

Appendix



Habitat Conservation Plan

Chapter



Introduction

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1 INTRODUCTION

The Montana Department of Natural Resources and Conservation (DNRC) has prepared this multi-species habitat conservation plan (HCP) to address the potential take of federally listed species on forested state trust lands managed by the Trust Lands Management Division (TLMD) of DNRC. This HCP was prepared to comply with Section 10(a)(1)(B) of the federal Endangered Species Act (ESA) (16 United States Code [USC] 1531 et seq.) and the regulations that implement that section of the ESA. Section 10 of the ESA provides a regulatory mechanism to allow for the incidental take of federally endangered and threatened species by private interests and non-federal government agencies during otherwise lawful activities. The DNRC Forest Management Bureau (FMB) would be responsible for implementation of this HCP.

The United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) are the federal agencies responsible for ensuring compliance with the ESA, which provides legal protection for federally threatened and endangered species. Generally, the USFWS is responsible for terrestrial and freshwater aquatic species, while NMFS is responsible for listed marine mammals, anadromous fish, and other living marine resources. This HCP does not involve a federally listed species managed by NMFS, so this agency will not be involved in this HCP or the environmental impact statement (EIS) associated with this HCP.

This HCP was developed to protect five terrestrial and aquatic species (three of which are currently listed under the ESA) that occur on DNRC forested trust lands (HCP species): grizzly bear (*Ursus arctos horribilis*), Canada lynx (*Lynx canadensis*), bull trout (*Salvelinus confluentus*), westslope cutthroat trout (*Oncorhynchus clarkii lewisi*), and Columbia redband trout (*Oncorhynchus mykiss gairdneri*). Specifically, the HCP was designed to avoid, minimize, and/or mitigate the impacts of incidental take of threatened and endangered species as a result of timber harvest and related activities to the maximum extent practicable. Take is defined under Section 9 of the ESA as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or to attempt to engage in any such conduct.”

Origin and Function of Trust Lands

By the Enabling Act approved February 22, 1889, the Congress of the United States granted to the State of Montana, for common school support, sections 16 and 36 in every township within the state. Some of these sections had been homesteaded, some were within the boundaries of Indian reservations, and others were disposed of before passage of the Enabling Act. To make up for this loss, the State of Montana selected other lands.

The Enabling Act and subsequent acts also granted acreage for other educational and state institutions, in addition to the trust beneficiaries. While all trust lands are considered state-owned, they may only be managed to fulfill the specific purposes for which the trust was created: to provide income for the designated trust beneficiary such as the common schools, agricultural college, mining college, asylums, reform schools, or public buildings. The original common school grant was for 5,188,000 acres. The additional acreage provided for other endowed institutions included 668,720 acres, for a total of 5,856,720 acres. The total acreage figure has changed over time due to land sales and acquisitions. Mineral acreage now exceeds surface acreage, because the mineral estate has been retained when lands are sold. Surface acreage at the end of fiscal year 2007 totaled over 5.1 million acres; mineral acreage exceeded 6.2 million acres (DNRC 2007). Nearly 548,500 acres of forested trust land will be covered under this HCP and incidental take permit.

1 This HCP is part of an application for an incidental take permit (Permit) that is submitted to the
2 USFWS for review and approval. Based on a careful review of the final HCP and the associated
3 final EIS, the analysis of benefits and impacts to the trust beneficiaries, public review, and other
4 appropriate analyses, DNRC will determine whether to enter into an agreement with the USFWS,
5 and the USFWS will evaluate whether the HCP and supporting application documents meet the
6 issuance criteria for the Permit. The resulting legal agreement between these two parties, referred to
7 as an implementing agreement, will legally bind the USFWS and DNRC to the HCP terms and
8 conditions.

9 **1.1 SECTION 10 AND HCP OVERVIEW**

10 Under Section 10 of the ESA, the United States (U.S.) Secretary of the Interior and U.S. Secretary
11 of Commerce may, where appropriate, authorize the taking of federally listed wildlife or fish if such
12 taking occurs incidentally during otherwise lawful activities. This authorization is granted through a
13 Permit. The Permit under Section 10(a)(1)(b) allows non-federal projects to “take” federally listed
14 species while ensuring their long-term survival and enhancement through an approved HCP.

15 Section 10(a)(2)(A) of the ESA requires a Permit applicant to submit an HCP that specifies, among
16 other things, the impacts that are likely to result from the taking, and the commitments the applicant
17 will undertake to minimize and/or mitigate such impacts to the maximum extent practicable. An
18 HCP is designed to provide benefits to both fish and wildlife species that receive protection under
19 the ESA, as well as to landowners who manage habitat for these species. For listed species (and
20 other species that rely on similar habitat), HCPs emphasize long-term biological goals by
21 encouraging the active participation of landowners. For landowners and local governments, an
22 HCP creates a predictable regulatory environment, offering the creative flexibility and certainty
23 needed for planning and management, while still providing protection for listed species. HCPs can
24 also reduce uncoordinated decision-making that may result in incremental habitat loss, negative
25 effects to other species, or inefficient and duplicative review.

26 The No Surprises regulations provide assurances by the federal government through the Section 10
27 (a)(1)(B) process to non-federal landowners. Through the No Surprises regulations, private
28 landowners are assured that if "unforeseen circumstances" arise, the USFWS and NMFS will not
29 require the commitment of additional land, water, or financial compensation or additional
30 restrictions on the use of land, water, or other natural resources beyond the level otherwise agreed to
31 in the HCP without the consent of the permittee. The government will honor these assurances as
32 long as a permittee is properly implementing the terms and conditions of the HCP, Permit, and other
33 associated documents

34 The requirements of Section 10 and the HCP are contained in Sections 10(a)(2)(A) and 10(a)(2)(B)
35 of the ESA, and 50 Code of Federal Regulations (CFR) 17.22 and 17.32. Additional guidance on
36 the contents of an HCP is provided in the HCP Handbook (USFWS and NMFS 1996) and in an
37 addendum to the HCP Handbook referred to as the 5 Points Policy (65 FR 35242-35257, June 1,
38 2000). Two of the key requirements of the Section 10 and HCP process are:

- 39 1. Demonstration of the impacts likely to result from the proposed taking of the species for
40 which Permit coverage is requested.

2. Demonstration that the impacts of the proposed take are minimized and mitigated to the maximum extent practicable.

Additional information on these requirements is provided in sections 1.5 and 1.6 below.

1.2 ORGANIZATION OF THIS DOCUMENT

Overall, this HCP is organized as follows.

Chapter 1, Introduction. This chapter introduces the requirements of Section 10 of the ESA and HCPs as a planning tool. The basic HCP elements are summarized, along with a detailed description of the activities proposed for coverage under this HCP. This chapter describes the trust mandate and process used to develop the conservation commitments. This chapter identifies the impacts that may constitute take to be authorized by the Permit and minimization and mitigation measures to reduce the effects of take to the maximum extent possible.

Chapter 2, Conservation Strategies. These strategies form the core of the HCP and represent DNRC's commitments designed to minimize and mitigate the effects of timber harvest and associated activities on HCP species that occur on trust lands. This section includes the rationale for the conservation commitments based on a balance between the best available science for the species and practicability considerations for DNRC implementation.

Chapter 3, Transition Lands Strategy. This chapter describes how the implementation of the HCP will respond to changes in the overall land base resulting from disposition, acquisition, and conversion of trust lands to other uses.

Chapter 4, Monitoring and Adaptive Management. This chapter describes the processes for monitoring both the implementation of the conservation strategies and the effectiveness of the HCP's minimization and mitigation commitments. In addition, it addresses the foreseeable changes that might be necessary in the adaptive management framework, including cooperative management changes in response to information gathered during implementation and effectiveness monitoring.

Chapter 5, Alternatives. This chapter summarizes other alternatives to the HCP and why they were not pursued as viable alternatives.

Chapter 6, Changed Circumstances. This chapter describes how implementation of the HCP will change in response to events outside of land use changes. Changed circumstances include those resulting from foreseeable natural events and those resulting from changes in administrative procedures.

Chapter 7, DNRC's Identification of Impacts that Have the Potential to Constitute Take under the HCP. This chapter describes the covered activities that could potentially result in incidental take of the covered species. It identifies how incidental take will be calculated and limited under the HCP and the related impacts expected to result from the covered activities.

Chapter 8, HCP Implementation. This chapter provides information about the standard administrative procedures once the HCP is in place, addressing matters such as decision making, staffing, reporting, and plan amendment. Additionally, the ESA requires that the HCP describe the

1 funding that will be made available to implement the proposed mitigation program. This chapter
2 presents the anticipated costs of implementing the conservation strategies, as well as those
3 associated with other long-term needs, such as biological monitoring and evaluation. This chapter
4 also describes how the HCP and Permit will be incorporated into the Administrative Rules of
5 Montana (ARMs) pursuant the Montana Administrative Procedure Act (MAPA), if approved by the
6 Board of Land Commissioners (Land Board). The Land Board and its role in the HCP process are
7 described in Chapter 2 (Environmental and Procedural Setting) of the EIS for this HCP.

8 **Chapter 9, Data Sources Used in HCP Development.** This chapter summarizes the data sources
9 and assumptions used in preparation of the HCP and associated EIS.

10 **Chapter 10, References.** This chapter provides full citations for literature, reports, etc. used in this
11 document.

12 **Chapter 11, Glossary.** This chapter contains definitions for key terms used in this document.

13 **Appendices.** Appendix B contains protocols, methods, and checklists for implementing the
14 conservation strategies. Appendix C contains the figures referenced in this HCP. Appendices D
15 and E contain the figures and tables supporting the EIS analysis, respectively. Appendix F contains
16 the Implementing Agreement between DNRC and the USFWS.

