative positive effects to aquatic habitat and fish resources within eastern  
19 Washington. The Northwest Forest Plan, however, only affects Federal forests along the  
20 east slope of the Cascades (USDA Forest Service and USDI Bureau of Land  
21 Management 1994). Many Federal, State, and local planning efforts are taking place in  
22 the watersheds and basins of eastern Washington with the objective of benefiting aquatic  
23 resources in the future and will complement the strategies under No Action Alternative 1-  
24 Scenario 1, and Alternatives 2, 3, and 4, particularly in watersheds with substantial  
25 amounts of Federal and private mixed ownership. Under No Action Alternative 1-  
26 Scenario 2 and its less restrictive protection measures, maintenance of properly  
27 functioning streams and recovery of degraded streams may not be possible in forested  
28 watersheds with high proportions of private ownership.

### 29 **Conclusion**

30 The various programs and plans described above reflect a substantial wide-spread effort  
31 and financial commitment to improve water quality, putting listed species on a positive  
32 trend towards recovery and providing substantial protection for other aquatic and  
33 riparian-associated species across the State. For the most part, the strategies and  
34 programs are complementary and reflect different land management goals and activities  
35 that are needed to maintain economic viability in the region and to meet legal and  
36 environmental responsibilities under the ESA and Clean Water Act. While some adverse  
37 cumulative effects from the wide variety of land use activities are unavoidable, these  
38 effects should diminish over time as the various statutes, regulations, plans, and programs  
39 described earlier are implemented. Many of these efforts have been underway for many  
40 years; some have just begun or are yet to begin. Thus, it will likely take many years for  
41 the various efforts to interact in such a way as to halt and reverse negative cumulative



## Chapter 5

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1 effects. In general, aquatic habitat on forestlands has been less impacted and should  
2 recover more quickly than aquatic habitat on agricultural lands or developed lands.

3 From the perspective of cumulative effects, No Action Alternative 1-Scenario 2 is  
4 unlikely to meet the level of protection needed for the long-term recovery and  
5 conservation of listed species. In contrast, No Action Alternative 1-Scenario 1 and  
6 Alternatives 2 and 3 would provide substantial additional protections over No Action  
7 Alternative 1-Scenario 2 that complements other activities in the region. Alternative 4  
8 would provide even greater additional protection than No Action Alternative 1-  
9 Scenario 2 where management would complement activities in the region, but may or  
10 may not achieve more protection for aquatic resources than No Action Alternative 1-  
11 Scenario 1. This protection would depend on the rate of forestland conversion that is  
12 triggered by land use restrictions.

13 Unlike No Action Alternative 1-Scenario 1 (and Alternatives 3 and 4), Alternative 2  
14 incorporates a fully supported adaptive management program in the approach, which is  
15 widely recognized as a cornerstone to many of the plans, policies, and programs  
16 mentioned above. Adaptive management is necessary to determine the effectiveness of  
17 the management prescriptions in meeting stated goals and objectives. Consequently, in  
18 the long-term, Alternative 2 should result in adequate protection levels that would result  
19 in improvements in water quality, the opportunity for recovery of listed species, and  
20 improved aquatic habitat for fish. While both No Action Alternative 1 scenarios include  
21 some level of adaptive management, it would not be as well funded or well supported by  
22 stakeholders as it would be under Alternative 2 due to less regulatory certainty.

23 Alternative 4, with much more restrictive protection measures, would be expected to have  
24 a low level of stakeholder and funding support for adaptive management but may still  
25 result in adequate protection levels. However, increased forestland conversion rates in  
26 some areas may diminish some of the resource benefits of more restrictive rules, and  
27 therefore raise the uncertainty associated with this alternative. No Action Alternative 1-  
28 Scenario 2, due to much less restrictive protection measures, would be a very uncertain  
29 approach to achieving aquatic habitat benefits and may likely cause further degradation.

### 30 **5.3.3.3 Cumulative Watershed Effects**

31 Cumulative watershed effects are defined here as the changes to the environment caused  
32 by the interaction of multiple forest practices taking place within a watershed. Multiple  
33 forest practices include all possible combinations of forest practices including those  
34 occurring on the same site over time, or widely dispersed within the forest, occurring  
35 simultaneously or in a sequential manner (Geppert et al. 1984).

36 Cumulative watershed effects from forest practices are addressed in the current  
37 Washington Forest Practices Rules. Changes outlined by the alternatives would affect  
38 these rules, as discussed below.

### 39 **Analysis of Alternatives**

40 Rule changes or modifications to the Washington Forest Practices Rules envisioned  
41 under each of the alternatives that could cumulatively affect water quality and hydrology





1 include Watershed Analysis, Road Maintenance and Abandonment Plans (RMAPs),  
2 Hydrologic Maturity (rain-on-snow rule), riparian and wetland buffer widths, the fate of  
3 the adaptive management program, and possible changes in the rate of forestland  
4 conversion.

### 5 **No Action Alternative 1-Scenario 2**

6 Under this scenario, the Washington Forest Practices Rules would revert back to the rules  
7 in effect prior to January 1, 1999, and no ITP or ESA Section 4(d) rule limit for take  
8 protection would be in place; this would likely lead to a high level of uncertainty  
9 regarding adverse cumulative effects to aquatic resources.

10 Watershed Analysis is assumed to continue on a voluntary basis, as there could be a  
11 benefit to landowners in the form of State regulatory certainty with respect to forest  
12 practices. However, considering the rate at which watershed analyses were undertaken  
13 and completed under the rules in effect on January 1, 1999, Watershed Analysis (under  
14 No Action Alternative 1-Scenario 2) is unlikely to provide protection to aquatic habitats  
15 within the majority of forested watersheds over the next decade under this scenario.

