Cover Page

Acronyms and Abbreviations

AFB	Air Force Base
AFI	Air Force Instruction
ANG	Air National Guard
BASH	Bird/Wildlife Aircraft Strike Hazard
dbh	Diameter at breast height
DNR	Department of Natural Resources
EMP	Eagle Management Plan
ESA	Endangered Species Act
FPA	Forest Practices Application
GPS	Geographical Positioning System
ITS	Incidental Take Statement
km	kilometer
MBTA	Migratory Bird Treaty Act
RCW	Revised Code of Washington
U.S.C.	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WAC	Washington Administrative Code
WAANG	Washington Air National Guard
WAARNG	Washington Army National Guard
WDFW	Washington Department of Fish and Wildlife

Draft

BALD EAGLE
(HALIAEETUS LEUCOCEPHALUS)
MANAGEMENT PLAN

FOR

CAMP MURRAY
WASHINGTON AIR NATIONAL GUARD

Submitted by

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Executive Summary

This Eagle Management Plan (EMP) has been developed for the Washington Air National Guard (WAANG) at Camp Murray, Pierce County, Washington, in accordance with Air Force Instruction (AFI) 32-7064, Integrated Natural Resources Management. It provides the WAANG with a guide for the management of the bald eagle *(Haliaeetus leucocephalus)* and its habitats on Camp Murray.

Effective 8 August 2007, the bald eagle was removed from the list of threatened and endangered species under the Endangered Species Act. The bald eagle has recovered from an all-time low of 417 nesting pairs in 1963 to an estimated high of 9,789 breeding pairs today (USFWS 2007a).

The eagle will continue to receive protection under two other Federal laws: the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Both laws prohibit killing, selling, or otherwise harming eagles, their nests, or eggs. The bald eagle will be reclassified as a sensitive species by the State of Washington, and it will continue to be managed by the general wildlife and migratory bird protection provisions of AFI 32-7064.

The last documented successful bald eagle nest on Camp Murray was in 1994. Since then, the bald eagles have used the two previous nesting trees as perches on the camp. There are currently active bald eagle nests on the adjacent Fort Lewis property and the private property and island north of the camp. All of the bald eagles found in the vicinity of the camp forage on American Lake which encompasses the camp's western boundary. American Lake also provides roosting and foraging habitat for wintering bald eagles.

A variety of activities or future development at Camp Murray can potentially interfere with the bald eagles that nest and forage in proximity of the camp. Activities that affect an eagles' ability to forage, nest, roost, breed, or raise young can be classified as a disturbance which is prohibited by the Bald and Golden Eagle Protection Act.

Due to the fact that bald eagles have been nesting in the vicinity of Camp Murray for multiple years, they have become somewhat accustomed to the activities associated with Camp Murray and Fort Lewis. However, activities that can create a disturbance near the perch trees should be avoided or minimized during the breeding season. If either perch tree on the camp is used as a nest in the future, WAANG must contact the appropriate agencies mentioned in this plan for possible updates to regulations or guidelines.

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DRAFT BALD EAGLE MANAGEMENT PLAN
CAMP MURRAY, WASHINGTON

TABLE OF CONTENTS

TABLE OF CONTENTS (CONTINUED)

APPENDICES

FIGURES

PHOTOGRAPHS

TABLES

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1. Introduction

This Eagle Management Plan (EMP) provides the Washington Air National Guard (WAANG) with a guide for the management of the bald eagle *(Haliaeetus leucocephalus)* and will assist the WAANG to minimize impacts on bald eagles, particularly where they might constitute a disturbance, which is prohibited by the Bald and Golden Eagle Protection Act. This section provides an overview of the eagle's new legal status and other laws that currently protect it.

1.1 Washington Air National Guard at Camp Murray

Camp Murray is a 225-acre property located between Interstate 5 and American Lake in Pierce County, Washington (**Figure 1-1**). The WAANG occupies approximately 43 acres of forested and developed land on the camp (**Figure 1-2**). The rest of the camp is occupied by the Washington Army National Guard (WAARNG).

1.2 Objectives of the Bald Eagle Management Plan

This EMP has been developed for the WAANG at Camp Murray in accordance with Air Force Instruction (AFI) 32-7064, Integrated Natural Resources Management. It provides the WAANG with a guide for the management of the eagle and its habitats on Camp Murray. This EMP provides an overview of the eagle's legal status and its natural history; locations and territory history of eagle nests on and in proximity of the camp; and an overview the U.S. Fish and Wildlife Service (USFWS) National Bald Eagle Management Guidelines (**Appendix A**), Washington Department of Fish and Wildlife (WDFW) guidelines, and eagle management guidelines for the camp.

1.3 The Bald Eagle's Updated Legal Status

Effective 8 August 2007, the bald eagle was removed from the list of threatened and endangered species under the Endangered Species Act (ESA). **Appendix B** provides the final rule published in the Federal Register. The bald eagle has recovered from an all-time low of 417 nesting pairs in 1963 to an estimated high of 9,789 breeding pairs today. The bald eagle will continue to be protected by the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act (MBTA). It will also be protected under corresponding state laws (USFWS 2007a).

To ensure that eagles continue to thrive, the USFWS will work with state wildlife agencies to monitor eagles for at least 5 years since delisting. If it appears that bald eagles again need the protection of the ESA, the USFWS can propose to relist the species. The USFWS is drafting the Final Post-Delisting Monitoring Plan (USFWS 2007a). The draft of this plan can be found in **Appendix C.**

The bald eagle first gained Federal protection in 1940, under what was later named the Bald and Golden Eagle Protection Act. The law curbed illegal hunting and shooting of eagles for their feathers, but they soon declined almost to extinction due to the widespread use of the pesticide DDT after World War II. When DDT washed off into waterways, it was absorbed by aquatic plants and animals. When eagles ate contaminated fish, they would then be poisoned. DDT prevented the proper formulation of calcium necessary to produce strong eggshells. Consequently, the thinned eggshells cracked when an adult bird tired to incubate them. Widespread reproductive failure and a precipitous decline in numbers followed. As a result, the bald eagle was protected in 1967 under the precursor to the Endangered Species Act. The eagle continued to be protected when the Endangered Species Act of 1973 was enacted (USFWS 2007a).

Figure 1-1. Location of Camp Murray

Figure 1-2. WAANG on Camp Murray

The legal protections given the species by these statutes, along with a crucial decision by the U.S. Environmental Protection Agency (USEPA) to ban the general use of DDT in 1972, provided the springboard for the USFWS and its partners to accelerate recovery through captive breeding programs, reintroductions, law enforcement efforts, protection of habitat around nest sites, and land purchase and preservation activities (USFWS 2007a).

1.4 Bald Eagle Protection

The following laws and guidance continue to provide protection and management guidelines for the bald eagle.

1.4.1 Air Force Instruction 32-7064

The bald eagle will continue to be managed by the general wildlife and migratory bird protection provisions of AFI 32-7064.

1.4.2 The Bald and Golden Eagle Protection Act

The Eagle Act (16 United States Code [U.S.C.] 668–668c), enacted in 1940 and amended several times since then, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. The Act provides criminal and civil penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

> "Disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that injures an eagle or substantially interferes with normal breeding, feeding, or sheltering habits and causes, or is likely to cause, a loss of productivity or nest abandonment.