17 **1.3 DEVELOPMENT OF THE DNRC HCP**

18 The development of an HCP is driven by the applicant (DNRC), while USFWS personnel provide
19 detailed guidance and technical assistance throughout the HCP process. Central to the HCP process
20 is the development of the conservation commitments that DNRC will implement to minimize and
21 mitigate incidental take to the maximum extent practicable.

22 Fundamental to the development of the DNRC HCP are the trust
23 obligations and fiduciary responsibilities of DNRC's TLMD, which
24 oversees the management of the state trust lands. These obligations
25 and responsibilities guided DNRC's formulation of management
26 goals and objectives for the HCP, which then guided the
27 development of the conservation commitments. In the course of
28 developing this HCP, the USFWS and DNRC formed technical
29 workgroups to collaborate on the design of conservation strategies
30 for the HCP species and their habitats. The workgroups were
31 composed of: (1) DNRC FMB specialists who have programmatic
32 responsibility for developing threatened and endangered species
33 policy and management approaches, including a terrestrial species
34 biologist, a fisheries biologist, a forest hydrologist, a silviculturist,
35 and a forest inventory specialist; (2) DNRC field foresters who
36 implement the forest management program; and (3) USFWS
37 terrestrial and aquatic species biologists and ESA Section 7 and 10
38 specialists.

DNRC's Mission

DNRC is responsible for helping ensure Montana's land and water resources provide benefits for present and future generations.

TLMD's Mission

TLMD is responsible for managing the State of Montana's trust land resources to produce revenue for the trust beneficiaries while considering environmental factors and protecting the future income-generating capacity of the land.

(Guided by: MCA 77-1-301 MCA 77-1-202 MCA; Enabling Act of February 22, 1889; and 1972 Montana Constitution, Article X, Section 11.)

1.3.1 Trust Obligations and Fiduciary Responsibilities

The legal framework for the management of state trust lands is summarized below and described in detail in the Chapter 2 (Environmental and Procedural Setting) of the EIS for this HCP.

State trust lands are managed under Montana’s Constitution and the Enabling Act. The Enabling Act provided that proceeds from the sale and permanent disposition of any of the trust lands shall constitute permanent funds for the support and maintenance of Montana’s public schools and the various state institutions for which the lands had been granted. The Montana constitution provides that these permanent funds shall forever remain inviolate, guaranteed by the State of Montana against loss or diversion.

The Enabling Act further provided that rentals received on leased lands, interest earned on the permanent funds arising from these lands, interest earned on deferred payments on lands sold, and all other actual income shall be available for the maintenance and support of such schools and institutions. While the trust lands are considered state-owned, the lands may only be managed to fulfill the specific purposes for which the trust was created, and the use of trust lands must result in income to the intended trust beneficiary. Montana’s constitution goes further and states that any use of the trust lands must generate “full market value” (i.e., the purchase price of a property must equal the appraised market value). Table 1-1 shows the non-HCP acres and HCP project area acres of trust lands by trust beneficiary for the three land offices with acreage in the HCP project area: Northwestern Land Office (NWLO), Southwestern Land Office (SWLO), and Central Land Office (CLO).

TABLE 1-1. NON-HCP ACRES AND HCP PROJECT AREA ACRES BY TRUST IN THE NWLO, SWLO, AND CLO

Trust Beneficiary	Non-HCP Acres¹	HCP Project Area Acres	Total Acres in NWLO, SWLO, and CLO
Montana State University - 2nd Grant	15,600	16,100	31,700
Montana State University - Morrill	40,300	4,500	44,800
Common Schools	973,100	414,100	1,387,200
School for the Deaf and Blind	25,700	7,300	33,000
General Fund	40	0	40
Public Buildings	108,000	63,700	171,700
School of Mines	28,700	12,100	40,800
State Normal School	33,400	12,300	45,700
State Industrial School	35,100	18,400	53,500
University of Montana	5,200	0	5,200
Total	1,265,140	548,500	1,813,640

¹ Non-HCP acres only refer to non-HCP acres in the NWLO, SWLO, and CLO. Source: DNRC (2008a), rounded to the nearest 100 acres.

Other factors that influence DNRC’s HCP program include Montana Code Annotated (MCA) 77-5-207, Salvage Timber Program, which requires DNRC to establish a salvage timber program

1 that provides for the timely salvage logging on state forests of dead or dying timber or timber that is
2 threatened by insects, disease, fire, or windthrow. This regulation requires DNRC to salvage timber
3 in order to recover the economic value on behalf of the trust beneficiaries. Additionally, pursuant to
4 MCA 77-5-116, DNRC is prohibited from either temporarily or permanently designating, treating,
5 or disposing of any interest in forested trust lands for old-growth timber, natural area, open space, or
6 wildlife management preservation without full market compensation to the affected trust
7 beneficiaries.

8 Additionally, in 1996, DNRC published the State Forest Land Management Plan (SFLMP) EIS,
9 which evaluated several alternative approaches to the management of forested trust lands. This
10 document went through extensive public review and comment. The selected alternative, Omega,
11 combines a coarse-filter and fine-filter approach to forest management. Under the coarse filter,
12 DNRC manages for a variety of forest structures and compositions to support diverse wildlife
13 habitats. The fine-filter approach allows DNRC to focus management on single threatened and
14 endangered species habitat requirements to ensure that the full range of biodiversity is addressed
15 through its management. From the SFLMP came the ARMs for forest management, ARM Title 36,
16 Chapter 11, Subchapter 4 (Forest Management ARMs), which provide the specific legal mandate
17 for resource management standards developed under the SFLMP, and under which DNRC operates
18 its forest management program. The Forest Management ARMs therefore, represent the foundation
19 of the conservation commitments developed for this HCP.

20 **1.3.2 Goals and Objectives of the DNRC HCP**

21 In developing this HCP, DNRC and the USFWS recognized it was critical to develop goals and
22 objectives that could be integrated into DNRC's management and conservation programs with the
23 intended results. Management goals address DNRC's fiduciary and legal responsibilities, while
24 biological goals serve as broad guiding principles for development and implementation of the
25 conservation commitments.

26 **1.3.2.1 Management Goals**

27 DNRC's management goals for development of the HCP and meeting ESA Section 10
28 requirements, while continuing to conduct forest management activities on trust lands, are
29 described below.

- 30 1. To the maximum extent practicable, minimize and mitigate the impacts of DNRC's forest
31 management activities on species covered by the HCP.
- 32 2. Provide habitat conditions that are necessary and advisable to conserve and enhance species
33 populations and allow for the long-term survival of species covered by the HCP in a manner
34 consistent with DNRC's trust mandate. To the extent unlisted species are covered by the
35 HCP, DNRC's goal is to address the factors under its control such that the listing of such
36 species would be unnecessary, assuming the strategies in the HCP were implemented by
37 similarly situated landowners throughout a species' range.
- 38 3. Provide DNRC with predictability and flexibility to manage forested trust lands
39 economically, consistent with its statutory mandate to generate revenue for trust
40 beneficiaries.

1 By adhering to these goals within the conservation strategies, DNRC will be able to continue to
2 provide reasonable and legitimate returns for trust beneficiaries through intensive forest
3 management. While the goals were designed to minimize and mitigate the impacts of any incidental
4 taking of HCP species, DNRC and the USFWS also recognize that opportunities to provide for
5 habitat needs of species may be limited by the trust mandate, location and amount of trust land
6 ownership on the landscape, and species distribution at the landscape scale (e.g., habitat amount and
7 connectivity).

8 **1.3.2.2 Biological Goals and Objectives**

9 In the course of developing this HCP, the USFWS and DNRC formed technical workgroups to
10 collaborate on the design of conservation strategies for the HCP species and their habitats. The
11 basis for the conservation strategies is found in the biological goals and objectives listed in
12 Table 1-2. Using the best information available for each species, the workgroups identified
13 biological goals that provide the rationale to support the minimization and mitigation strategies. For
14 each goal, the workgroups identified objectives that serve as measurable targets for achieving the
15 goal.

16 The terrestrial workgroup developed goals and objectives for the two HCP mammal species. The
17 aquatic workgroup developed goals and objectives for the three HCP fish species. Table 1-2
18 identifies the biological goals for each HCP species and the objectives that will be used to support
19 those goals.

20 **1.3.2.3 DNRC Practicability Considerations**

21 In developing commitments for an HCP that would allow a Permit to be issued, the ESA requires an
22 applicant to minimize and mitigate the impacts of the authorized incidental taking to the maximum
23 extent practicable. Therefore, DNRC identified some practicability considerations to aid in the
24 determination of the “maximum extent practicable” criterion.

- 25 • **Long-term sustainability.** Conservation strategies that promote only a short-term
26 management focus are not practicable for a long-term business operation, such as forest
27 management on trust lands.
- 28 • **Cost-effective conservation.** Commonly, a conservation strategy has a point of
29 diminishing returns where increasing costs achieve a diminishing conservation benefit. It is
30 not practicable to expend extensive resources for conservation commitments that have very
31 little benefit, especially when those resources can be allocated somewhere else at a greater
32 conservation benefit.
- 33 • **Scientific credibility.** DNRC can only invest in conservation if there is reasonable
34 scientific certainty of a conservation benefit. Given the fiduciary responsibilities associated
35 with the trust mandate, DNRC can only consider those conservation measures where there
36 are clear and certain conservation benefits.
- 37 • **Operational practicality.** Some conservation strategies may be too operationally complex,
38 rendering them impractical for foresters and loggers to implement on the ground.