16 Under this alternative, RMAPs would only be required based on Watershed Analysis  
17 prescriptions or Washington DNR request. The lack of a requirement for RMAPs from  
18 all landowners within a 5-year period increases the uncertainty and potential for mass  
19 wasting that could contribute sediment to surface waters.

20 Under this alternative, there could be less protection for hydrologic impacts because there  
21 would be less forest cover retained across the landscape, thus increasing the potential for  
22 increased peak flows associated with rain-on-snow events. Riparian buffers would be  
23 narrower, and in general, fewer restrictions would be placed on landowners for forest  
24 management due to potential slope instability than would be expected under the other  
25 alternatives.

26 The effects on adaptive management under this scenario are described in Chapter 2  
27 (Alternatives). It is anticipated that funding and support for the adaptive management  
28 program would be degraded or eliminated. With the loss of adaptive management, a  
29 program that would effectively monitor forest practices effects on sediment input and  
30 water quality and quantity would not likely be implemented. Without the ability to  
31 quantify and understand these effects it may be more difficult to manage lands  
32 appropriately to meet the goals of ESA and the Clean Water Act.

33 Adverse economic impacts, especially to small forest landowners, would likely be  
34 reduced under this alternative due to fewer regulatory restrictions. Economic impacts  
35 would vary by watershed, but would likely result in a slower rate of forestland conversion  
36 than is currently occurring, as discussed in subsection 5.3.2 (Landownership and Use). A  
37 slower rate of forestland conversion, especially at the forest-urban interface could be a  
38 net benefit to surface water quality and hydrology in some watersheds, as urbanization of  
39 these areas could degrade water quality and increase peak flows in the long term to a  
40 greater degree.



## **Chapter 5**

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### **No Action Alternative 1-Scenario 1**

Alternative 1-Scenario 1 anticipates the current Washington Forest Practices Rules, but without an ITP or ESA Section 4(d) rule limits for take protection. Under this scenario, Watershed Analysis may continue on a voluntary basis as there could be a benefit to landowners in the form of State regulatory certainty. RMAPs would still be required from most forestland owners on affected lands by 2016, and rain-on-snow and buffer rules would be to the same as current Washington Forest Practices Rules. Funding and support for adaptive management, however, is expected to degrade due to the lack of regulatory certainty.

Cumulative watershed impacts under this scenario would likely be mixed. Although protection measures would be better than under No Action Alternative 1-Scenario 2, it is likely that the rate of forestland conversion would be higher than current rates. Further, the adaptive management program would not likely be effective at determining if the rules are meeting established resource protection goals and objectives. Therefore, the potential for adverse impacts to aquatic resources at the watershed scale would be somewhat increased over No Action Alternative 1-Scenario 2 due to less effective adaptive management and an expected increase in forestland conversion.

### **Alternatives 2 and 3**

Alternatives 2 and 3 anticipate that the current Washington Forest Practices Rules would remain in effect with take protection provided by an ITP or ESA Section 4(d) rule limit, respectively. Riparian easement programs would remain in place, reimbursing forest landowners for some of the lost value within RMZs, although the level of funding support is expected to be somewhat less under Alternative 3. It is anticipated that forestland conversion rates would remain relatively unchanged, although may be slightly higher under Alternative 3 compared to No Action Alternative 1-Scenario 2. The rules would be modified over time as a result of adaptive management. However, support for adaptive management is expected to be lower under Alternative 3.

While ESA Section 4(d) rules would give landowners some assurances that take violations from ESA would be minimal to non-existent so long as the Washington Forest Practices Rules were followed, the long term regulatory certainty associated with a Section 4(d) rule limit is considerably less than under Section 10 (i.e., issuance of an ITP). Due to more fully supported adaptive management, Alternative 2 would likely produce the least potential for watershed cumulative effects. As compared to No Action Alternative 1-Scenario 1, and especially Scenario 2, these alternatives likely represent a decreased potential for adverse cumulative effects to aquatic resources at the watershed scale.

### **Alternative 4**

This alternative could be the most protective in terms of water quality and hydrologic cumulative effects due to activities related to forest management. However, this alternative would increase economic impacts to landowners, especially small forest landowners and, likely increase the rate of forestland conversion substantially over



1 current rates. Increased conversion rates would be due to increased buffer requirements,  
2 the lack of exemptions for some small landowners, and the increased burden of the “no  
3 net road increase” rule. Forestland conversion to more intense land uses could cause  
4 adverse cumulative effects in some watersheds due to degraded water quality, increased  
5 sedimentation, and increased peak flows, especially at the forest/urban interface.  
6 Watersheds that are located entirely or mostly within Washington DNR-managed lands  
7 on the eastside would likely have the lowest potential for aquatic resource degradation  
8 due to conversion.

9 Adaptive management, while included under Alternative 4, would likely not be well  
10 supported and well funded due to the increased costs of the more restrictive protection  
11 measures. Thus, while the protection measures would be increased under Alternative 4,  
12 the ability to monitor effectiveness of those protection measures decreases.

13 As compared to No Action Alternative 1-Scenario 1, Alternative 4 may have similar or a  
14 slightly reduced potential for adverse cumulative effects; this is due to the potential for  
15 increased forestland conversion to offset the aquatic habitat benefits of more restrictive  
16 protection measures. As compared to No Action Alternative 1-Scenario 2, Alternative 4  
17 would have less potential for adverse cumulative effects; this is due to the large  
18 difference in protection measures between these alternatives.