A violation of the Act can result in a criminal fine of $100,000 ($200,000 for organizations), imprisonment for one year, or both, for a first offense. Penalties increase substantially for additional offenses, and a second violation of this Act is a felony.

1.4.3 The Migratory Bird Treaty Act

The MBTA (16 U.S.C. 703–712), prohibits the taking of any migratory bird or any part, nest, or egg, except as permitted by regulation. The MBTA was enacted in 1918 and a 1972 agreement supplementing one of the bilateral treaties underlying the MBTA had the effect of expanding the scope of the Act to cover bald eagles and other raptors. Implementing regulations define "take" under the MBTA as "pursue, hunt, shoot, wound, kill, trap, capture, possess, or collect."

1.4.4 Washington State

Bald eagles have been listed as threatened in Washington State since 1978. The WDFW is expected to recommend to the Washington Fish and Wildlife Commission that the bald eagle be downlisted to sensitive status (WDFW 2007a).

The Bald Eagle Protection Act, Revised Code of Washington (RCW) 77.12.655 was passed by the Washington State Legislature in 1984. This law requires the establishment of rules defining buffer zones around bald eagle nest and roost sites. The law states that the rules shall take into account the need for variation of the extent of the zone from case to case. In 1986, the Bald Eagle Protection Rules, Washington Administrative Code (WAC) 232-12-292, were established by the Washington State Wildlife Commission. The primary focus of the Bald Eagle Protection Rules is to protect habitat via habitat management plans (WDFW 2007a).

1.4.5 Revised Code of Washington 77.12.655 Habitat Buffer Zones for Bald Eagles — Rules

The department, in accordance with chapter 34.05 RCW, shall adopt and enforce necessary rules defining the extent and boundaries of habitat buffer zones for bald eagles. Rules shall take into account the need for variation of the extent of the zone from case to case, and the need for protection of bald eagles. The rules shall also establish guidelines and priorities for purchase or trade and establishment of conservation easements or leases to protect such designated properties. The department shall also adopt rules to provide adequate notice to property owners of their options under RCW 77.12.650 and this RCW (WASL 2007).

Washington Administrative Code 232-12-292 — Bald Eagle Protection Rules

The purpose of these rules is to protect the habitat and thereby maintain the population of the bald eagle so that the species is not classified as threatened, endangered, or sensitive in Washington State. This can best be accomplished by promoting cooperative efforts to manage for eagle habitat needs through a process which is sensitive to the landowner goals as well. The following rules are designed to promote such cooperative management (WASL 2007).

WAC 232-12-011 — Wildlife Classified as Protected Shall Not be Hunted or Fished

Sensitive species are any wildlife species native to the state that are vulnerable or declining and are likely to become endangered or threatened in a significant portion of their range within the state without cooperative management or removal of threats (WASL 2007).

RCW 77.12.650 — Protection of Bald Eagles and Their Habitats — Cooperation Required

The department shall cooperate with other local, state, and Federal agencies and governments to protect bald eagles and their essential habitats through existing governmental programs, including the following:

1. The natural heritage program managed by the Department of Natural Resources under chapter 79.70 RCW
2. The natural area preserve program managed by the Department of Natural Resources under chapter 79.70 RCW
3. The shoreline management master programs adopted by local governments and approved by the Department of Ecology under chapter 90.58 RCW (WASL 2007).

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2. Bald Eagle Description and Natural History

2.1 Description

Bald eagles are among the largest birds in North America. Wing spans range from 6.5 to 7.5 feet and body length from 2.5 to 3 feet. Individuals can weigh from 6 to 15 lbs (Stinson *et al.* 2001).

Like the other seven species of sea eagles, bald eagles have unfeathered lower legs and large, powerful talons. Females are larger than males. The plumage of adult bald eagles is characterized by a snowy white head and tail with deep brown body and wing feathers (**Photograph 2-1**). Adults have yellow eyes, beak, and cere (fleshy area at the base of the beak). Juveniles and subadults lack the white head and tail and display widely various patterns of dark brown, light brown, whitish gray, and white on the body and wing feathers. Early in life the eyes are dark brown, transforming with age. The beak and cere also start off very dark, almost black. Eagles in juvenile plumage (**Photograph 2-2**) appear larger than adults because of longer feathers, particularly in the wings and tail. These and other details of plumage and color allow the separation of five distinct plumages that correspond to bald eagle age classes (Stinson *et al.* 2001).

Sometimes confused with golden eagles, bald eagles are mostly dark brown until they are 4 to 5 years old and acquire their characteristic coloring. There is a distinction between the two species, though, even during the early years. Only the tops of the bald eagle's legs have feathers. The legs of golden eagles are feathered all the way down (USFWS 2007b). The bald eagle has a proportionately larger head and bill than the golden eagle (NatureServe 2007).

Source: USFWS 2007b

Photograph 2-1. Mature Bald Eagle

Source: Schmidt 2007

Photograph 2-2. Immature Bald Eagle at Camp Murray on American Lake Shoreline near WAANG Boat Dock

2.1.1 Territoriality

Bald eagles defend their territories from other adult eagles that attempt to intrude. The adult pair attempts to maintain exclusive occupancy of the territory through passive perching atop dominant trees, threat vocalizations, circling displays, and territorial chases. Subadult eagles are usually tolerated to a greater degree than intruding adults. Eagles occasionally fight using their talons to grasp the opponent while in flight. Such fights are responsible for many of the injured birds that require rehabilitation and fights sometimes have fatal outcomes (Stinson *et al.* 2001).

2.1.2 Reproduction

Mating behavior. Adult bald eagles go through a series of courtship behaviors that establish a relationship known as a "pair bond," that often lasts until one eagle dies. When one eagle of the pair dies or does not return to the territory, it will be replaced by a new adult. The courtship of bald eagles can involve vocal displays, various chase displays, and copulation. Chase displays have been given names such as the "roller coaster flight" or "cartwheel display." In Washington, territorial eagles engage in courtship behavior in January and February, although some pairs begin to repair nests as early as December (Stinson *et al.* 2001).

Nesting and brood rearing. Bald eagles build large nests constructed of sticks with nest cups lined with soft materials like grasses, shredded bark, and downy feathers. A nest territory might contain only one nest, but can have as many as eight additional alternate nests. Bald eagles, particularly males, exhibit strong fidelity to their nest territory. Eagles usually return to a territory near a reliable food source year after year (Stinson *et al.* 2001).

The clutch is most often 2 eggs (79%), occasionally 1 (17%) or 3 (4%). Clutches of 4 are extremely rare. The dull white eggs measure only about 3 by 2 inches, rather small for a bird the size of an eagle. Incubation lasts for about 35 days. Both members of a mated pair participate in the incubation of eggs and care of young, but the female does the bulk of incubation. Eggs are turned about every hour and are sometimes covered with soft nesting material when left unattended for a short time. Adults brood their young, particularly when the eaglets are less than a month old. Brooding keeps the young warm (or cool,

in southern climates), dry, and protected from predators. In western Washington most eagles begin to incubate their eggs by the third week in March, and young hatch by late April (Stinson *et al.* 2001).

Prey are brought to the young in the nest. The male delivers most of the prey during the first month while the female is usually busy with brooding the young. During this first month, the adults tear meat from a prey item and dangle it above the chick until it is taken. In nests with more than one eaglet, the largest chick often receives the most food. The adults respond to the most noticeable eaglet, both in terms of its size and the noise it makes in fussing for food. This can create increasing disparity in size between nestmates (Stinson *et al.* 2001).