1 **TABLE 1-2. HCP SPECIES BIOLOGICAL GOALS AND OBJECTIVES**

Species-specific Goals	Objectives
<p>Grizzly Bear Support federal grizzly bear conservation efforts by providing quality seasonal habitat and avoiding or minimizing bear/human conflicts.</p>	<ol style="list-style-type: none"> 1. Promote safety for humans and bears in the HCP project area through vegetation management constraints, comprehensive sanitation policy, education, and livestock grazing commitments. 2. Minimize displacement of grizzly bears from suitable habitat and provide for seasonal habitat use and security through overall access management. 3. Contribute to grizzly bear recovery where the conservation of seasonally important grizzly bear habitat would complement federal efforts. 4. Promote grizzly bear habitat connectivity where the HCP project area lands occur in important locations. 5. Maintain important habitat features, including den sites, avalanche and snow chutes, lush riparian zones, and locations that produce high volumes of forage. 6. Increase DNRC’s understanding of grizzly bear habitat quality in managed forests through HCP monitoring and voluntary cooperation in research programs as funding and budgets allow.
<p>Canada Lynx Support federal Canada lynx conservation efforts by managing for habitat elements important for lynx and their prey that contribute to the landscape-scale occurrence of lynx, particularly in key locations for resident populations.</p>	<ol style="list-style-type: none"> 1. Minimize potential for disturbance to known active den sites. 2. Within preferred habitat types (Pfister et al. 1977), map potential lynx winter foraging, young foraging, and other suitable and temporary unsuitable habitats. 3. Provide stand structures or attributes that provide habitat for prey species, particularly in winter. 4. Retain coarse woody debris and other denning attributes on managed sites. 5. Limit conversion of suitable lynx habitat to temporary unsuitable habitat per decade in key geographic areas of notable importance for lynx (termed lynx management areas and described further in Section 2.1.2.2, Geographic Scope). 6. Ensure that adequate amounts of foraging habitat are maintained in defined lynx management areas. 7. Provide for habitat connectivity on the landscape where vegetation and ownership patterns allow. 8. Maintain suitable lynx habitat on DNRC scattered parcels outside lynx management areas.
<p>Bull Trout, Westslope Cutthroat Trout, and Columbia Redband Trout Implement conservation strategies designed to protect bull trout, westslope cutthroat trout, and Columbia redband trout habitat, and contribute to restoration of habitat, as appropriate, that has been affected by past DNRC forest management activities.</p>	<ol style="list-style-type: none"> 1. Manage for stream temperature regimes suitable for bull trout, westslope cutthroat trout, and Columbia redband trout. 2. Manage for in-stream sedimentation levels suitable for bull trout, westslope cutthroat trout, and Columbia redband trout. 3. Manage for levels of in-stream habitat complexity suitable for bull trout, westslope cutthroat trout, and Columbia redband trout. 4. Maintain stream channel stability and channel form and function. 5. Provide for connectivity among subpopulations of bull trout, westslope cutthroat trout, and Columbia redband trout, where appropriate.

1 The conservation commitments of this HCP, including the monitoring and adaptive management
2 program, meet the DNRC management goals and HCP biological goals and objectives, as well as
3 recognize DNRC’s fiduciary responsibility to the trusts and the practicability considerations
4 identified above. These commitments have a solid basis in scientific data and rationale and address
5 additional concerns, uncertainties, and collaborative input from the USFWS. In addition to
6 providing a significant conservation benefit, the resulting package of commitments ensures a
7 predictable flow of income to the trusts through the long term.

8 **1.3.3 Development of the Conservation Strategies**

9 Conservation commitments represent the means by which DNRC can meet the goals and objectives
10 of the HCP and measure its success. In developing DNRC’s conservation commitments, the HCP
11 planning team considered the biological goals for minimizing and mitigating potential incidental
12 take of the HCP species, as well as management goals consistent with DNRC’s fiduciary
13 responsibility to the state trusts and the practicability considerations identified above.

14 The Forest Management ARMs served as the platform from which the HCP conservation
15 commitments were developed. The HCP planning team reviewed existing DNRC resources and
16 published literature and met with researchers to gain the best available science for the HCP species.
17 This information was used to determine areas within the ARMs where DNRC rules, procedures, and
18 requirements could be enhanced to further minimize and mitigate potential take of the HCP species.
19 Much of this effort entailed discussing the existing ARMs and how they were implemented.

20 **1.3.3.1 Incorporation of Existing Practices**

21 Currently, the Forest Management ARMs, promulgated March 2003, provide the guiding
22 framework for DNRC’s management of forested trust lands. The ARMs implement the
23 requirements of the SFLMP (DNRC 1996). The SFLMP takes a coarse-filter approach to
24 biodiversity. The coarse-filter approach operates at the landscape scale and focuses on maintaining
25 an appropriate mix of stand structures and compositions on trust lands. This approach is based on
26 the understanding that, if DNRC maintains landscape patterns and processes similar to those with
27 which the component species evolved, then the full complement of species will persist, and
28 biodiversity will be maintained (Jensen and Everett 1994). Maintaining a diversity of stand
29 structures and compositions (cover types) also provides a range of current and prospective trust
30 revenue opportunities, including a sustainable yield of timber, maintenance of forest health and
31 biodiversity, and other outputs, while reducing risks of catastrophic fires and insect or disease
32 attacks. Because the coarse-filter approach may not adequately address the full range of needs
33 required to support biodiversity, a fine-filter approach is employed to address the needs of
34 threatened, endangered, or sensitive species as described in the ARMs (36.11.427 through 443).

35 The ARMs are considered effective in reducing impacts to the habitats upon which the HCP species
36 depend, because they ensure that a variety of habitat and forest age is present over time and because
37 they apply additional considerations when threatened, endangered, or sensitive species are present
38 on the lands. In addition, the ARMs are familiar to DNRC forest management personnel who are
39 responsible for their on-the-ground implementation. Therefore, DNRC and the USFWS agreed the
40 ARMs were a suitable platform from which to develop the HCP conservation commitments.
41 Additionally, existing programs such as the Montana Streamside Management Zone Law (SMZ

1 Law) (MCA 77-5-301 through 307) and Montana Forestry Best Management Practices (BMPs)
2 (DNRC 2004a) were incorporated into the HCP commitments.

3 **1.3.3.2 Use of DNRC Resources**

4 In addition to published literature and ongoing research, DNRC relied on its own internal databases
5 to support the development of the conservation commitments. The primary forest vegetation
6 information source used in the development of this HCP was DNRC's stand-level inventory (SLI)
7 database. The SLI is map-based and is stored in a geographic information system (GIS) database
8 maintained by the Technical Services Section of the FMB. This database provided the basis for
9 describing habitat conditions for much of the HCP project area.

10 The SLI covers more than 1.2 million acres of DNRC land, which includes 726,000 acres of forest
11 land and exceeds 34,000 individual map polygons. Each forested polygon has a data record that
12 provides information about the forest tree species, size, stocking level, potential vegetation class,
13 productivity, and management objectives for a particular timber stand. Data pertaining to these
14 parameters are based on observations made during inventories conducted by DNRC staff and
15 private contractors. These inventories are based on a combination of observed data on the ground
16 and photo-interpreted data. Inventories are conducted regularly by private contractors and by
17 DNRC staff for planned and completed timber projects.

18 In addition to using the database to summarize current habitat conditions, this information will be
19 used to track the availability and status of habitat conditions under the HCP. In developing the
20 conservation commitments, the HCP planning team and Technical Services Section identified
21 opportunities to enhance data collection efforts so that the commitments could be adequately
22 monitored, tracked, and reported over the Permit term.

23 Additionally, the SLI database served as the basis of the forest management modeling process to
24 determine the sustainable yield under current practices (ARMs and SFLMP) versus under the HCP.
25 These data were also used to estimate future HCP species' habitat conditions and timber production
26 under different HCP alternatives to test the feasibility of the various commitments to meet the
27 biological objectives as well as the DNRC trust mandate. The modeling results and habitat
28 conditions are described in Chapter 4 (Affected Environment and Environmental Consequences) of
29 the EIS for this HCP.

30 **1.3.3.3 Use of Best Available Information**

31 As the HCP planning team and EIS interdisciplinary teams developed the HCP and Draft EIS,
32 respectively, team members gathered, reviewed, and used the best available scientific information.
33 This includes material that was readily available from public (libraries, research institutions,
34 schools, agencies) or private (researchers, timber companies, other HCP applicants) sources, as well
35 as unpublished findings from ongoing research projects. Background information for the HCP
36 species was compiled into species accounts, and comprises the best available science for these
37 species. Based on information from the literature on the life history, occurrence, habitat needs, and
38 status of the HCP species, these accounts serve as the primary technical information for each
39 species and are the basis for the conservation commitments, which build upon the existing ARMs.
40 The species accounts are available on the project website at <http://www.dnrc.mt.gov/HCP/default.asp>.

1 If substantive new information becomes available between finalization of the species accounts and
2 issuance of the Permit, that information will be incorporated into the conservation commitments or
3 addressed subsequent to Permit issuance through the process described in Section 4.2.3 (Adjusting
4 for New Research).

5 The species accounts were developed with five objectives:

- 6 1. Develop each species' background to understand its status, occurrence, distribution, and life-
7 history requirements applicable to state trust lands.
- 8 2. Examine the sensitivity of each species to covered activities and assess associated risk
9 factors.
- 10 3. Identify the conservation strategies currently in place (through federal and state regulations
11 and signed DNRC conservation agreements) to protect each species' habitat on trust lands.
- 12 4. Describe additional conservation strategies recommended or implemented by others that
13 could provide benefit in protecting species' habitats on trust lands.
- 14 5. Identify existing or new species models that could be used to describe species' habitat use
15 on trust lands and/or that might help to determine the effectiveness of the proposed HCP
16 conservation strategies.

17 The science related to the effects of timber harvest and road use on grizzly bears is well-established
18 and widely accepted in the scientific community. Numerous modern studies on grizzly bears have
19 been published that span nearly 4 decades (1972 to 2008). These studies, as summarized in the
20 species account, were considered while developing the HCP, and they provided the technical
21 workgroup a consistent basis for understanding the needs of grizzly bears and their ecology. Both
22 old and new studies have overwhelmingly identified human conflicts and habitat loss as leading risk
23 factors for grizzly bear recovery and survival in the lower 48 states. The scientific community
24 (including DNRC and USFWS) surrounding grizzly bear research remains active and broad, and
25 encompasses several groups that meet on a regular basis to share information, pool funding and
26 resources, and brainstorm new ideas for bear conservation.