### 19 **5.3.4 Vegetation and Wildlife**

#### 20 **5.3.4.1 Vegetation**

21 Statewide, approximately 28 percent of the forestland is either State or Federal land that  
22 is not available for timber management. Another 22 percent is Federal and tribal land  
23 that is managed for timber, but management direction on these lands generally includes  
24 longer rotation lengths and, therefore, a higher ratio of late seral stands to early seral  
25 stands than is found on State and private lands managed for timber production. This is  
26 expected to result in more than one-third of the forestlands in the State supporting late  
27 seral forests over the long term.

28 The alternatives considered in this analysis are expected to support late seral forests on an  
29 additional 6 percent (No Action Alternative 1-Scenario 2) to 20 percent (Alternative 4)  
30 over the long term, while the other alternatives could support late-seral forest on 9 to 10  
31 percent of the forestland in Washington over the long term. Alternative 4 and, to a lesser  
32 extent, No Action Alternative 1-Scenario 1 and Alternative 3 would have a greater  
33 potential of encouraging conversion of forestland to other uses because of the uncertainty  
34 of future regulations on forest management and, in the case of Alternative 4, the much  
35 larger no-harvest riparian buffers. If additional land use conversions occur, this could  
36 contribute to cumulative loss of late-seral forests.

37 Federal and State lands not managed for timber production also provide protection for  
38 rare plants, and they are less likely to provide habitat for invasive weeds. Alternatives  
39 that have more land in no-harvest or light selective harvest riparian buffers are likely to  
40 contribute more, cumulatively, to protecting rare plants and reducing the spread of  
41 invasive plants. There are exceptions to this pattern. Some rare plants prefer disturbed



## Chapter 5

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1 areas, and these species would not benefit from the trend toward more late-seral forest.  
2 As discussed above, if No Action Alternative 1-Scenario 1, Alternative 3, and Alternative  
3 4 result in additional land use conversions, this could contribute to cumulative loss of rare  
4 plant habitat and is likely to increase habitat for invasive plants.

5 The distribution of protected forests is not uniform across the State. Over 90 percent of  
6 the West Puget Sound, Southwest, and Columbia Basin Regions are State, city, and  
7 county lands that are available for timber management, as is over 70 percent of the South  
8 Puget Sound Region. The alternatives play a larger role in providing late-seral forest,  
9 protecting rare plants, and protecting against invasive plants in these Regions.

10 Alternative 4 is expected to contribute about six times the amount of late-seral habitat  
11 over the long term in eastern Washington and four times the amount in western  
12 Washington than is expected under No Action Alternative 1-Scenario 2, and about two to  
13 three times as much as No Action Alternative 1-Scenario 1. This prospective gain could  
14 be offset if substantially more forestland conversion occurs under Alternative 4 than  
15 under these alternatives.

### 16 **5.3.4.2 Wildlife**

17 Cumulative effects on amphibians and other wildlife species are analyzed on a landscape  
18 scale, appropriate for each species. Historic effects and land ownership and use are  
19 discussed along with the statutes, regulations, plans, and programs that may work  
20 together to cumulatively affect wildlife in subsection 5.2 (Context for Analysis). Past  
21 disturbances are also summarized by analysis region in DEIS Appendix A.

22 The following discussion analyzes past, present, and reasonably foreseeable actions in  
23 connection with riparian and wetland resources; land ownership/use; and existing  
24 Federal, State and local plans, policies, and programs that play a role in protection and  
25 recovery efforts for the amphibians and other wildlife species.

26 There are a number of protection measures, at all levels of government, throughout  
27 Washington to maintain and recover listed species. Protection measures under Federal,  
28 State, and local plans, policies, and programs common to all of the amphibians and other  
29 wildlife are addressed in subsection 5.2 (Context for Analysis); additional species-  
30 specific protection measures are addressed below. It is important to note that species  
31 recovery plans, HCPs, and the broad-scale Northwest Forest Plan, which span the scale of  
32 the cumulative effects analysis area, pre-date the FFR and the associated changes to the  
33 current Washington Forest Practices Rules, and would not likely change under any of the  
34 alternatives.

### 35 **Species-Specific Measures**

#### 36 **Federal**

37 *The Bald Eagle and Golden Eagle Protection Act (16 USCS 668-668c).* The Bald Eagle  
38 and Golden Eagle Protection Act establishes prohibited acts and penalties to protect bald  
39 and golden eagles.



1 *Designation of Critical Habitat for the Marbled Murrelet, Final Rule.* The final  
 2 designation of critical habitat for the marbled murrelet does not include all suitable  
 3 habitat (U.S. Federal Register, Vol. 61, No. 102, May 24, 1996, pages 26255-26320).  
 4 Emphasis was placed on those areas considered most essential to the species'  
 5 conservation in terms of habitat, distribution, and ownership. A designation of critical  
 6 habitat begins with identifying areas essential to the conservation of the species. In  
 7 Washington, the allocation of critical habitat by ownership in Table 5-2.

8 **Table 5-2.** Marbled Murrelet Designated Critical Habitat in Washington by  
 9 Ownership and Land Allocation.

Ownership Category	Acres
<b>Federal Lands</b>	
Congessionally Withdrawn Lands	1,800
Late Successional Reserves	1,200,200
<b>Non-Federal Lands</b>	
State Lands	426,800
Private Lands	2,500
<b>Total</b>	<b>1,631,300</b>

10

11 *Recovery Plan for the Marbled Murrelet.* The recovery plan for the marbled murrelet  
 12 lists the loss of nesting habitat and poor reproductive success as the two major factors  
 13 leading to the decline of the population (USFWS 1997). Factors contributing to the poor  
 14 reproductive success are habitat fragmentation and edge effect, nest predation, low  
 15 productivity, adult mortality, and nest mortality.