During the first month after hatching, nestmates often fight vigorously. They will peck and grab at one another, sometimes seizing the other's wing and dragging it about the nest. The earliest to hatch is larger and will sometimes bully smaller nestmates into submission so the larger chick is able to eat more of the food brought to the nest without competition from its siblings. While this type of fighting is common, actual death of a nestmate from this behavior is rare. Most young eagles fledge at 11 to 13 weeks of age, usually during early to mid-July in Washington (Stinson *et al.* 2001). **Table 2-1** provides a summary of the nesting chronology for bald eagles in the Camp Murray area.

Table 2-1. Nesting Chronology for Eagles in the Camp Murray and Fort Lewis Area

Activity	Earliest	Mid-Point	Latest
Nest Initiation	19 Dec	4 Jan	16 Jan
Egg-laying	8 Mar	22 Mar	5 Apr
Incubation	8 Mar	8 Apr	10 May
Hatching	12 Apr	26 Apr	10 May
Nestling period	12 Apr	6 Jun	5 Aug
Fledging	30 Jun	23 Jul	5 Aug

Source: Fort Lewis 2006

2.1.3 Migration

Washington's breeding adults are on their territories until early fall when they migrate north to coastal British Columbia and southeastern Alaska for several weeks to take advantage of food supplies associated with early salmon runs. They return to territories in Washington by January to commence nesting again. Fledglings also disperse northward, but they might remain there for several months before returning to Washington. Juvenile eagles from Oregon and California also migrate north and pass through western Washington while en route to Canada (Stinson *et al.* 2001).

Eagles generally leave northern breeding grounds during fall and seek out milder climates where prey are concentrated during the winter months. Fall migration may be a response to dwindling food supplies on breeding areas, or the lack of feeding opportunities when lakes and rivers freeze over in the interior. The relatively mild winter climate and abundant fall salmon runs in Washington attract eagles from as far away as the northern Canadian provinces, Alaska, and Montana (Stinson *et al.* 2001).

Wintering eagles begin to arrive in Washington in October; most adults arrive in November and December, and many juveniles arrive in January. Satellite telemetry was used to track 23 eagles captured on the Skagit River. Based on the subsequent breeding locations, 30% of these eagles originated from British Columbia, 30% from Alaska, 22% from Northwest Territories, and 9% from the Yukon Territory

(the remaining 2 birds seemed to be local birds). Individual eagles might occupy a small winter range on one river for several weeks during winter, and then move to other major rivers throughout Washington or southern British Columbia before migrating back to their origins (Stinson *et al.* 2001).

2.1.4 Diet

Few birds eat as wide a variety of food as bald eagles. Fish are usually the most common prey taken by breeding bald eagles throughout North America, but bald eagles also capture a variety of birds. Direct observations of nesting eagles in Puget Sound found they captured 78% fish, 19% birds, and 3% mammals. Invertebrates were not observed to be captured, but were found in prey remains (molluscs 6% and crustaceans 1%) (Stinson *et al.* 2001).

Fish that occurred several times in western Washington studies included flounder (family Pleuronectidae), plainfin midshipman (*Porichthys notatus*), dogfish shark (*Squalus acanthias*), sculpin (family Cottidae), rockfish (*Sebastes* spp.), ling-cod (*Ophiodon elongatus*), walleye pollock (*Theragra chalcogramma*), Pacific hake (*Merluccius productus*), Pacific cod (*Gadus macrocephalus*), cabezon (*Scorpaenichthys marmoratus*), red Irish lord (*Hemilepidotus hemilepidotus*), salmon (unidentified salmonids), and channel catfish (*Ictalurus punctatus*) (Stinson *et al.* 2001).

2.1.5 Behavior

Winter feeding. Bald eagles use their keen eyesight to search for food. In winter, when prey are concentrated, they look for other eagles in the act of feeding. Large congregations of eagles often occur where food is abundant. The opportunity for an individual to eat depends on its aggressiveness, which might be influenced by hunger, size, and age. A variety of behaviors are used to communicate dominance and submission (Stinson *et al.* 2001).

Soaring. Under suitable conditions, bald eagles will soar for long periods, sometimes climbing to great heights. During winter, soaring is usually seen in the afternoon after eagles have fed. Once one eagle has started this behavior, others will often join in until a large flock is spiraling upward together. These "kettles" might consist of 25 to 50 eagles (Stinson *et al.* 2001).

Communal roosting. During the winter, bald eagles often spend the night roosting in groups of 2 to more than 500 birds. Communal bald eagle night roosts occur at 131 known sites in Washington and some of these roosts are used traditionally, year after year. Roosts occur in areas that are sheltered from the wind, and are otherwise favorable for conserving energy. Eagles usually select the highest perch that will support their weight, and eagles perched at different heights reflect the position birds hold in their social hierarchy (Stinson *et al.* 2001).

2.1.6 Habitat

Home Range. The seasonal home range that contains the foraging and nesting habitat of a pair averages about 2.6 square miles in the Puget Sound. The density of nesting eagles depends on many factors that affect habitat quality, such as prey populations, human disturbance, and perhaps the availability of nest and perch trees. In areas of high-quality habitat, occupied nests of adjacent nesting pairs might be spaced every few miles (Stinson *et al.* 2001).

Winter ranges are considerably larger and more variable. Winter ranges for 15 eagles captured on the Skagit River averaged 17,450 square miles, and ranged from 89 to 113,365 square miles (Stinson *et al.* 2001).

Some birds migrated quickly to a distinct area and remained within a relatively small range, while others moved regularly to new locations throughout the winter (Stinson *et al.* 2001).

Nesting Habitat. Breeding bald eagles need large trees near open water that is not subject to intense human activity. In Washington, nearly all bald eagle nests (99%) are within 1 mile of a lake, river, or marine shoreline and 97% are within 3,000 feet. The distance to open water varies somewhat with shore type. Nests tend to be closer to marine shores and rivers than to lake shores. This difference might be because many lake shores are heavily developed and shoreline nesting habitat has been lost (Stinson *et al.* 2001).

Assuming the presence of an adequate food supply, the single most critical habitat factor associated with eagle nest locations and success is the presence of large super-dominant trees. Alteration of upland nesting habitat from natural events (e.g., fire, windstorms) or human-caused alterations (e.g., timber harvest, development) that result in more or less permanent loss of nest trees or potential nesting habitat, or prevent trees from attaining the size capable of supporting a nest, have the potential to reduce the number of nesting territories in Washington. Studies throughout the eagle's range have shown the positive relationship between nest presence and large super-dominant trees and negative relationship with clear cutting (Stinson *et al.* 2001).

In western Washington, nest trees are most often old-growth Douglas-fir (*Pseudotsuga menziesii*) and Sitka spruce (*Picea sitchensis*) near the coast, with a higher component of mature grand fir (*Abies grandis*) and black cottonwood (*Populus balsamifera*) around Puget Sound. Ponderosa pines (*Pinus ponderosa*) and black cottonwoods are often used for nesting in eastern Washington (Stinson *et al.* 2001).

Perch Trees. Perches from which nesting bald eagles forage are distributed throughout their nest territories along shorelines and prominent points which provide a commanding view of the foraging area. Nesting eagles exhibit consistent daily foraging patterns and use of the same perches. Perch trees provide eagles with some security as eagles perched in trees are more tolerant of disturbance than when they are perched on the ground (Stinson *et al.* 2001).