27 Published studies related to habitat use by Canada lynx in Montana are relatively scant, and our
28 understanding of their habitat needs, behaviors, and responses to timber harvest is still emerging.
29 DNRC and USFWS reviewed existing literature and spoke with scientists in Washington who
30 developed the state's *Lynx Habitat Management Plan for DNR-Managed Lands* (WADNR 2005).
31 Many studies have recently been initiated in Montana, and data are still being gathered or have not
32 yet been published. To incorporate the most recent and best available information for lynx, DNRC
33 and USFWS met with researchers to gain insight into their preliminary findings and field
34 observations. Additionally, these researchers were asked to review and comment on the
35 conservation strategies to help ensure that important habitat considerations were not overlooked. As
36 recently as 2008, when new studies were published, the conservation strategies were modified to
37 incorporate the findings of this research.

38 Considerable research has been completed on the effects of timber harvest on streams and Pacific
39 salmon and bull trout fish habitat. Additionally, since the designation of westslope cutthroat trout as
40 a sensitive species and the petition to list it under ESA, a lot of research has been conducted for this
41 species. All such literature was reviewed during the development of the aquatic conservation

1 strategies. The aquatic strategies were also developed to incorporate the findings of several years of
2 BMP audits and SFLMP monitoring. Lastly, DNRC and USFWS drew from the experience and
3 findings of the Plum Creek Native Fish HCP and monitoring, which has been in effect for six years.

4 The information gathered through the review of best available information and development of the
5 species accounts was applied in the development of the conservation strategies. While developing
6 the conservation strategies, technical workgroups evaluated best available scientific information and
7 practices used by others and identified opportunities to supplement existing ARMs and regulations
8 to further reduce the potential for risks of impacts to HCP species that DNRC's forest management
9 activities may present. The technical workgroups also strived to develop conservation
10 commitments that were integrated into habitat-based commitments to meet the collective needs for
11 all five HCP species.

12 **1.4 BASIC ELEMENTS OF THE DNRC HCP**

13 This section serves as a general introduction to this HCP, which has been prepared in support of the
14 Permit application for DNRC. The subsections below provide a brief description of the HCP species,
15 Permit lands, and the proposed Permit term, as well as a detailed description of the covered activities.

16 **1.4.1 HCP Species**

17 The HCP species are the species covered by the terms of the Permit and subject to its incidental take
18 authorization. The HCP addresses the following three species listed under the ESA:

- 19 • Grizzly bear
- 20 • Canada lynx
- 21 • Bull trout.

22 The HCP also addresses two additional aquatic species should these species become listed during
23 the Permit term:

- 24 • Westslope cutthroat trout
- 25 • Columbia redband trout.

26 Once listed under the ESA, these two species would automatically become covered under the
27 Permit with no additional conservation commitments required outside those listed in the HCP.
28 More information on the status of these species can be found in Chapter 4, Sections 4.8 (Fish and
29 Fish Habitat) and 4.9 (Wildlife and Wildlife Habitat), of the EIS for this HCP.

30 The ESA defines a species to include any species or subspecies of fish, wildlife, or plant and any
31 distinct population segment of any vertebrate species that interbreeds when mature. Common
32 names for these species will be used throughout this document. Additionally, Canada lynx will be
33 referred to from here on as lynx.

1.4.2 HCP Project Area

DNRC determined which lands to cover in the HCP by assessing where lands within the distribution of the species of interest overlapped with lands containing appreciable amounts of manageable forest acreage. This approach identified the geographic area where risk to the species of concern was deemed greatest over the Permit term.

The lands covered by the HCP, the HCP project area, include approximately 548,500 acres of trust lands within three DNRC land offices (Appendix C, Figure C-1), the NWLO, SWLO, and CLO. The HCP project area includes primarily forested lands (approximately 446,100 acres) but contains other lands that are non-forested (approximately 102,400 acres) that consist of grasslands, agricultural lands, water, rocky areas, etc., where forest management activities typically would not occur. Some of the non-forested lands included in the HCP project area may be needed to access forested parcels in the HCP project area.

The HCP project area occurs on both blocked lands and scattered parcels across the three land offices (Table 1-3). Blocked lands refer to large, mostly contiguous blocks of DNRC ownership specifically identified as the Stillwater and Coal Creek State Forests (Stillwater Block) and the Swan River State Forest. Scattered parcels refer to all other HCP project area lands outside of blocked lands.

TABLE 1-3. ACRES OF DNRC LANDS AND HCP PROJECT AREA BY LAND OFFICE AND ADMINISTRATIVE UNIT

Land Office and Administrative Unit	DNRC Lands (Acres)	HCP Project Area Lands (Acres)	% of Total Lands in the HCP Project Area
NWLO	316,100	273,500	87%
Kalispell Unit (Scattered)	59,900	41,700	13%
Libby Unit (Scattered)	31,200	28,500	9%
Plains Unit (Scattered)	64,100	53,600	17%
Stillwater Unit (Blocked)	90,800	90,700	29%
Stillwater Unit (Scattered)	30,000	19,300	6%
Swan Unit (Blocked)	39,800	39,700	13%
Swan Unit (Scattered)	300	0	0%
SWLO	234,700	161,800	69%
Anaconda Unit (Scattered)	81,600	43,900	19%
Clearwater Unit (Scattered)	54,600	44,100	19%
Hamilton Unit (Scattered)	29,500	20,900	9%
Missoula Unit (Scattered)	69,000	52,900	23%
CLO	1,262,500	113,200	9%
Bozeman Unit (Scattered)	125,900	16,500	1%
Conrad Unit (Scattered)	359,600	0	0%
Dillon Unit (Scattered)	427,400	70,600	6%
Helena Unit (Scattered)	349,600	26,100	2%
Total	1,813,300	548,500	

Source: DNRC (2008a), rounded to the nearest 100 acres.

1 Although the HCP project area spans three land offices, most of it is concentrated in the NWLO and
2 SWLO (Table 1-3). Approximately 273,400 acres of the NWLO are included in the HCP project
3 area and occur on both blocked lands (Stillwater Block and Swan River State Forest) and scattered
4 parcels. The Stillwater Block and the Swan River State Forest comprise 41 percent of the HCP
5 project area in the NWLO. HCP project area lands in the NWLO account for about 86 percent of
6 DNRC ownership within the NWLO and about 50 percent of the total HCP project area.
7 Approximately 161,920 acres of the SWLO are included in the HCP project area and occur solely
8 on scattered parcels. These acres account for about 69 percent of DNRC ownership within the
9 SWLO and about 30 percent of the HCP project area. Approximately 113,180 acres of the CLO are
10 included in the HCP project area and also occur solely on scattered parcels. These acres account for
11 9 percent of DNRC ownership within the CLO and 20 percent of the HCP project area.

12 **1.4.3 Permit Term**

13 DNRC has proposed that the Permit be issued to the TLMD by the USFWS for a period of 50 years
14 in order to realize both the biological and economic benefits of the HCP. DNRC views the HCP as
15 a long-term program for addressing and improving habitat needs across the landscape. This Permit
16 term was selected by DNRC to ensure that it would have sufficient time and funding to implement
17 the conservation strategies and make adjustments through adaptive management where needed.
18 Securing an adequate amount of time to implement the HCP is expected to maximize the HCP's
19 contribution to the recovery of the HCP species.

20 This time period also helps ensure that the cost and effort of obtaining the Permit would be offset by
21 the long-term advantage of ensuring that ESA regulatory requirements are met for the HCP species
22 over the next 50 years. ESA regulatory certainty will help DNRC plan forest management activities
23 with the reassurance that those activities will not be subject to additional ESA regulatory restrictions
24 due to the presence of a listed HCP species. If, in the course of the application process for the
25 Permit, DNRC determines that the costs of implementing the HCP conservation strategies desired
26 by the USFWS outweigh the benefits, DNRC can abandon this voluntary planning process at any
27 time following discussion with the USFWS.

28 As part of its review of the Permit application, the USFWS will evaluate the proposed Permit period
29 to ensure that it is an adequate timeframe in which to fully mitigate for the expected incidental take
30 of listed species. In addition, the USFWS will determine whether the proposed monitoring and
31 adaptive management to be implemented will be adequate to assess the effectiveness of the
32 proposed conservation commitments over the life of the HCP.

33 **1.4.4 Covered Activities**

34 The DNRC forest management activities that will be covered under the HCP are summarized
35 below. The existing management intensity and extent of each activity is described further in this
36 section.

- 37 • **Timber harvest.** Includes timber harvest, salvage harvest, and silvicultural treatments such
38 as thinning.

- 1 • **Other forest management activities.** Includes slash disposal, prescribed burning, site
2 preparation, reforestation, fertilization, inventory, and access to forestlands for weed control.
- 3 • **Roads.** Includes forest management road construction, reconstruction, maintenance, use,
4 and associated gravel quarrying for road surface materials, as well as installation, removal,
5 and replacement of stream crossing structures.
- 6 • **Grazing.** Includes grazing licenses on classified forest trust lands.