16 *The Recovery Plan for the Northern Spotted Owl, Final Draft.* The final draft of the  
 17 recovery plan for the northern spotted owl divides the range of the northern spotted owl  
 18 into provinces (USFWS 1992). There are three provinces in the action area, including the  
 19 Western Washington Cascades Province, the Western Washington Lowlands Province,  
 20 and the Olympic Peninsula Province. For identifying significant threats to the northern  
 21 spotted owl, the recovery plan splits the Western Washington Cascades Province into two  
 22 segments (north and south). Interstate 90 is the dividing line between the two segments.

23 *Determination of Critical Habitat for the Northern Spotted Owl, Final Rule.* Designating  
 24 critical habitat for the northern spotted owl provides additional protection requirements  
 25 under Section 7 of the ESA with regard to activities that are funded, authorized, or  
 26 carried out by a Federal agency. The final designation of critical habitat in the on  
 27 January 15, 1992, did not include private lands (U.S. Federal Register, Vol. 57, No. 10,  
 28 January 15, 1992, pages 1796-1838).

29 *Grizzly Bear Recovery Plan.* The grizzly bear was listed as threatened on 28 July 1975  
 30 (USFWS 1993). Habitat loss and human-caused mortality (both direct and indirect) were  
 31 responsible for the grizzly bears' decline in numbers. Seven recovery zones are identified  
 32 for possible grizzly bear recovery.



## Chapter 5

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1 *Interagency Grizzly Bear Guidelines.* The *Interagency Grizzly Bear Guidelines* describe  
2 five management situations relevant to management on public lands by the National Park  
3 Service, the U.S. Forest Service, and the U.S. Bureau of Land Management.  
4 Management direction and guidelines are provided for each management situation.

5 *Feasibility Study on the Reintroduction of Gray Wolves to the Olympic Peninsula.* The  
6 *Feasibility Study on the Reintroduction of Gray Wolves to the Olympic Peninsula*  
7 concluded that the reintroduction of wolves was biologically feasible (USFWS 1998b).  
8 The analysis indicated that sufficient habitat and prey base exists to support a marginally  
9 viable wolf population over the long term. However, sportsmen have expressed concerns  
10 over a possible decline in elk and deer hunting success. Livestock and pet losses are not  
11 expected to be substantial, but would likely occur and would be a concern for the public.

12 *Canada Lynx Federally Listed as a Threatened Species.* The Canada lynx was listed  
13 under the ESA as threatened on March 24, 2000 (U.S. Federal Register, Vol. 65, No. 58,  
14 March 24, 2000, pages 16051-16086) with clarification to final rule issued in the U.S.  
15 Federal Register 3 July 2003 (U.S. Federal Register, Vol. 68, No. 128, July 3, 2003,  
16 pages 40075-40101). The range of the lynx includes portions of Washington State, and  
17 its habitat (high elevation forest) occurs primarily on Federal lands. Federal agencies are  
18 guided by the *Canada Lynx Conservation Assessment and Strategy* (Ruediger et al.  
19 2000), which was produced by an interagency team of biologists. To date, the USFWS  
20 has not yet designated critical habitat for the species, and preparation of a recovery plan  
21 for the lynx is in the initial stages.

22 *The Migratory Bird Treaty Act (16 USC 703-712, Chapter 128, as amended).* The  
23 Migratory Bird Treaty Act decreed that all migratory birds and their parts (including  
24 eggs, nests, feathers) were fully protected. The Act is a domestic law that affirms, or  
25 implements, the United States' commitment to four international conventions (with  
26 Canada, Japan, Mexico, and Russia) for the protection of a shared migratory bird  
27 resource. A list of all migratory bird species subject to the regulations of the Act is listed  
28 in 50 CFR 10.13.

### 29 **State**

30 *Washington Bald Eagle Protection Rules (WAC 232-12-292).* The purpose of these rules  
31 is to protect bald eagle habitat. The goal is to increase and maintain the population of the  
32 bald eagle so that it no longer is classified as threatened or endangered in Washington.  
33 The rules require site management plans to be developed if land use activities would  
34 adversely impact eagle habitat. As stated in the rules, any relevant factor will be  
35 considered in developing a site management plan.

36 *Washington Forest Practices Rules (WAC 222).* The Washington Forest Practices Rules  
37 designate certain forest practices as Class IV-Special if they would occur within critical  
38 wildlife habitat (State) and critical habitat (Federal) of threatened or endangered species.  
39 Forest practices applications that are designated as Class IV-Special require an  
40 Environmental Checklist in compliance with SEPA (WAC 222-16-080), and potentially  
41 an EIS. Specific harvest and timing prescriptions apply to various wildlife species and



1 include the northern spotted owl, marbled murrelet, bald eagle, gray wolf, grizzly bear,  
2 mountain caribou, Oregon silverspot butterfly, peregrine falcon, sandhill crane, and  
3 western pond turtle.

#### 4 **Cumulative Effects Analysis**

5 Many of the programs or plans listed above pre-date the FFR and the associated changes  
6 to the current Washington Forest Practices Rules and would not likely change under any  
7 of the alternatives. For Washington, approximately 40 percent and 34 percent of forested  
8 land is currently subject to the rules in western and eastern Washington, respectively  
9 (Table 3-3). The remainder of the forestland is Federal and/or State lands not primarily  
10 managed for timber production.

#### 11 **No Action Alternative 1-Scenario 2**

12 If the Services do not grant the State of Washington take authorization through ESA  
13 Section 10(a)(1)(B) ITPs or take limits under Section 4(d) rules, for any part of the  
14 Washington Forest Practices Rules, it is possible that the Legislature could review and  
15 rescind the 1999 Salmon Recovery Act, statutes could be modified, and current  
16 Washington Forest Practices Rules would revert back to those in effect prior to January 1,  
17 1999. In turn, the Legislature could also reduce funding for enforcement of the  
18 Washington Forest Practices Rules and reduce or terminate funding for adaptive  
19 management.