2.1.7 Longevity, Survival, and Mortality

The longevity record for bald eagles in the wild is greater than 28 years. Captive birds have lived to an age of at least 47 years, and they are believed to be capable of reproducing for 20 to 30 years. Based on survival data, the estimated average maximum life span is 15.4 years (Stinson *et al.* 2001).

There are many known causes of bald eagle mortality. Eggs and hatchlings might be killed by black bears (*Ursus americanus*), raccoons (*Procyon lotor*), wolverines (*Gulo gulo*), ravens (*Corvus corax*), or American crows (*Corvus brachyrhynchos*). Nestlings are sometimes killed by their nestmates. Similar to other young birds, juvenile eagles are particularly vulnerable to accidents, predation, or starvation during their first year. Full grown bald eagles have few natural enemies, and the most frequently reported causes of adult bald eagle mortality are human-related. Adult eagles occasionally die in aggressive encounters with other bald eagles, golden eagles (*Aquila chrysaetos*), or peregrine falcons (*Falco peregrinus*) (Stinson *et al.* 2001).

Eagle carcasses with unknown cause of death are often sent to the National Wildlife Health Lab, in Madison, Wisconsin. A report based on 1,429 carcasses received between 1963 and 1984 indicated that gunshot (23%), trauma (21.1%), poisoning (11.1%), and electrocution (9.1%) were the most prevalent causes of death. Flights into wires or vehicular impact were major causes of traumatic death. Of the 68 bald eagle carcasses sent to the National Lab from Washington, the most frequent causes of death were trauma (16), gunshot (10), and electrocution (7). This is a small biased subsample of fatalities, however,

because most dead eagles are probably not found before they are eaten by scavengers, and eagles killed by human-related causes (roads, power lines) are more likely to be discovered (Stinson *et al.* 2001).

2.1.8 Present Population Status in Washington State

Table 2-2 provides an overview of the number of breeding pairs of bald eagles in Washington from 1990 to 2007. Between the early 1980s and 2000, most states conducted annual bald eagle surveys. Since then, many states recognized that annual surveys were no longer necessary. The last survey in Washington, conducted in 2005, resulted in 848 breeding pairs (USFWS 2007c).

Table 2-2. Number of Breeding Pairs of Bald Eagles in Washington State from 1990 to 2007

Year	Number of Breeding Pairs of Bald Eagles
1990	398
1991	442
1992	459
1993	469
1994	544
1995	558
1996	594
1997	582
1998	664
1999	**
2000	564
2001	658
2002	**
2003	**
2004	**
2005	848
2006	**
2007	**

Source: USFWS 2007c

Note: **- no data

3. Bald Eagle Territory History at Camp Murray

This section provides an overview of the bald eagle's nesting territory history at Camp Murray and in the areas in close proximity to the camp. Bald eagle observations are also provided from the week of field work conducted by e²M while collecting data for this EMP.

3.1 Bald Eagle Activity at Camp Murray

The last documented successful bald eagle nest on Camp Murray was in 1994. Since then, eagles have used the two previous nesting trees and other various trees as perches on the camp. There are currently active bald eagle nests on the adjacent Fort Lewis property and the private property and island north of the camp.

Perch tree 1, a Douglas-fir, is near the WAANG boat dock on American Lake. Perch tree 2 (also a Douglas-fir) is near Building 112. **Figures 3-1** and **3-2** provide maps of each tree and its surroundings. Most bald eagles build nests in Washington within 3,000 feet of a shoreline and prefer old growth Douglas-firs and black cottonwood trees (Stinson *et al*. 2001). The WAANG has multiple trees on its property that fall into this category.

Tables 3-1 to **3-3** provide a summary of the WDFW bald eagle territory history for Camp Murray and the areas in close proximity to the camp. Three territories (907, 355, and 1305) are included in the Camp Murray area. Each nest in a territory is numbered by the territory number followed by the nest number (e.g., 907-3).

3.1.1 Bald Eagle Observations at Camp Murray and Fort Lewis in July 2007

The following observations were made during the week of 9 July 2007 by e²M during the field work session for the data collection of this EMP.

9 July 2007

- One eagle was observed near the American Lake shoreline from the 41st Division Street gate past Building 101. As a seaplane appeared, the eagle left the area.

10 July 2007

- 2 to 3 eagles were observed soaring over American Lake at Russell Landing near the boat dock.
- Eagle calls were heard near the WAANG boat dock near old nest tree 1.

11 July 2007 from 0630 to 0900 hours

Russell Landing at Fort Lewis:

- 0655: Juvenile eagle flew out of WAANG property to tree behind the restaurant at Russell Landing. Eagle perched in tree until 0715. While eagle was in the tree, a car with loud music and boat activity did not disturb it **(**see **Photographs 3-1** and **3-2).**
- 0710: Eagle flew a loop around Russell Landing from the WAANG property near the cell tower.
- 0715: Eagle flew into the WAANG property from the cove area of Camp Murray

Figure 3-1. Perch Tree 1 on Camp Murray

Figure 3-2. Perch Tree 2 on Camp Murray

Table 3-1. Bald Eagle Territory History for Territory 907- American Lake South

Survey Year	Nest #	Early Season	Late Season	Season Summary
2005	2	2 adults incubating, nest repaired	not observed	occupied/active
2004*	3 (Camp Murray Perch Tree 1)	juvenile eagles attempted to build a nest	nest was not used	inactive
2002	2	occupied/active	2 young	nest successful
2001	2	2 adults incubating	2 adults, 1 feathered young	nest successful
2000	2	no adults observed	no young	unoccupied
1999	2	nest repaired	not observed	occupied/inactive
1998	2	2 adults perched	not observed	occupied/inactive
1997	2	occupied/activity unknown	not observed	occupied/activity unknown
1996*	3 (Camp Murray Perch Tree 1)	not observed	not observed	nest failed
1995	2	nest unrepaired	not observed	nest not found
1994*	4 (Camp Murray Perch Tree 2)	not observed	not observed	nest successful
1992	2	1 adult incubating, nest repaired	1 young	nest successful
1991	2	1 adult incubating, new nest	1 adult, 2 downy young	nest successful
1991*	4 (Camp Murray Perch Tree2)	not observed	not observed	nest successful
1990	2	1 adult incubating, nest repaired	1 adult, no young	nest failed
1990*	3 (Camp Murray Perch Tree 1)	not observed	not observed	nest successful
1989	3 (Camp Murray Perch Tree 1)	1 adult incubating, nest repaired	1 adult, no young	nest failed
1988	2	occupied/active	2 adults, 1 feathered young	nest successful
1987	2	occupied/inactive	not observed	occupied/inactive