7 **1.4.4.1 Timber Harvest**

8 Timber harvest is a broad term used to describe a series of forest practices designed to access,
9 harvest, and regenerate trees in a defined land area for commercial purposes. DNRC is responsible
10 for conducting all field work in the selection, location, examination, and appraisal of timber on
11 forested state trust lands. The agency is required to supervise all timber management activities,
12 including the sale of timber that requires approval by the Land Board. Between 2003 and 2006,
13 DNRC sold between 43 and 57.8 million board feet of timber on trust lands statewide (Table 1-4).
14 As shown in Table 1-4, between 22 and 26 sales were conducted for a total harvest between 44.5
15 and 57.3 million board feet. Revenues ranged from a low in 2003 of \$6.9 million to a high in 2005
16 of \$13.7 million. Timber harvest is conducted through two primary means: timber permits or
17 timber sales. A timber permit is issued for the harvest of under 100 thousand board feet (mbf) of
18 timber and, in the case of emergencies, for the salvage of under 200 mbf of timber. Timber permits
19 do not require approval by the Land Board. All timber harvest in excess of these amounts is
20 processed as timber sales and requires approval by the Land Board. Timber sales are sold and
21 permits are issued to private contractors whose activities are administered by DNRC. The timber
22 sale process is outlined in Chapter 2 (Environmental and Procedural Setting) of the EIS for this
23 HCP.

24 **TABLE 1-4. NUMBER OF TIMBER SALES, TIMBER VOLUME SOLD AND**
25 **HARVESTED AND TIMBER REVENUES ON DNRC TRUST LANDS FOR**
26 **2003 THROUGH 2006**

Year	Timber Sales	Timber Volume Sold ¹ (million board feet)	Timber Volume Harvested ¹ (million board feet)	Timber Revenue (in millions)
2006	23	53.3	56.5	\$13.0
2005	26	57.8	57.3	\$13.7
2004	22	50.1	46	\$ 9.0
2003	26	43	44.5	\$ 6.9

27 ¹ The volume sold and harvested varies for the same year because the amounts of timber harvested may include volume from
28 sales in the previous year.
29 Source: DNRC (2003a, 2004b, 2005a, 2006a).

30 **Timber Harvest Treatments**

31 The harvest type or treatments are applied to emulate natural disturbance (primarily fire) acting on
32 the forest. For example, many of the treatments described below, including clearcut and seed tree
33 harvests, emulate stand-replacement fire, while shelterwood treatments typically emulate mixed-

1 severity fires. Commercial thinning and selection harvests emulate mixed-severity and non-lethal
2 fire or gap-replacement disturbances. DNRC uses timber harvesting to maintain forest health,
3 increase tree growth, reduce wildfire severity and mortality, and to achieve desired forest cover
4 types or desired future conditions. Emulating natural disturbances and managing for desired future
5 conditions is guided by the coarse-filter approach described in the SFLMP.

6 DNRC's timber harvests can be grouped into two categories of silvicultural treatments: regeneration
7 treatments and intermediate treatments. Regeneration treatments aim to initiate or assist the
8 development of a new age class in a stand, and can be accomplished by using even-aged methods or
9 uneven-aged methods. Even-aged methods regenerate or maintain a stand with a single age class
10 using such methods as clearcutting, seed tree, and shelterwood. Uneven-aged or selection methods
11 regenerate or maintain a multi-aged stand by removing trees throughout the range of age and size
12 classes present in a stand. Selection cutting can be done by removing single trees or small groups of
13 trees within a stand.

14 Intermediate treatments are used to enhance the growth, quality, vigor, and composition of a stand
15 after establishment and prior to final harvest. Two common intermediate treatments are commercial
16 thinning and sanitation cutting.

17 These treatment methods are defined below.

- 18 • **Clearcut.** The cutting of essentially all trees in a harvest unit, producing a fully exposed
19 microclimate for the development of a new age class. Regeneration is typically
20 accomplished by planting or seeding or using seedlings established in advance of the
21 treatment (Helms 1998). DNRC always retains some structural elements when clearcutting
22 such as retention of large snags and snag recruits.
- 23 • **Seed tree.** The cutting of all trees except for a small number of widely dispersed trees
24 retained for seed production and to produce a new age class in fully exposed
25 microenvironment. Seed trees are often removed after regeneration is established, unless
26 they are required to attain goals other than regeneration (i.e., live large tree or snag
27 requirements) (Helms 1998).
- 28 • **Shelterwood.** The cutting of most trees, leaving those needed to produce sufficient shade to
29 produce a new age class in a moderated microenvironment. Shelterwood trees may be
30 removed after regeneration is established, unless they are required to attain goals other than
31 regeneration (i.e., live large tree or snag requirements) (Helms 1998).
- 32 • **Selection.** A cutting method applied in uneven aged forests to regenerate and maintain a
33 multi-aged structure by removing some trees in all size classes either singly, in small groups,
34 or in strips (Helms 1998).
- 35 • **Commercial thinning.** Any type of thinning that produces merchantable material at least
36 equal to the value of the direct costs of harvesting (Helms 1998).
- 37 • **Sanitation cutting.** The removal of trees to improve stand health by stopping or reducing
38 the actual or anticipated spread of insects and disease (Helms 1998).

39 Most of the recent harvests completed on DNRC land have employed either selection or
40 commercial thinning prescriptions (Table 1-5).

1 **TABLE 1-5. PERCENT OF THE TOTAL TIMBER HARVESTED ON DNRC-MANAGED**
 2 **LANDS BY SILVICULTURAL METHOD FOR FISCAL YEARS 1998**
 3 **THROUGH 2005**

Silvicultural Treatment Method	Percent of Total Harvest ¹	
	Fiscal Years 1998–2000 ²	Fiscal Years 2001–2005 ³
Clearcut	4	5
Seed tree	8	18
Shelterwood	2	8
Selection	55	47
Commercial thinning	31	22

4 ¹ Total harvest for fiscal years 1998 through 2000 was 27,141 acres; total harvest for fiscal years 2001 through 2005 was 31,492 acres.

5 ² Source: DNRC (2000a).

6 ³ Source: DNRC (2005b). Percentages do not include fire salvaged acres.

7 Logging systems used for DNRC timber harvest activities include tractor, cable, and helicopter
 8 methods, with tractor-based logging being the most common. Approximately 91 percent of the
 9 acres harvested on state trust lands between 1998 and 2000 used tractor-based logging systems. The
 10 remaining harvests between 1998 and 2000 were completed with cable systems (7 percent) and
 11 helicopter systems (2 percent). Approximately 79 percent of the acres harvested between 2001 and
 12 2005 were tractor-based systems. The remaining harvests between 2001 and 2005 were completed
 13 with cable systems (17 percent) and helicopter systems (4 percent).

14 **Salvage Harvest**

15 The term salvage is defined under ARM 36.11.403(71) as “the removal of dead trees or trees being
 16 damaged or killed by injurious agents other than competition, to recover value that would be
 17 otherwise lost.” Injurious agents include wildfires and major outbreaks of insects and diseases that
 18 ultimately inflict high tree mortality rates throughout forested stands. Wind events can also be
 19 considered injurious; however, such events result in far less mortality than wildfires or insect and
 20 disease outbreaks. A considerable portion of recent DNRC harvest volume has been derived from
 21 salvage harvest. For fiscal years 2001 to 2005, fire salvage comprised 26 percent of the total
 22 harvest acreage on forested trust lands (DNRC 2005b). This harvest occurred primarily in areas
 23 affected by large wildfires, including the fires in the Sula State Forest in 2000 and Coal Creek State
 24 Forest in 2001, as well as the Maxey Ridge and Wilson Creek fires in the Bozeman area in 2001.
 25 The fire, insect, and disease salvage volume sold for fiscal years 2006, 2007, and 2008 and the
 26 percentage of the total volume sold comprising salvage harvest is presented in Table 1-6. The high
 27 fire salvage volume associated with fiscal year 2008 is attributed to large wildfires, including the
 28 Chippy Creek, Jocko Lakes, Blackcat, and Mile-Marker 124 fires. Salvage is expected to continue
 29 to represent a substantial portion of the DNRC annual harvest volume in response to mortality from
 30 wildfires and other causes.

1 **TABLE 1-6. SALVAGE HARVEST VOLUME SOLD AND PERCENTAGE OF TOTAL**
 2 **VOLUME SOLD COMPRISING SALVAGE HARVEST FOR FISCAL**
 3 **YEARS 2006, 2007, AND 2008**

Fiscal Year	Salvage Type	Salvage Harvest Volume Sold (million board feet) ¹	Percent of Total Volume Sold Comprising Salvage Harvest
2006	Insect and Disease	16.5	31.0
	Fire	1.0	1.9
2007	Insect and Disease	27.2	51.0
	Fire	6.5	12.2
2008	Insect and Disease	2.5	4.8
	Fire	19.9	37.8

4 ¹ Salvage harvest volume sold does not include volume sold as timber permits.
 5 Source: DNRC (2008b).

6 **Pre-commercial Thinning**

7 Pre-commercial thinning is defined under the Forest Management ARMs as “the removal of trees
 8 not for immediate financial return but to reduce stocking to concentrate growth on the more
 9 desirable trees.” From 1998 to 2004, DNRC conducted pre-commercial thinning on approximately
 10 12,466 acres statewide with an annual average of 1,781 acres. Most recently, pre-commercial
 11 thinning occurred on 1,537 acres in 2006.

12 **1.4.4.2 Other Forest Management Activities**

13 Other activities associated with forest management that are covered under this HCP include slash
 14 disposal, prescribed burning, site preparation, reforestation, fertilization, inventory, and access to
 15 forestlands for weed control. These activities are described below. Additionally, most of the
 16 covered activities involve some degree of human presence and fieldwork activities. This human
 17 presence may affect HCP species through incidental contact, disturbance, displacement, or in other
 18 ways. The actual number of days spent engaged in the field is difficult to ascertain, but is in the
 19 range of hundreds of days per year for each land office. The average annual number of acres treated
 20 through forest improvement activities on forested trust lands between 2001 and 2005 included
 21 plantation regeneration surveys (1,484 acres), tree planting (1,021 acres), tree browse prevention
 22 (567 acres), hand brush work (54 acres), managed tree improvement areas (19 acres), and cone
 23 collection (247 bushels). Other activities include, but are not limited to, field work associated with
 24 the completion of environmental analyses, preparation of timber sales, design and layout of roads,
 25 layout of pre-commercial thinning units, grazing inspections, and monitoring.