20 Under the Washington Forest Practices Rules in effect on January 1, 1999, buffers would  
21 protect approximately 618,140 acres (10 percent) of existing riparian areas in western  
22 Washington and 128,490 acres (3.8 percent) of existing riparian areas for eastern  
23 Washington, respectively (Table 3-3). Fewer acres of riparian habitat would be left as  
24 no-harvest buffers, with more acres of selective harvesting occurring compared to current  
25 Washington Forest Practices Rules (No Action Alternative 1-Scenario 1). Under the  
26 Washington Forest Practices Rules in effect on January 1, 1999, forested lands subject to  
27 the rules would likely add cumulatively to past harvesting of riparian habitat on private,  
28 State, and Federal lands. Also, protections for amphibians and riparian-associated  
29 wildlife species would be reduced, including a reduction in travel/dispersal corridors and  
30 connectivity to Federal and State protected lands.

#### 31 **No Action Alternative 1-Scenario 1 and Alternatives 2 and 3**

32 In contrast to No Action Alternative 1-Scenario 2, No Action Alternative 1-Scenario 1  
33 would maintain the current Washington Forest Practices Rules. Potential cumulative  
34 impacts to amphibians and other riparian-associated wildlife under No Action Alternative  
35 1-Scenario 1 would differ from No Action Alternative 1-Scenario 2 (and the other  
36 alternatives) based on the level of continued adaptive management support and the  
37 relative potential for conversion of forestland to other land uses.

38 Under No Action Alternative 1-Scenario 1, it is anticipated that landowner participation  
39 in the adaptive management program would cease because ESA take authorization or  
40 limits would not be provided. Further, the rate of forestland conversion would be



## Chapter 5

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1 expected to rise (See subsection 4.2.3.2, Forestland Conversion and, subsection 5.3.2,  
2 Land Ownership and Use).

### 3 **Alternative 2**

4 Alternative 2 would maintain the current Washington Forest Practices Rules and would  
5 be expected to maintain continued stakeholder and funding support for adaptive  
6 management. Wildlife protection under Alternatives 2 would be more predictable based  
7 on continued implementation of the Washington Forest Practices Rules, continued  
8 support and participation in program implementation, and continued public funding for  
9 adaptive management. Therefore, impacts from cumulative effects would be expected to  
10 decrease over time under Alternative 2 as compared to No Action Alternative 1-Scenario  
11 1, and especially compared to No Action Alternative 1-Scenario 2.

### 12 **Alternative 3**

13 Adaptive management would not be as well supported in the future under Alternative 3  
14 compared to Alternative 2. Under Alternative 3 there would likely be decreased  
15 stakeholder support for and participation in adaptive management, as well as a potential  
16 reduction in funding because of lack of take authorization for endangered species, some  
17 threatened species, and unlisted species, and because of the indefinite term of ESA  
18 assurances. It is likely that the rate of forestland conversion would be similar to current  
19 rates or higher. Therefore, the potential for adverse impacts to amphibians and other  
20 riparian-associated wildlife would be somewhat increased compared to both No Action  
21 Alternative 1 scenarios due to a less effective adaptive management program and  
22 possibly by increased conversion of forestland to non-forest uses. As compared to No  
23 Action Alternative 1-Scenario 1, the potential for adverse impacts to amphibians and  
24 other riparian-associated wildlife would be expected to decrease; this potential would  
25 decrease even further as compared to No Action Alternative 1-Scenario 2.

26 *Existing Washington Forest Practices Rules.* Under the existing Washington Forest  
27 Practices Rules, nearly twice as many acres of riparian habitat are being protected as  
28 would be protected under No Action Alternative 1-Scenario 2 with approximately  
29 1,234,543 acres (20 percent) of protected riparian habitat in western Washington, and  
30 247,825 acres (7 percent) of protected riparian habitat in eastern Washington (Table 3-3;  
31 Figure 4.2-1). More acres of riparian habitat would be left as no-harvest buffers, and the  
32 potential exists to increase the amount of complex forest structure along streams under  
33 No Action Alternative 1-Scenario 1 (and Alternatives 2 and 3) compared to No Action  
34 Alternative 1-Scenario 2.

35 Under the current Washington Forest Practices Rules, with ESA incidental take coverage  
36 from the Services, forested lands subject to the rules would not add to past harvesting of  
37 riparian habitat on private, State, and Federal lands. The current Washington Forest  
38 Practices Rules, along with a strong adaptive management program, add to the protection  
39 of amphibians and riparian-associated wildlife species. This protection includes an  
40 increase in riparian area, which would provide travel/dispersal corridors and connectivity  
41 to Federal and State protected lands.





1    **Alternative 4**

2    Larger no-harvest buffers under Alternative 4 would protect approximately twice the  
3    number of existing riparian acres in RMZs than under the current Washington Forest  
4    Practices Rules of No Action Alternative 1-Scenario 1 (Figure 4.2-1). No harvest would  
5    be allowed within the larger buffer areas. Therefore, under this alternative, there would  
6    be little to no additive negative impact to those from past timber harvests within riparian  
7    habitat on private, State, and Federal lands. Protection of amphibians and riparian-  
8    associated wildlife species habitat would be increased, which would also provide  
9    travel/dispersal corridors and connectivity to Federal and State protected lands.  
10   However, a more restrictive set of rules would generally not be supported by private  
11   landowners, and in turn would likely increase conversion rates and adversely affect the  
12   viability of the adaptive management programs. Increased conversions and a lack of  
13   support for adaptive management could, over time, diminish the resource benefits of a  
14   more restrictive set of rules.