Source: WDFW 2007c; * Source: Purvine 2007

Table 3-2. Bald Eagle Territory History for Territory 355- American Lake

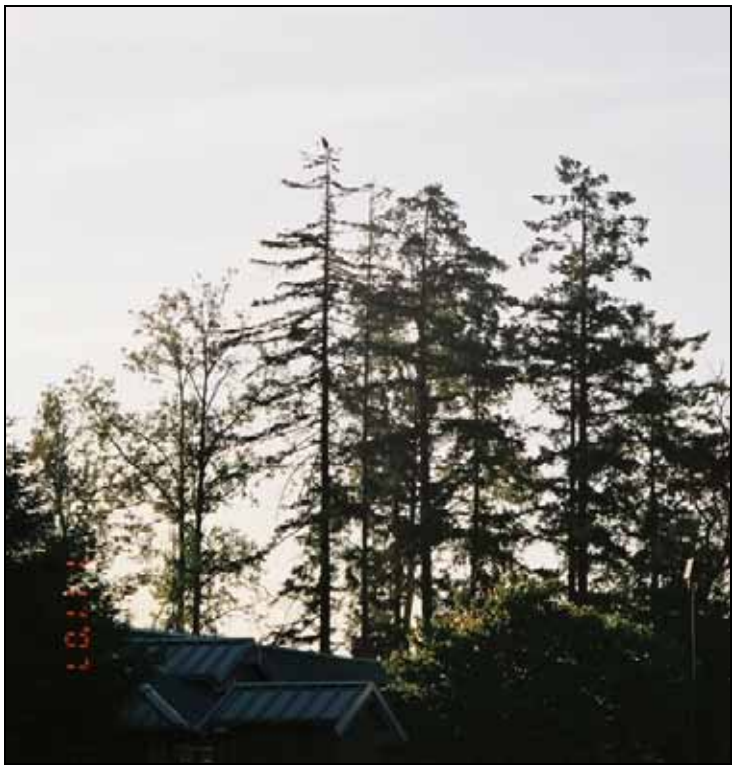
Survey Year	Nest #	Early Season	Late Season	Season Summary
2002	7	occupied/inactive	not observed	occupied/inactive
2001	7	2 adults perched, nest unrepaired	2 adults, no young	occupied/inactive
2000	7	new nest	not observed	occupied/inactive
1999	4	nest repaired	no young	nest failed
1995*	6	not observed	not observed	nest failed

Source: WDFW 2007c; * Source: Purvine 2007

Table 3-3. Bald Eagle Territory History for Territory 1305- Park Marsh, American Lake

Survey Year	Nest #	Early Season	Late Season	Season Summary
2005	1	1 adult incubating, nest repaired	not observed	occupied/active
2002	1	occupied/active	no young	nest failed
2001	1	2 adults incubating	1 adult, 1 young	nest successful
2000	1	occupied/active	1 young	nest successful
1999	1	nest repaired	1 young	nest successful

Source: WDFW 2007c; * Source: Purvine 2007



Source: Kelly 2007

Photograph 3-1. Juvenile Bald Eagle in Tree at Russell Landing at Fort Lewis

Source: Kelly 2007

Photograph 3-2. Close-up of Juvenile Bald Eagle in Tree at Russell Landing at Fort Lewis

- 0735: Eagle calls
- 0820: Eagle flew out of cove area on Camp Murray into the black cottonwood trees near the boat dock at Russell Landing. A helicopter flew over American Lake shortly after this sighting and did not flush out the eagle.
- 0830: Eagle flew out of black cottonwood tree, did a loop over the lake and returned to the same area in the cottonwood trees (see **Photograph 3-2**).
- 0900: Juvenile eagle in trees along shoreline of American Lake on WAANG property (see **Photograph 3-3**).

12 July 2007

- A GPS point was taken at the Fort Lewis eagle nest across the lake from the camp. No eagles were observed, but fireworks were found on the ground near the nest (this was reported to Dave Clouse at Fort Lewis).

3.2 Bald Eagle Activity in the Vicinity of Camp Murray

3.2.1 Bald Eagle Activity at Fort Lewis

Nine active nesting territories are present on Fort Lewis which borders Camp Murray to the south and is across American Lake to the west and north. Two of these nesting territories are on the Nisqually Indian Reservation adjacent to Fort Lewis. Surveys conducted during the past 5 years have revealed that 150 to 240 wintering bald eagles use the Nisqually corridor and Muck Creek between December and March (Fort Lewis 2006).

Figure 3-3 provides the location of nest 907-2 at Fort Lewis. WAANG perch tree 1 was referenced as an alternate for this nest in the Fort Lewis Eagle Management Plan (Fort Lewis 2006), but the perch tree

hasn't been utilized as a nest since 1996 (nest failed this year). **Photograph 3-4** shows an adult eagle in nest 907-2 at Fort Lewis.

Source: Kelly 2007

Photograph 3-3. Eagle Flying Near Russell Landing at Fort Lewis

Source: Schmidt 2007

Photograph 3-4. Eagle in Nest 907-2 at Fort Lewis

1
2 **Figure 3-3. Active Bald Eagle Nest 907-2 at Fort Lewis**

Table 3-4 provides statistics for the bald eagle nesting territories at Fort Lewis from 1974 to 2005.

Table 3-4. Bald Eagle Nesting Territory History at Fort Lewis

Year	Nest Statistics			
	Number of Territories	Number of Young	Young/ Occupied Territory	Percent Territory Success
1974	1	2	2.0	100
1975	1	2	2.0	100
1976	0	0	0.0	0
1977	1	0	0.0	0
1978	1	1	1.0	100
1979	2	4	2.0	100
1980	2	3	1.5	100
1981	2	1	0.5	50
1982	1	0	0.0	100
1983	2	3	1.5	100
1984	2	1	0.5	50
1985	2	4	2.0	100
1986	3	6	2.0	100
1987	3	4	1.3	67
1988	4	7	1.7	100
1989	4	6	1.5	75
1990	4	3	0.7	50
1991	4	6	1.5	100
1992	5	5	1.0	60
1993	5	5	1.0	80
1994	5	8	1.6	100
1995	4	6	1.5	75
1996	5	7	1.4	80
1997	5	1	0.2	20
1998	5	5	1.0	60
1999	5	5	1.0	60
2000	7	6	0.9	57
2001	7	6	0.9	57
2002	8	10	1.2	75
2003	9	8	0.9	67
2004	9	8	0.9	56
2005	9	4	0.4	33
Totals	127	137	1.1	67

Source: Stalmaster 2005

3.2.2 McChord Air Force Base (AFB)

McChord AFB is approximately 5 miles to the northeast of Camp Murray. There are currently no bald eagle nests at McChord AFB. Bald eagles forage in the ponds at McChord AFB, especially after they have been stocked with fish. Bald eagles have caused Bird/Wildlife Aircraft Strike Hazards (BASH) in the past at the base (Grenko 2007).

3.2.3 Private Land

Figure 3-4 provides a map of bald eagle nests for the Camp Murray and American Lake South area. Two nests located on privately owned land can be seen on this map (355-5 and 355-6). Both perch trees at Camp Murray (907-3 and 907-4) and some of the nests at Fort Lewis are also included on the map. **Figure 3-4** was provided by the WDFW and provides their management zones for the nests and perch trees.