26 **Slash Disposal and Prescribed Burning**

27 Slash, also referred to as brush, is defined in the ARMs as “the woody debris that is dropped to the
 28 forest floor during forest practices and consists of stems, branches, and twigs.” Slash disposal refers
 29 to the treatment of woody debris generated from forest management activities. Guidelines for slash
 30 disposal to meet fire hazard reduction requirements and to meet the nutrient and coarse woody
 31 debris retention requirements are included in the Forest Management ARMs (36.11.410 and 414).

1 Slash disposal is also an element of site preparation to facilitate stand regeneration. Slash disposal
 2 may include brush piling, pile burning, and broadcast burning. In 2006, pile burning was the most
 3 common type of slash disposal employed by DNRC (Table 1-7).

4 **TABLE 1-7. AVERAGE ANNUAL ACRES OF SLASH DISPOSAL AND BROADCAST**
 5 **BURNING ON DNRC TRUST LANDS DURING FISCAL YEARS 1996**
 6 **THROUGH 2005, COMPARED TO 2006**

Method	Annual Average, 1996–2005 ¹	Fiscal Year 2006 ¹
Brush piling	817	1,654
Pile burning	1,677	3,792
Broadcast burning	285	417

7 ¹ The acres indicated in the table represent the stand area where these treatments occurred, but do not necessarily reflect the actual
 8 area treated. The amount of area actually treated is typically much smaller than the stand area. For example, during the process of
 9 pile burning, slash from throughout a harvest unit is gathered into a small area before being burned.
 10 Source: DNRC (2000a, 2005b, 2006a).

11 A prescribed burn is defined by the Society of American Foresters as “to deliberately burn wild land
 12 fuels in either their natural or their modified state and under specific environmental conditions,
 13 which allows the fire to be confined to a predetermined area and produces the fire intensity and rate
 14 of spread required to attain planned resource management objectives” (Helms 1998). In some areas,
 15 prescribed burning can be effectively and safely used to restore and maintain desired forest
 16 conditions and reduce unacceptably high risks of damage to human life and property, as well as
 17 potential losses of resource values. DNRC rarely uses prescribed fire as a management tool due to
 18 liability issues associated with its scattered ownership pattern and the proximity to private property
 19 and the prohibitively high costs to conduct prescribed fire projects. DNRC instead uses silvicultural
 20 treatments to emulate fire disturbances and manages for desired future condition as guided by the
 21 coarse-filter approach described in the SFLMP.

22 DNRC currently employs broadcast burning and pile burning as prescribed fire methods. These
 23 methods are used primarily to control the fire hazard associated with slash generated from forest
 24 management activities and for site preparation to meet reforestation objectives. As shown in
 25 Table 1-7, on forested trust lands statewide, an annual average of 1,962 acres were treated through
 26 prescribed burning (pile and broadcast burning) in 1996 through 2005, and 4,209 acres were burned
 27 in 2006.

28 **Site Preparation**

29 The Society of American Foresters defines site preparation as “hand or mechanized manipulation of
 30 a site, designed to enhance the success of regeneration” (Helms 1998). DNRC uses burning,
 31 herbicides, and mechanical scarification to create conditions conducive to the establishment and
 32 growth of desired tree species. Many of the activities conducted under slash disposal also
 33 accomplish site preparation goals, such as slash piling and burning. Note that only mechanical
 34 methods of site preparation, not herbicide use, are covered activities under this HCP.

1 **Reforestation**

2 The Society of American Foresters defines reforestation as “the reestablishment of forest cover
3 either naturally or artificially by direct seeding or planting” (Helms 1998). DNRC regularly
4 engages in reforestation activities, primarily by planting in burned areas or areas where regeneration
5 harvest treatments have occurred, and by interplanting following partial harvests. DNRC
6 reforestation is primarily limited to shade-intolerant species (ponderosa pine [*Pinus ponderosa*],
7 western larch [*Larix occidentalis*], and western white pine [*Pinus monticola*]), often with seedlings
8 selected from genetically superior seed sources.

9 Between 2001 and 2005, DNRC planted trees on approximately 5,103 acres statewide (or an
10 average of 1,020 acres per year). Between 2001 and 2005, regeneration surveys occurred on
11 approximately 7,421 acres for an average of 1,484 acres per year. Planting and regeneration
12 surveys for this period occurred on more acres than for the period between 1996 and 2000, when an
13 average of 679 acres were planted per year and 295 acres were surveyed per year. This is attributed
14 to the large fires of 2000, 2001, and 2003, which were so severe that a minimal seed source
15 remained in the burned areas to foster natural regeneration. Tree planting and regeneration surveys
16 increased again in 2006, with 2,106 acres planted and 502 acres surveyed.

17 In planted areas, tree browse prevention (plastic tubes placed over newly planted trees) is applied
18 when planting in big game winter range areas. Between 2001 and 2005, tree browse prevention was
19 applied on 2,836 acres for an annual average of 650 acres. In 2006, tree browse prevention was
20 applied on 1,084 acres.

21 **Weed Control**

22 DNRC employs an integrated pest management approach for weed control on forested trust lands.
23 This integrated approach includes regular monitoring to determine if and when treatments are
24 needed and includes physical, mechanical, cultural, biological, and educational approaches for
25 controlling pest species to prevent unacceptable damage or annoyance. All pesticides and
26 herbicides are applied in accordance with applicable regulations of the U.S. Environmental
27 Protection Agency (EPA) and applicable laws of the State of Montana. The application of
28 pesticides and herbicides is not a covered activity under the Permit because the USFWS does not
29 authorize incidental take for pesticide and herbicide applications; those activities are covered by
30 incidental take statements issued in connection with Section 7 consultations between the USFWS
31 and the EPA. However, the monitoring activities and trips associated with application are covered.
32 In 2005, noxious weed spraying occurred on 3,935 DNRC acres statewide, and herbicide
33 applications associated with tree planting occurred on 680 acres. A total of 17,170 acres were
34 sprayed from 2001 to 2005 for an annual average of 3,434 acres. For the same time period,
35 herbicide application occurred on a total of 2,084 acres for an annual average of 417 acres.

36 With regard to forest management activities, DNRC manages to control the spread of noxious
37 weeds and prioritizes control measures where native plant communities are threatened. Prompt
38 revegetation of road rights-of-way and other disturbed areas with site-adapted species (including
39 native species) is a primary preventative measure. In general, DNRC seeds all new road
40 construction and reconstruction with site-adapted grass seed. Other control measures include use of
41 weed-free equipment and minimization of ground disturbance. DNRC cooperates with local county

1 weed control boards on management projects and revegetation plans for land-disturbing projects.
2 DNRC has also participated in cooperative projects involving the release of biocontrol agents for
3 knapweed and leafy spurge on forested sites.

4 **Fertilization**

5 Fertilization associated with forest management consists of occasional applications of small
6 amounts of fertilizers to individual planted trees. DNRC applies a few thousand doses of fertilizer
7 annually on lands designated for tree planting. A dose is typically about 1 ounce, and there may be
8 200 to 300 doses per acre when trees are planted. These applications are designed to increase
9 growth rates or to overcome nutrient deficiencies in the soil. DNRC also uses fertilizer on newly
10 constructed road cuts and fills to promote grass establishment when warranted. The type of
11 fertilizer applied varies based on the soil deficiency at the site, but is generally some combination of
12 nitrogen, phosphorous, and/or potassium.

13 **Forest Inventory**

14 DNRC's forest inventory program is responsible for collecting and analyzing forest resource
15 inventory data across the state. The forest inventory program is also responsible for the
16 development and maintenance of a GIS database to support forest management planning activities
17 and environmental analyses. Forest inventory field activities consist primarily of accessing
18 inventory areas from forest road systems with motorized vehicles, conducting walk-through stand
19 examinations, conducting cruise plots, and collecting other field data. Inventories are completed by
20 both DNRC field staff and contracted employees.

21 From 1997 through 2002, an average of 47,450 acres of SLI data were collected each year. Most of
22 the inventory field data were collected from within the NWLO and SWLO by DNRC contractors
23 (and their employees). In 2004, the inventory program collected 14,200 acres of SLI data. To date,
24 approximately 1,206,000 acres of forested and non-forested state trust land have been inventoried
25 and mapped.

26 **1.4.4.3 Road Construction, Road Maintenance, and Gravel Sources**

27 **Construction, Reconstruction, and Abandonment or Reclamation**

28 Road activities associated with forest management include: construction, reconstruction,
29 abandonment, reclamation, and maintenance. Road maintenance is described in the subsection
30 below.

- 31 • Road construction is defined under ARM 36.11.403 (67) as “cutting and filling of earthen
32 material that results in a travel-way for wheeled vehicles.”
- 33 • Road reconstruction is defined under ARM 36.11.403 (70) as upgrading roads to
34 accommodate proposed use.

- For this HCP, road abandonment refers to the process of making a road impassable and effectively closed (using gates or other barriers), but maintaining the road’s drainage structures.
- For this HCP, road reclamation is similar to road abandonment, but road reclamation also includes stabilizing the road bed surface and removing culverts and other structures.

Road projects are typically conducted through timber sale contracts. If additional roads are required for access to a timber sale area, these roads, including stream crossings, are constructed after contract award. Based on site-specific conditions, different timber sale contracts contain different provisions for post-harvest road management, including abandonment, temporary closure, and long-term maintenance. In recent years, timber sales have involved reconstructing roads more than constructing new roads, and abandonment or reclamation of roads has been uncommon (Table 1-8). DNRC abandons or reclaims roads that are deemed non-essential to near-term future management plans or where unrestricted access would cause excessive resource damage. DNRC determines which roads to abandon or reclaim during project-level analysis. Both abandoned roads and reclaimed roads are left in a condition that is stable and provides for adequate drainage. When DNRC abandons or reclaims a road, it removes and replaces stream crossing structures as appropriate for the proposed road use.