15   As compared to No Action Alternative 1-Scenario 1, Alternative 4 may have similar or a  
16   slightly reduced potential for adverse cumulative effects to amphibians and other riparian  
17   associated wildlife; this is due to the potential for increased forestland conversion in  
18   some areas to offset the aquatic habitat benefits of more restrictive protection measures.  
19   As compared to No Action Alternative 1-Scenario 2, Alternative 4 would have much less  
20   potential for adverse cumulative effects; this is due to the large difference in protection  
21   measures between these alternatives.

22    **5.3.5 Social and Economic Environment and Archeological, Historical,**  
23    **and Cultural Resources**

24    **5.3.5.1 Archeological, Historical, and Cultural Resources**

25    The archeological, historical, and cultural resources of Washington’s forestlands are  
26    under steady pressure from resource extraction, development, recreation, and other  
27    modern human activities. These resources have experienced long-term cumulative losses  
28    as a result of these types of activities. Because they are widespread and unidentified for  
29    purposes of this analysis, the effects of these activities on the archeological, historical,  
30    and cultural resources of Washington’s forestlands cannot be taken into consideration in  
31    any systematic manner. It is, however, possible to divide lands into two broad groups,  
32    private and non-private, with the non-private lands further divisible into two parts,  
33    Federal/tribal and State-managed lands.

34    Private forestlands are subject to the constraints of the Washington Forest Practices Rules  
35    and other regulations (RCW Chapters 27.44 and 27.52) associated with the protection of  
36    archeological, historical, and cultural resources. The effects of each alternative on these  
37    resources have been addressed in subsection 4.13 (Archeological, Historical, and Cultural  
38    Resources). In that subsection, alternatives are compared according to the levels of  
39    protection that would be provided under each alternative and the anticipated effect of  
40    each alternative on anadromous fish.



## Chapter 5

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1 Non-private forestlands are also managed under a set of laws, regulations, and policies  
2 pertaining to archeological, historical, and cultural resources; the effects of which are  
3 generally understood. Non-private forestlands fall into two groups: those under Federal  
4 and tribal management and those managed by the Washington DNR.

5 Federal and tribal lands are under the jurisdiction of the NHPA, the American Indian  
6 Religious Freedom Act, Archaeological Resource Protection Act, Native American  
7 Graves Protection and Repatriation Act, and Executive Order 13007. NHPA Section 106  
8 requires Federal agencies to take into account the effects of Federal undertakings on  
9 cultural resources, which includes archaeological and historical properties, along with  
10 traditional cultural properties. The latter includes traditional sites, as defined herein, and  
11 areas where traditional resources are gathered. As defined in the U.S. Department of  
12 Interior regulations, “undertaking” means a project, activity, or program funded in whole  
13 or in part under the direct or indirect jurisdiction of a Federal agency, including those  
14 carried out by or on behalf of a Federal agency; those carried out with Federal financial  
15 assistance; or those requiring a Federal permit, license, or approval. The Services will  
16 comply with Section 106 of the NHPA for the action analyzed in this DEIS by making a  
17 determination whether or not the proposed Federal action is an undertaking, as previously  
18 defined, considering the nature of Federal involvement, such as the degree of Federal  
19 agency control or discretion, the type of Federal involvement or link to the action, and  
20 whether or not the action could move forward without the Federal action. The Federal  
21 review will focus on the proposed action of issuing a permit or approval for activities  
22 conducted according to requirements of the Washington Forest Practices Rules.

23 The American Indian Religious Freedom Act and Executive Order 13007 require  
24 agencies to take into account the effects of their actions on religious practices and sacred  
25 lands, respectively. The Native American Graves Protection and Repatriation Act  
26 protects Native American skeletal remains, associated funerary objects, sacred objects,  
27 and objects of cultural patrimony on Federal lands, while the Archaeological Resource  
28 Protection Act protects and controls access to archaeological and some historical  
29 resources. Federal and tribal agencies maintain staffs that are charged with complying  
30 with these statutes, so it is reasonable to assume that the cumulative effects of forest  
31 management on lands under Federal and tribal jurisdiction, as well as private lands with a  
32 project, activity, or program under the direct or indirect jurisdiction of a Federal agency,  
33 would not be substantial.

34 Archeological, historical, and cultural resources on Forest Trust lands under Washington  
35 DNR’s trustee obligations are protected under Forest Resource Plan Policy #24 and the  
36 existing State Trust Lands HCP (Washington DNR 1992a; Washington DNR 1997d).  
37 Titled “Identifying Historic Sites,” Forest Resource Plan Policy #24 declares that  
38 Washington DNR will establish a program to identify and inventory historic and  
39 archaeological sites and protect them at a level that, at a minimum, meets regulatory  
40 requirements (Washington DNR 1992a). This policy is generally interpreted to mean that  
41 Washington DNR will follow procedures equivalent to those required under Section 106  
42 of the NHPA. The existing State Trust Lands HCP must follow RCW Chapter 27.44 and  
43 Chapter 27.53 to assure that archaeological sites and Indian graves are protected from



1 disturbance (Washington DNR 1997d). It identifies Washington DNR's Total Resource  
2 Application Cross-Reference System as an important tool for ensuring that department  
3 activities do not damage such sites. In addition, Washington DNR enters into  
4 Memoranda of Agreements with Tribes to ensure access to and protection of traditional  
5 sites and resources. Although small numbers of sites may still be missed, and biotic  
6 resources may be affected by forest management activities, these effects are expected to  
7 be slight.

8 Because of these constraints, few cultural resource sites are expected to be adversely  
9 affected. Consequently, the cumulative effects of the alternatives that are considered in  
10 this DEIS would be equivalent to the direct and indirect effects, which are discussed in  
11 Chapter 4 (Environmental Consequences).