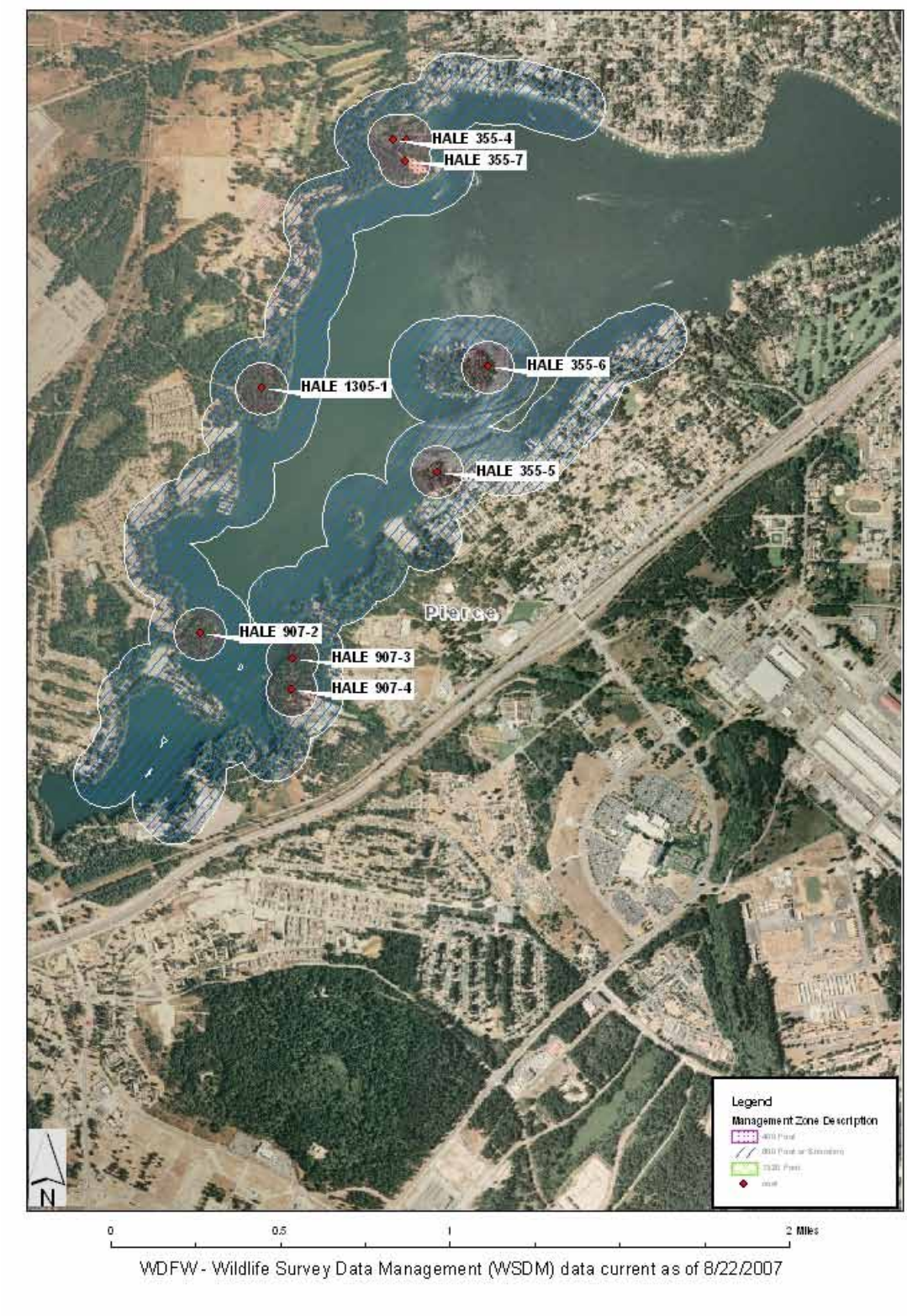


Figure 3-4. Bald Eagle Nests and Management Buffers for Camp Murray and American Lake South

Source: WDFW 2007b

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4. Potential Management Conflicts for Bald Eagles at Camp Murray

Activities that permanently alter bald eagle habitat (e.g., removal of nest, roost, and perch trees, and removal of buffers without regeneration of trees of adequate size and structure), and activities that temporarily disturb eagles to the point of reproductive failure or reduced vigor (e.g., construction, logging, pedestrian activity, boating) are the greatest threats to nesting and wintering eagle populations in Washington State (Stinson *et al.* 2001).

Food availability might also be an issue in areas with dwindling salmon runs. Studies conducted on Fort Lewis have shown that fish and waterfowl are the primary food sources for both nesting and wintering bald eagles utilizing Fort Lewis (Fort Lewis 2006). As Washington's human population grows, disturbances and changes to the landscape will also increase. The current availability of large, mature trees along shorelines, and the availability of these trees in the future, will play a primary role in determining how bald eagles will ultimately fare in Washington (Stinson *et al.* 2001).

Where a human activity agitates or bothers roosting or foraging bald eagles to the degree that causes injury or substantially interferes with breeding, feeding, or sheltering behavior and causes, or is likely to cause, a loss of productivity or nest abandonment, the conduct of the activity constitutes a violation of the Eagle Act's prohibition against disturbing eagles. Trash such as fishing line and hazardous waste can harm eagles and their eggs. This section provides an overview of possible sources of disturbance and potential management conflicts for bald eagles at Camp Murray.

4.1 Nesting Bald Eagle Sensitivity

During the breeding season, bald eagles are sensitive to a variety of human activities. However, not all bald eagle pairs react to human activities in the same way. Some pairs nest successfully just dozens of yards from human activity, while others abandon nest sites in response to activities much farther away. This variability could be related to a number of factors, including visibility, duration, noise levels, extent of the area affected by the activity, prior experiences with humans, and tolerance of the individual nesting pair (USFWS 2007d).

If agitated by human activities, eagles might inadequately construct or repair their nest, expend energy defending the nest rather than tending to their young, or abandon the nest altogether. Activities that cause prolonged absences of adults from their nests can jeopardize eggs or young. Depending on weather conditions, eggs could overheat or cool too much and fail to hatch. Unattended eggs and nestlings are subject to predation. Young nestlings are particularly vulnerable because they rely on their parents to provide warmth or shade, without which they could die as a result of hypothermia or heat stress. If food delivery schedules are interrupted, the young might not develop healthy plumage, which can affect their survival. In addition, adults startled while incubating or brooding young could damage eggs or injure their young as they abruptly leave the nest (USFWS 2007d).

Older nestlings no longer require constant attention from the adults, but they might be startled by loud or intrusive human activities and prematurely jump from the nest before they are able to fly or care for themselves. Once fledged, juveniles range up to 0.25 mile from the nest site, often to a site with minimal human activity. During this period, until about 6 weeks after departure from the nest, the juveniles still depend on the adults for food (USFWS 2007d).

The relative sensitivity of bald eagles during various stages of the breeding season is outlined in **Table 4-1.**

Table 4-1. Nesting Bald Eagle Sensitivity to Human Activities

Phase	Month	Activity	Sensitivity to Human Activity	Comments
1	December/January	Courtship and nest building	Most sensitive period; likely to respond negatively	Most critical time period. Disturbance is manifested in nest abandonment. Bald eagles in newly established territories are more prone to abandon nest sites.
2	March/ April	Egg laying	Very sensitive period	Human activity of even limited duration might cause nest desertion and abandonment of territory for the breeding season.
3	March/April/May	Incubation and early nestling period (up to 4 weeks)	Very sensitive period	Adults are less likely to abandon the nest near and after hatching. However, flushed adults leave eggs and young unattended; eggs are susceptible to cooling, loss of moisture, overheating, and predation; young are vulnerable to the elements.
4	April/May/June/ July/August	Nestling period (4 to 8 weeks)	Moderately sensitive period	Likelihood of nest abandonment and vulnerability of the nestlings to elements somewhat decreases. However, nestlings might miss feedings, affecting their survival.
5	June/July/August	Nestlings (8 weeks through fledging)	Very sensitive period	Gaining flight capability, nestlings 8 weeks and older could flush from the nest prematurely due to disruption and die.