TABLE 1-8. TOTAL AND AVERAGE ANNUAL MILES OF ROAD CONSTRUCTION, RECONSTRUCTION, AND ABANDONMENT OR RECLAMATION THROUGH TIMBER SALE CONTRACTS, 1998 THROUGH 2005

Activity	1998–2000 Total	2001–2005 Total	Annual Average
Road Construction	105.9	149.0	31.9
Road Reconstruction	322.4	206.9	66.2
Road Abandonment or Reclamation	20.5	34.3	6.9

Source: DNRC (2000a, 2005b).

Road Maintenance

Road maintenance is defined under the ARMs as “the maintenance and repair of existing roads that are accessible to motorized use, including but not limited to: blading, re-shaping, or re-surfacing the road to its original condition; cleaning culverts; restoring and perpetuating road surface drainage features; and clearing the road side of brush.” Funding for road maintenance is provided by timber sale contracts as well as the forest improvement program. As reported in the 2005 DNRC Monitoring Report (DNRC 2005b), approximately 412 miles of road were maintained on DNRC land statewide between 2001 and 2005. This mileage does not include routine blading and grading. Consequently, the miles of road receiving routine maintenance is considerably higher than that reported in the monitoring report. In 2006, road maintenance activities statewide occurred on 139 miles of road including grading, blading, and snowplowing, as well as some activities that do not lend themselves to reporting by miles, such as removing and maintaining bridges and installing culverts.

1 **Gravel Quarrying**

2 Gravel quarrying as a covered activity is limited to the following actions in support of forest
3 management activities:

- 4 • DNRC’s development and operation of gravel pits and borrow sites
- 5 • DNRC’s obtaining, stockpiling, hauling, and unloading gravel from DNRC or non-DNRC
6 borrows or gravel pits.

7 Third-party gravel pit operators and gravel permit holders using DNRC pits authorized under this
8 strategy would not be covered for incidental take under this Permit. However, these operations
9 would be subject to the limitations on the number of allowable pits and season of use as described
10 for the Stillwater Block, Swan River State Forest, and scattered parcels in grizzly bear recovery
11 zones and non-recovery occupied habitat.

12 There are three types of gravel quarrying operations associated with forest management activities:
13 borrow, medium pits, and large pits (Table 1-9).

14 **TABLE 1-9. DESCRIPTION OF GRAVEL QUARRYING OPERATIONS ASSOCIATED**
15 **WITH FOREST MANAGEMENT ACTIVITIES**

Operation	Description of Operations
Borrow	Gravel or rock sources consisting of up to 1.0 acre of disturbed area and located within 0.25 mile of an open or restricted road.
Medium Pit	Gravel or rock sources consisting of 1.0 to 4.9 acres of disturbed area.
Large Pit	Gravel or rock sources consisting of 5.0 to 40 acres of disturbed area.

16

17 Borrows are small sources of gravel, rock, or fill material within 0.25 mile of open or restricted
18 roads. Size of borrows can range from a small, disturbed area associated with the removal of
19 several cubic yards of material up to larger areas of 1.0 acre. Borrow sites are typically only active
20 during road construction and maintenance work, and are not used regularly as large, long-term
21 sources. Medium pits are sources of gravel or rock involving 1.0 to 4.9 acres of disturbed area.
22 Medium pits receive intermediate levels of use and may be activated periodically to serve as sources
23 for multiple road maintenance and/or construction projects in a given year or across multiple years.
24 Medium pits may include excavating, crushing, sorting, and/or asphalt operations. Large pits are
25 sources of gravel or rock that involve 5 to 40 acres of disturbed area. Typically, no more than
26 5 acres can be under operation and actively mined at any point in time. Large pits may be activated
27 periodically or continuously to serve as sources for multiple road maintenance and/or construction
28 projects in a given year or across multiple years. Large pits may include mining, crushing, sorting,
29 and/or asphalt operations over 1 or more years. Large gravel pits are typically subject to rules,
30 regulations, and permitting outlined in the Montana Openpit Mining Act (ARMs 17.24.201 through
31 225) administered by the Montana Department of Environmental Quality (MDEQ).

1 **1.4.4.4 Grazing Licenses**

2 Livestock grazing on trust lands is authorized under grazing licenses issued on classified forest trust
3 lands or grazing leases on classified grazing lands. Grazing as an HCP covered activity is limited to
4 the grazing that occurs on classified forest trust land in the HCP project area. DNRC currently
5 administers approximately 261 grazing licenses on 454 different parcels (covering 198,907 acres) of
6 classified forest trust land statewide. Most of these parcels are located west of the Continental
7 Divide in the NWLO and SWLO.

8 Grazing licenses are generally issued for 10-year periods, with detailed range condition and
9 capability evaluations completed during license renewal inspections. Grazing evaluations
10 completed during license renewal include assessments of forage utilization, season of use, grazing
11 system, tract conditions, riparian conditions and riparian forage utilization, streambank disturbance,
12 noxious weed occurrence, and range improvements. Stocking rates are evaluated and assessed
13 using guidelines adopted by the U.S. Department of Agriculture (USDA) Natural Resources
14 Conservation Service (NRCS). Animal use months for each license are reevaluated every 10 years,
15 prior to reauthorization of the license, and special stipulations and management plans are
16 incorporated into the license agreements, if necessary.

17 Midterm evaluations of range and riparian conditions are completed for grazing licenses as directed
18 under the SFLMP and ARMs. Practices that lead to an unacceptable level of impacts to riparian
19 vegetation, damage stream banks, cause channel instability, or do not promote diverse and healthy
20 riparian plant communities are identified as problems in need of remedial action. A grazing coarse-
21 filter methodology has been developed using both numeric and narrative criteria to describe the
22 general acceptable levels of use and impact. However, while these standards provide a useful
23 reference point in identifying potential problems and determining relative risk, indices of healthy
24 and functioning riparian communities, stream bank stability, and acceptable levels of impact are
25 ultimately determined on a site-specific basis.

26 **1.5 DNRC’S IDENTIFICATION OF IMPACTS THAT HAVE THE**
27 **POTENTIAL TO CONSTITUTE “TAKE” UNDER THE HCP**

28 Prior to issuing the Permit, the USFWS must determine the amount of incidental take that will be
29 authorized under the Permit. To that end, DNRC with technical assistance from the USFWS, has
30 determined: (1) how incidental take will be calculated and limited under the HCP, and (2) the level
31 of take and related impacts expected to result from the covered activities. This analysis is provided
32 in Chapter 7 of this HCP (DNRC’s Identification of Impacts That Have the Potential to Constitute
33 Take under the HCP).

34 **1.6 MINIMIZATION AND MITIGATION TO THE MAXIMUM**
35 **EXTENT PRACTICABLE**

36 The HCP issuance criteria require DNRC to demonstrate that the impacts of the proposed incidental
37 take is minimized and mitigated to the maximum extent practicable. For the purposes of this HCP,
38 to minimize an impact means to reduce the effect to the smallest possible amount or degree and to

1 mitigate an impact means to alleviate the effect or moderate the force or intensity of the effect.

2 Minimizing an impact might be accomplished by:

- 3 • Avoiding the impact (i.e., restricting certain activities during sensitive times for the affected
- 4 species)
- 5 • Reducing or lessening the impact (i.e., limiting the duration of an activity or the types of
- 6 activities that may occur and where they may occur)

7 Mitigating an impact might be accomplished by:

- 8 • Compensating for the impact, such as replacing or providing substitute resources
- 9 • Rectifying the impact by repairing, rehabilitating, or restoring the affected resource.

10 Table 1-10 shows the HCP commitments that comprise a minimization and mitigation program that
11 is intended to meet issuance criteria. The USFWS must also determine that DNRC has minimized
12 and mitigated incidental take to the maximum extent practicable. DNRC has identified some
13 factors that define maximum extent practicable for its program. These factors are described in
14 Section 1.3.1 (Trust Obligations and Fiduciary Responsibilities) and Section 1.3.2.3 (DNRC
15 Practicability Considerations).

16 **TABLE 1-10. SUMMARY OF THE PROPOSED MINIMIZATION AND MITIGATION**
17 **COMMITMENTS COMPRISING THE CONSERVATION STRATEGIES**
18 **FOR GRIZZLY BEARS, LYNX, AND AQUATIC SPECIES**

Biological Objectives	Minimization and Mitigation Commitments
Grizzly Bears	
Promote safety of humans and bears	PR1 ¹ – Develop educational program (brochures and training). PR2 – Restrict firearm use by employees and contractors (and their employees). PR3 – Require proper food storage and sanitation for employees and contractors (and their employees). NR4 – Limit distance to cover to no greater than 600 feet for clearcut or seed tree harvest designs. NR5 – Develop minimization measures for small livestock grazing licenses. RZ2 – Retain visual screening on open roads and clearcut and seed tree units. RZ4 – Prohibit new small livestock grazing licenses. Do not initiate establishment of new grazing licenses. ST1, SW1 – Install interpretive signs about bear presence.
Minimize displacement of bears from suitable habitat, and provide security through access management	PR5 – Suspend activities near den sites. NR1 – Minimize construction of open roads. NR2, RZ6 – Discourage easements with private parties. Screen granting of easements and implement minimization measures in agreements. NR3, ST4, CY3 – Restrict management activities in the spring season. NR6, ST5, SW5, SC4 – Limit size, number, and period of operation of gravel pits. RZ3 – Maintain road closures. Examine all primary road closures annually, and repair ineffective closures within 1 year. RZ5 – Implement seasonal restrictions on activities in post-denning habitat. ST2, SW3, SC2 – Rest specified lands for 8 years following 4 years active management. ST3, SW4, SC3, CY1, CY2 – Allow one salvage harvest requiring 31 to 150 days per 8-year rest period. Various minimization measures apply.