12 In general, the more RMZ area set-aside as no-harvest areas, the more potential  
13 protection afforded to archeological, historical, and cultural resources. The functionality  
14 of the adaptive management program is not expected to affect the protection of  
15 archeological, historical, and cultural resources to any substantial degree. However, the  
16 rate of forestland conversion could affect these resources; increases in the rate of  
17 forestland conversion could offset some of the protection afforded by larger no-harvest  
18 RMZs. Given this, No Action Alternative 1-Scenario 2 is expected to provide the least  
19 amount of protection due to the least amount of RMZ buffer area. No Action Alternative  
20 1-Scenario 1 and Alternative 3 would provide more protection than No Action  
21 Alternative 1-Scenario 2 due to more RMZ buffer area provided under these alternatives.  
22 Alternative 2, while providing the same amount of RMZ buffer area as No Action  
23 Alternative 1-Scenario 1, offers long-term regulatory certainty, which may increase  
24 landowner willingness to voluntarily provide more protection than would be required by  
25 regulation. Alternative 4 could provide the most protection due to the largest RMZ  
26 buffer area, but some of this protection could be offset due to increased forestland  
27 conversion.

### 28 **5.3.5.2 Social and Economic Environment**

29 The following subsections discuss the potential cumulative effects of the proposed action  
30 on the economic and social environment. This discussion addresses the potential  
31 combined effects of the proposed action along with other past, present, and reasonably  
32 foreseeable future activities.

#### 33 **Employment and the Economy**

34 Total employment in Washington increased by 688,915 jobs, or 24 percent, between  
35 1990 and 2000 (Washington Employment Security Department 2003). Covered  
36 employment projections developed in 2003 anticipate continued total employment  
37 growth with an average annual growth rate of 1.6 percent between 2002 and 2012.  
38 Covered employment in wood products manufacturing is also projected to grow, although  
39 at a slower annual rate than total employment, increasing by 1.0 percent from 2002 to  
40 2007 and 0.9 percent from 2007 to 2012. Logging employment is projected to remain  
41 constant from 2002 to 2007 (0.0 percent annual growth rate) and to decline between 2007  
42 and 2012 (-0.6 percent annual growth rate). Covered employment in paper



## Chapter 5

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1 manufacturing is expected to increase slightly between 2002 and 2007 (0.2 percent  
2 annual growth rate) and remain constant from 2007 to 2012 (0.0 percent annual growth  
3 rate). Projections are not available for the commercial fishing sector (Washington  
4 Employment Security Department 2003).

5 Projections are also not available for the recreation sector because it is not measured as a  
6 separate industrial category, and data are not specifically gathered for this sector.  
7 Employment is, however, projected to increase in the leisure and hospitality sector, with  
8 annual increases of 1.7 percent and 1.3 percent from 2002 to 2007 and 2007 to 2012,  
9 respectively. The leisure and hospitality sector includes the arts, entertainment, and  
10 recreation sector and the accommodation and food services sector, which are often used  
11 as general measures of recreation activities (Washington Employment Security  
12 Department 2003).

### 13 **Lumber and Wood Products**

14 Annual full- and part-time employment in the lumber and wood products sector is shown  
15 for 1969 through 2000 in Figure 5-2. Lumber and wood products employment fluctuated  
16 substantially over this period, with peaks in the late 1970s prior to the economic  
17 recession of the early 1980s and an overall declining trend from 1990 onward. Harvest  
18 from all ownerships declined from 5,849 million board feet in 1990 to 4,176 million  
19 board feet in 2000, a decrease of approximately 29 percent. Harvests from National  
20 Forest System lands decreased by 736 million board feet, or 90 percent over this period.  
21 Private lands accounted for 84 percent of total harvest in 2000, with State harvest  
22 accounting for 13 percent (Washington DNR 2001). Overall, harvests declined on  
23 private and State lands in 2001 and 2002 (Washington DNR 2004).