Sources: USFWS 2007d, Fort Lewis 2006

4.2 Impact of Human Activity on Foraging and Roosting Bald Eagles

Disruption, destruction, or obstruction of roosting and foraging areas can also negatively affect bald eagles. Disruptive activities in or near eagle foraging areas can interfere with feeding, reducing chances of survival. Interference with feeding can also result in reduced productivity (number of young successfully fledged). Migrating and wintering bald eagles often congregate at specific sites for purposes of feeding and sheltering. Bald eagles rely on established roost sites because of their proximity to sufficient food sources. Roost sites are usually in mature trees where the eagles are somewhat sheltered from the wind and weather. Human activities near or within communal roost sites could prevent eagles from feeding or taking shelter, especially if there are no other undisturbed and productive feeding and roosting sites available. Activities that permanently alter communal roost sites and important foraging areas can altogether eliminate the elements that are essential for feeding and sheltering eagles (USFWS 2007d).

4.3 Potential Sources of Disturbance

Figures 4-1 and **4-2** provide potential sources of disturbance at Camp Murray and in the vicinity of the camp. Potentially any type of loud noise can cause an eagle to flush. These figures provide the most likely areas that can be the source of a disturbance.

Training

The WAANG does not conduct training activities on Camp Murray, but the Army's activities are mentioned for reference in this section. There is a helicopter landing area on the Army property on Camp Murray. Helicopter activity has a significant likelihood of creating noise disturbances and a possible BASH causing injury or death to the eagles. The Army conducts on-the-ground training operations that can create noise disturbances. Generators (long-term) and pile drivers (short-term) for tent installation can create disturbances and are often used for overnight training activities.

Stalmaster 1997 studied the flushing responses of wintering bald eagles to military firing activity, helicopter overflights, and boating on the Nisqually River and Muck Creek on Fort Lewis during 1991 to 1994. Eight percent of 1,452 eagles monitored near Muck Creek flushed during 373 firing events; 45% from ordnance explosions, 9% from automatic weapons fire, 6% from artillery impacts, 4% from mortar impacts, and 3% from small arms fire. Flushing by eagles decreased with increasing distance from firing events (16% flushed at 0.5 to 1.0 km, 9% at 1 to 2 kilometers (km), 4% at 2 to 4 km, and < 1% at 4 to 6 km). Forty-seven percent of 919 eagles flushed in response to 48 helicopter overflights, 37% on the Nisqually River and 53% on Muck Creek. Sixty-one percent of 1,825 eagles flushed in response to 52 experimental boat disturbances on the Nisqually River. Subadults flushed more often than adults, and eagles feeding or standing on the ground flushed more often than those perching in trees (Stalmaster 1997).

General Camp Activities

General camp activities include truck and other large vehicle movement and pedestrian activity. Construction-related activities and general maintenance operations can potentially create noise disturbances.

Landscape Activities

The use of landscaping tools such as lawnmowers, mulchers, chainsaws, trimmers, and blowers can potentially create noise disturbances. Landscaping activities can occur close to either of the perch trees. **Photograph 4-1** shows a leaf blower in operation at Camp Murray.

Recreation and American Lake

Camp Murray has camping areas and boat docks on American Lake. The camping and boat dock areas are located close to perch tree 1. Noises generated by boats and jet skis close to the shoreline have a likelihood of creating noise disturbances, especially for eagles nesting in the vicinity.

Seaplane activity has a significant likelihood of causing a noise disturbance (especially for eagles nesting in the vicinity) and possible injury or death. An eagle was observed flushing when a seaplane passed by during the first field session. There was a seaplane base on American Lake, but it has been closed down according to the city of Lakewood. There are currently no other seaplane bases on the lake. **Table 4-2** provides a summary of the decibel levels for possible sources of bald eagle disturbance. The passage of

Figure 4-1. Potential Sources of Eagle Disturbance at Camp Murray

Figure 4-2. Potential Sources of Eagle Disturbance in the Vicinity of Camp Murray

Source: Schmidt 2007

Photograph 4-1. Landscape Activity at Camp Murray

Table 4-2. Decibel Levels for Possible Sources of Bald Eagle Disturbance

Source	Decibel Level (dB)
artillery fire	140–170
seaplane	120
helicopter	105
pile driver	105
riding lawn mower	98
leaf blower	96
heavy truck	90
fork lift with load	82
generator	80–82
boat	80

Sources: CADBW 2007, Suafoa 2007

sound waves through the air causes air pressure changes. The loudness of a sound is related to the amount of air pressure created by its sound waves and is measured in decibels. A change of 10 decibels reflects a change in sound intensity of 10 times (CADBW 2007).

4.4 Future Development

Future development in the vicinity of either perch tree can create a disturbance from noise or habitat loss (perch trees are considered protected habitat by the WDFW). The loss of Douglas-fir trees and other

vegetation that form the landscape buffers around each perch tree would increase the likelihood of disturbing eagles using the trees.

Short-term noise generated from construction can create disturbances for eagles nesting or foraging in the vicinity of the camp. Refer to the guidelines in Section 5 and contact the USFWS and WDFW during the construction planning phase.

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5. Bald Eagle Management Guidelines

This section provides an overview of the National Bald Eagle Management Guidelines. The complete guidelines can be viewed in **Appendix B**. The WDFW bald eagle management guidelines are also provided. The WDFW has yet to change the status of the eagle, so their guidelines most likely will be updated in the future. Contact the USFWS and the WDFW for future guideline updates before starting any activity that might impact either of the perch trees or cause a disturbance to bald eagles.

5.1 2007 USFWS National Bald Eagle Management Guidelines

5.1.1 Purpose

These guidelines are actions designed to give landowners and others clear guidance on how to ensure that actions they take on their property are consistent with the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act (USFWS 2007d).

The modifications to implementing regulations for the Bald and Golden Eagle Protection Act established a regulatory definition of "disturb," a term specifically prohibited as "take" by the Eagle Act. The final definition defines "disturb" as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior." For more information, see the final rule (see **Appendix A**) defining "disturb" and accompanying environmental assessment (USFWS 2007d).

On June 5, 2007, the USFWS also opened a 90-day public comment period on a proposal to create a permit program (see Section 5.1.4) to authorize limited "take" of bald and golden eagles where the take is associated with, and not the purpose of, otherwise lawful activities. The proposed rulemaking also contains proposed provisions to extend Eagle Act authorizations to persons authorized to take bald eagles under an ESA permit. In addition, the proposed permit would establish provisions to remove eagle nests in rare cases where their location poses a risk to human safety or to the eagles themselves, for example, in close proximity to an airport runway (USFWS 2007d).

5.1.2 Active Nest Guidelines

In developing these guidelines, the USFWS relied on existing state and regional bald eagle guidelines, scientific literature on bald eagle disturbance, and recommendations of state and Federal biologists who monitor the impacts of human activity on eagles. Despite these resources, uncertainties remain regarding the effects of many activities on eagles and how eagles in different situations might or might not respond to certain human activities (USFWS 2007d).