TABLE 1-10. SUMMARY OF THE PROPOSED MINIMIZATION AND MITIGATION COMMITMENTS COMPRISING THE CONSERVATION STRATEGIES FOR GRIZZLY BEARS, LYNX, AND AQUATIC SPECIES (CONTINUED)

Biological Objectives	Minimization and Mitigation Commitments
Minimize displacement of bears from suitable habitat, and provide security through access management (continued)	<p>SW1 – Manage transportation systems to limit new roads and close or restrict existing roads. Apply spring restrictions on more activities to an additional 41 miles of existing road. All new roads (70.3 miles) would have restricted access and would be subject to spring restrictions.</p> <p>SC1, CY4 – Open road reduction program.</p> <p>ST1 – Manage transportation systems to limit new roads and close or restrict existing roads. Manage 18 miles of existing open roads as restricted roads. Apply spring restrictions to an additional 107 miles of existing road. All new roads (19.3 miles) would have restricted access, most of which (10.5 miles) would also be subject to spring restrictions.</p>
Contribute to recovery	<p>Addressed through the geographic hierarchy of the commitments, whereby greater restrictions apply adjacent to other land ownerships actively managing for bears.</p> <p>SW2 – Collaborate with adjacent landowners.</p>
Promote habitat connectivity	<p>PR6 – Retain cover to provide visual screening in RMZs and WMZs.</p> <p>NR1 – Minimize construction of open roads.</p> <p>NR3, ST4, CY3 – Restrict management activities in the spring season.</p> <p>RZ2 – Retain visual screening on open roads and clearcut and seed tree units.</p> <p>SC1, CY4 – Implement open road reduction program.</p> <p>ST2, SW3, SC2 – Rest specified lands for 8 years following 4 years active management.</p> <p>Existing Swan Agreement</p>
Maintain important habitat features	<p>PR4 – Reduce road construction in riparian zones and avalanche chutes.</p> <p>PR5 – Suspend activities near den sites.</p> <p>PR6 – Retain cover to provide visual screening in RMZs and WMZs.</p> <p>PR7 – Comply with biennial weed agreements with county weed boards at DNRC gravel pits.</p> <p>RZ1 – Consider habitat needs in designing timber sale layouts.</p> <p>ST2, SW3, SC2 – Restrict management in rested areas in winter above 6,300 feet elevation.</p>
Increase DNRC understanding of bear habitat quality in managed forests	<p>Achieved through DNRC monitoring commitments outlined in Chapter 4 (Monitoring and Adaptive Management) of this HCP, including requirement to prioritize evaluation of Swan River State Forest and Stillwater Block transportation plans.</p>
Canada Lynx	
Minimize den site disturbance	<p>HB4 – Prohibit activities near active den sites.</p>
Map potential lynx suitable habitat	<p>HB1 – Establish and maintain a lynx habitat map.</p>
Provide habitat elements for prey species	<p>HB3 – Retain CWD in timber sale designs.</p> <p>HB5 – Retain foraging habitat during pre-commercial thinning activities.</p>
Retain CWD and other denning attributes	<p>HB2 – Retain den site attributes in timber sale designs.</p> <p>HB2 – Construct man-made structures for den sites.</p> <p>HB3 – Retain CWD in timber sale designs.</p>
Limit conversion of suitable habitat in LMAs	<p>LM2 – Limit habitat conversion in LMAs from potential to non-suitable to 15 percent per decade.</p>
Ensure adequate amounts of foraging habitat in LMAs	<p>LM1 – Maintain lynx habitat in LMAs in a 65/35 percent suitable/temporary non-suitable habitat ratio.</p> <p>LM3 – Maintain 20 percent of total habitat as foraging habitat.</p>

TABLE 1-10. SUMMARY OF THE PROPOSED MINIMIZATION AND MITIGATION COMMITMENTS COMPRISING THE CONSERVATION STRATEGIES FOR GRIZZLY BEARS, LYNX, AND AQUATIC SPECIES (CONTINUED)

Biological Objectives		Minimization and Mitigation Commitments
Provide for habitat connectivity		HB6 – Design timber harvest units to maintain habitat connectivity.
Maintain suitable habitat outside LMAs		HB7 – Maintain lynx habitat in a 65/35 percent suitable/temporary non-suitable habitat ratio on scattered parcels at the land office scale.
Aquatic Species		
Riparian Timber Harvest Strategy		
Temperature, Sedimentation, Habitat Complexity, Channel Form and Function	RM1 – Tier 1 streams and lakes supporting HCP fish species	<p>Establish RMZ with a minimum of one SPTH.</p> <p>Maintain 25-foot no-harvest buffer.</p> <p>Outside buffer, retain shrubs, sub-merchantable trees, and 50 percent of trees greater than 8 inches dbh.</p> <p>Extend SMZ to incorporate adjacent wetlands.</p> <p>Extend RMZ where CMZ influences riparian functions.</p> <p>Do not develop gravel pits within SMZs. For borrow sites in SMZs, DNRC water resource specialist to develop measures to minimize risk of sediment delivery. Allow one medium non-reclaimed pit within the portion of RMZ extending beyond the SMZ in both the Stillwater Block and Swan River State Forest.</p>
	RM1 – Tier 1 streams and lakes supporting non-HCP fish species	Implement existing rules, BMPs, and SMZ Law.
	RM2 – Tier 2 streams	Implement existing rules, BMPs, and SMZ Law.
	RM3 – Tier 3 streams	Implement existing rules, BMPs, and SMZ Law.
Sediment Delivery Reduction Strategy		
Temperature, Sedimentation, Habitat Complexity, Channel Form and Function	SD1	<p>Implement transportation planning to minimize new roads and consider alternative yarding systems.</p> <p>Implement transportation planning to relocate roads in SMZs.</p>
	SD2	<p>Inventory roads and rank sites in need of corrective action – high, medium, low risk.</p> <p>Correct high-risk sites on bull trout systems where DNRC has access and sole ownership within 15 years of HCP implementation and, for other HCP fish species, within 25 years.</p>
	SD3	<p>For new roads, avoid sites prone to mass failure.</p> <p>When contract administration identifies unacceptable impacts, implement mitigation or rehabilitation measures.</p> <p>Administer road projects in watersheds supporting HCP fish species weekly to avoid and reduce potential for impacts.</p> <p>For new roads required on unstable sites, incorporate site-specific measures to reduce the risk of a mass failure.</p> <p>Ensure unnecessary roads that are abandoned or reclaimed will require no further maintenance.</p> <p>Resource specialist to review of specified activities in watersheds supporting HCP fish species.</p>
	SD4	<p>For projects with harvest greater than 100 mbf within HCP fish species watersheds, resource specialist to develop operating requirements and restrictions, special requirements and restrictions, and BMPs to avoid and minimize risk of sediment delivery.</p> <p>If needed for projects with harvest greater than 100 mbf within HCP fish species watersheds, resource specialist to develop site-specific measures to mitigate the risk of sediment delivery.</p>

TABLE 1-10. SUMMARY OF THE PROPOSED MINIMIZATION AND MITIGATION COMMITMENTS COMPRISING THE CONSERVATION STRATEGIES FOR GRIZZLY BEARS, LYNX, AND AQUATIC SPECIES (CONTINUED)

Biological Objectives	Minimization and Mitigation Commitments	
SD5	<p>Design and implement site-specific BMPs and other mitigation measures to reduce the risk of sediment delivery to streams affecting HCP fish species from all gravel pits.</p> <p>Comply with biennial weed agreements with county weed boards at DNRC gravel pits.</p> <p>Prohibit gravel pits within SMZs. If borrows occur in SMZs, measures to minimize risk of sediment delivery would be developed by a DNRC water resource specialist and would be integrated into the development of contract specifications or permits.</p> <p>Prohibit gravel pits within RMZs. If borrows occur in RMZs, measures to minimize risk of sediment delivery would be developed by a DNRC water resource specialist and would be integrated into the development of contract specifications or permits.</p> <p>In the Stillwater Block and the Swan River State Forest, only one medium non-reclaimed gravel pit is allowed within the portion of an RMZ that extends beyond the SMZ.</p>	
Fish Connectivity Strategy		
Connectivity, Channel Form and Function	FC1	<p>Inventory connectivity for all streams supporting HCP fish species, and prioritize needed improvements.</p> <p>In the course of replacing culverts on streams supporting HCP fish species, implement minimization measures.</p>
Grazing Strategy		
Temperature, Sedimentation, Habitat Complexity, Channel Form and Function	GR1	<p>Inspect all licenses on a 5-year cycle. Evaluate and rank potential problems on licensed lands. Field-verify potential problem sites within 1 year of completing evaluations. Continue identification of problem sites.</p> <p>Implement corrective actions within specified timeframe.</p>
Cumulative Watershed Effects (CWE) Strategy		
Temperature, Sedimentation, Habitat Complexity, Channel Form and Function, Connectivity	CW1	<p>Through CWE evaluations, set water quality thresholds to ensure compliance with water quality standards and protection of beneficial water uses.</p>

1 ¹ Commitments are numbered and coded according to the HCP species they address and category of commitment under which they fall as described in Chapter 2 (e.g., GB-PR2 is the second program-wide commitment in the grizzly bear strategy).

3	BMP = best management practice	CMZ = channel migration zone	CWD = coarse woody debris
4	CYE = Cabinet-Yaak Ecosystem	dbh = diameter at breast height	LMA = lynx management area
5	mbf = thousand board feet	NROH = Non-recovery occupied habitat	RMZ = riparian management zone
6	SMZ = streamside management zone	SPTH = site potential tree height	WMZ = wetland management zone