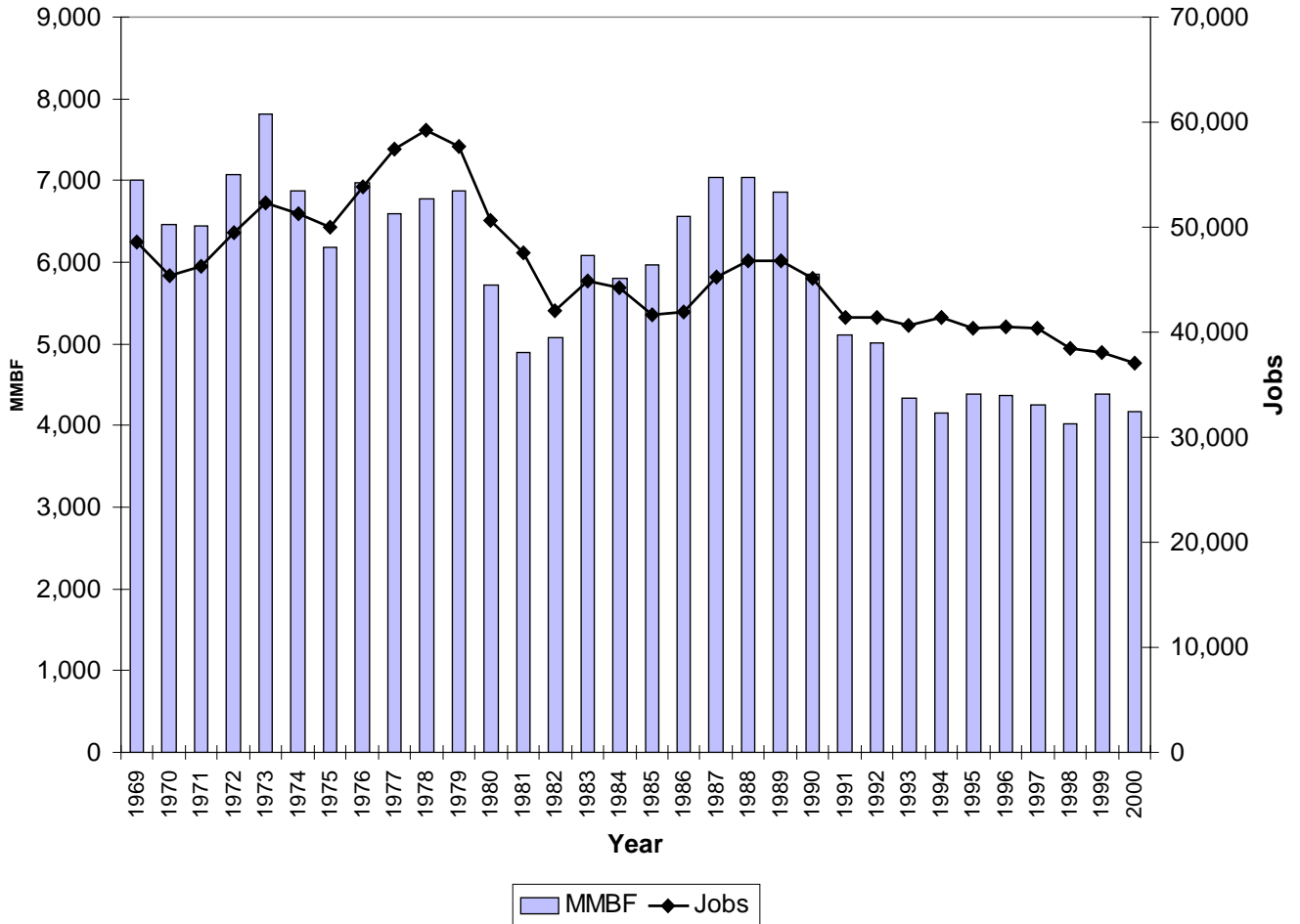
24 As compared to No Action Alternative 1-Scenario 2, potential reductions in acres  
25 available for harvest under No Action Alternative 1-Scenario 1 (and Alternatives 2 and 3)  
26 could contribute to the downward trend in timber harvest shown in Figure 5-2. This is  
27 especially true under Alternative 4. This could, in turn, contribute to the downward trend  
28 in timber-related employment. Employment levels in both the lumber and wood products  
29 and pulp and paper sectors are, however, as noted above, expected to remain relatively  
30 stable over the next few years. These projections are based on a number of factors that  
31 affect the economic performance of the forest products sector in Washington State.  
32 These factors include the overall health of the United States economy, demand from  
33 Asia, and competition from Canadian and European softwood lumber exporters.

34 Lumber prices declined nationally and in Washington State in 2002. Comparatively low  
35 prices despite a strong United States housing market and high duties on Canadian imports  
36 indicate an excess supply of softwood lumber products. The ongoing weak Asian export  
37 market coupled with continued low-priced Canadian imports suggests that lumber prices  
38 will likely remain fairly constant in the near future. Domestic and international pulp and  
39 paper markets were weak during 2002, with pulpwood and chip prices also unlikely to

40



1 **Figure 5-2.** Timber Harvest and Lumber and Wood Products Employment,  
 2 1969 to 2000.



3 MMBF = million board feet  
 4 Source: Bureau of Economic Analysis 2004; Washington DNR 2004d.

5  
 6 increase in the near future (Blatner et al. 2003). As compared to No Action Alternative  
 7 1-Scenario 2, potential reductions in timber supply under No Action Alternative 1-  
 8 Scenario 1 (and Alternatives 2 and 3) are likely to contribute to these broader trends in  
 9 the forest products industry, but timber supply is just one of a number of factors that  
 10 affect the industry and potential future employment and income. This is especially true  
 11 under Alternative 4.

12 **Recreation and Commercial Fishing**

13 While it is not possible to quantify the cumulative effects of the proposed alternatives on  
 14 salmonid populations and recreation and commercial fishing employment, it is possible to  
 15 assess the potential direction of the effects and to provide a general comparison between  
 16 alternatives. Potential cumulative effects to aquatic habitat and fish are discussed in  
 17 subsection 5.3.3 (Aquatic Resources). The combination of programs and plans described



## **Chapter 5**

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1 in that subsection reflect a substantial widespread effort to put listed species on a positive  
2 trend toward recovery and to provide substantial protection for other aquatic and riparian-  
3 associated species.

4 The potential for adverse habitat impacts associated with No Action Alternative 1-  
5 Scenario 2, suggest that salmonid populations would likely decline over the long term  
6 under this alternative. Viewed from a cumulative perspective, this alternative is unlikely  
7 to meet the level of protection needed for the Washington Forest Practices Rules to play a  
8 role in the overall recovery process. No Action Alternative 1-Scenario 1, in contrast,  
9 provides protection that complements other activities in the region. Alternative 2 would  
10 likely result in long-term improvements as compared to both No Action Alternative 1  
11 scenarios; substantially so compared to Scenario 2. Alternative 3 would result in a slight  
12 improvement over No Action Alternative 1-Scenario 1 and more so over No Action  
13 Alternative 1-Scenario 2.

14 Alternative 4 may have more certainty of achieving adequate protection to resources in  
15 the short term and would result in the highest likelihood of long-term improvements in  
16 habitat and salmonid numbers. However, over time, increased forestland conversion  
17 rates could diminish some of these resource benefits. Effects on existing salmonid  
18 populations would likely affect the availability of salmonids for recreational and  
19 commercial harvest, which would, in turn, affect recreation- and commercial fishing-  
20 related employment and income.

21