The USFWS recognizes this uncertainty and views the collection of better biological data on the response of eagles to disturbance as a high priority. To the extent that resources allow, the USFWS will continue to collect data on responses of bald eagles to human activities conducted according to the recommendations within these guidelines to ensure that adequate protection from disturbance is being afforded, and to identify circumstances where the guidelines might be modified. These data will be used to make future adjustments to the guidelines (USFWS 2007d).

To avoid disturbing nesting bald eagles, we recommend (1) keeping a distance between the activity and the nest (distance buffers), (2) maintaining preferably forested (or natural) areas between the activity and

around nest trees (landscape buffers), and (3) avoiding certain activities during the breeding season. The buffer areas serve to minimize visual and auditory impacts associated with human activities near nest sites. Ideally, buffers would be large enough to protect existing nest trees and provide for alternative or replacement nest trees (USFWS 2007d).

The size and shape of effective buffers vary depending on the topography and other ecological characteristics surrounding the nest site. In open areas where there are little or no forested or topographical buffers, such as in many western states, distance alone must serve as the buffer. Consequently, in open areas, the distance between the activity and the nest might need to be larger than the distances recommended under Categories A and B of these guidelines if no landscape buffers are present. The height of the nest above the ground might ay also ameliorate effects of human activities; eagles at higher nests might ay be less prone to disturbance (USFWS 2007d).

In addition to the physical features of the landscape and nest site, the appropriate size for the distance buffer could vary according to the historical tolerances of eagles to human activities in particular localities, and might also depend on the location of the nest in relation to feeding and roosting areas used by the eagles. Increased competition for nest sites might lead bald eagles to nest closer to human activity (and other eagles).

Seasonal restrictions can prevent the potential impacts of many shorter-term, obtrusive activities that do not entail landscape alterations (e.g., fireworks, outdoor concerts). In proximity to the nest, these kinds of activities should be conducted only outside the breeding season. For activities that entail both short-term, obtrusive characteristics and more permanent impacts (e.g., building construction), a combination of both approaches is recommended: retaining a landscape buffer and observing seasonal restrictions.

For assistance in determining the appropriate size and configuration of buffers or the timing of activities in the vicinity of a bald eagle nest, contact the USFWS Field Office in Lacy at 306-753-9440 or at *http://www.fws.gov/westwafwo* (USFWS 2007d).

Eagles are unlikely to be disturbed by routine use of roads, homes, and other facilities where such use pre-dates the eagles' successful nesting activity in a given area. Therefore, in most cases ongoing existing uses can proceed with the same intensity with little risk of disturbing bald eagles. However, some intermittent, occasional, or irregular uses that pre-date eagle nesting in an area could disturb bald eagles. For example, a pair of eagles might begin nesting in an area and subsequently be disturbed by activities associated with an annual outdoor flea market, even though the flea market has been held annually at the same location. In such situations, human activity should be adjusted or relocated to minimize potential impacts on the nesting pair (USFWS 2007d).

5.1.3 Activity-Specific Guidelines

The following section provides the USFWS's management recommendations for avoiding bald eagle disturbance as a result of new or intermittent activities proposed in the vicinity of bald eagle nests. Activities are separated into eight categories (A–H) based on the nature and magnitude of impacts on bald eagles that usually result from the type of activity (USFWS 2007d).

Activities with similar or comparable impacts are grouped together. In most cases, impacts will vary based on the visibility of the activity from the eagle nest and the degree to which similar activities are already occurring in proximity to the nest site. Visibility is a factor because, in general, eagles are more prone to disturbance when an activity occurs in full view. For this reason, it is recommended that activities be located farther from the nest structure in areas with open vistas, in contrast to areas where the view is shielded by rolling topography, trees, or other screening factors. The recommendations also take

into account the existence of similar activities in the area because the continued presence of nesting bald eagles in the vicinity of the existing activities indicates that the eagles in that area can tolerate a greater degree of human activity than we can generally expect from eagles in areas that experience fewer human impacts. To illustrate how these factors affect the likelihood of disturbing eagles, the USFWS has incorporated the recommendations for some activities into a table for categories A and B **(**see **Table 5-1)**. First, determine which category the activity falls into (between categories A and H). If the activity is not specifically addressed in these guidelines, follow the recommendations for the most similar activity represented (USFWS 2007d).

Table 5-1. Guideline Summary for Category A and Category B Activities

	If there is no similar activity within 1 mile of the nest	**If there is similar activity closer than 1 mile from the nest**
If the activity will be visible from the nest	660 feet. Landscape buffers are recommended.	660 feet, or as close as existing tolerated activity of similar scope. Landscape buffers are recommended.
If the activity will not be visible from the nest	Category A: 330 feet. Clearing, external construction, and landscaping between 330 feet and 660 feet should be done outside the breeding season. Category B: 660 feet	330 feet, or as close as existing tolerated activity of similar scope. Clearing, external construction, and landscaping within 660 feet should be done outside the breeding season.

Source: USFWS 2007d

The vertical axis of **Table 5-1** shows the degree of visibility of the activity from the nest. The horizontal axis (header row) represents the degree to which similar activities are ongoing in the vicinity of the nest. Locate the row that best describes how visible the activity will be from the eagle nest. Then, choose the column that best describes the degree to which similar activities are ongoing in the vicinity of the eagle nest. The box where the column and row come together contains the management recommendations for how far you should locate your activity from the nest to avoid disturbing the eagles. The numerical distances shown in the tables are the closest the activity should be conducted relative to the nest. In some cases the USFWS has included additional recommendations (other than recommended distance from the nest) you should follow to help ensure that the activity will not disturb eagles (USFWS 2007d).

Category A:

- Building construction, 1 or 2 story, with project footprint of 0.5 acre or less
- Construction of roads, trails, canals, power lines, and other linear utilities
- Agriculture and aquaculture – new or expanded operations
- Alteration of shorelines or wetlands
- Installation of docks or moorings
- Water impoundment.

Category B:

- Building construction, 3 or more stories
- Building construction, 1 or 2 story, with project footprint of more than 0.5 acre
- Installation or expansion of marinas with a capacity of 6 or more boats

- Mining and associated activities
- Oil and natural gas drilling and refining and associated activities.

Category C. Timber Operations and Forestry Practices:

- Avoid clear cutting or removal of overstory trees within 330 feet of the nest at any time
- Avoid timber harvesting operations, including road construction and chain saw and yarding operations, during the breeding season within 660 feet of the nest. The distance can be decreased to 330 feet around alternate nests within a particular territory, including nests that were attended during the current breeding season but not used to raise young, after eggs laid in another nest within the territory have hatched.
- Selective thinning and other silviculture management practices designed to conserve or enhance habitat, including prescribed burning close to the nest tree, should be undertaken outside the breeding season. Precautions such as raking leaves and woody debris from around the nest tree should be taken to prevent crown fire or fire climbing the nest tree. If it is determined that a burn during the breeding season would be beneficial, then, to ensure that no take or disturbance will occur, these activities should be conducted only when neither adult eagles nor young are present at the nest tree (i.e., at the beginning of, or end of, the breeding season, either before the particular nest is active or after the young have fledged from that nest). Appropriate federal and state biologists should be consulted before any prescribed burning is conducted during the breeding season.
- Avoid construction of log transfer facilities and in-water log storage areas within 330 feet of the nest.

Category D. Off-road vehicle use (including snowmobiles):

- No buffer is necessary around nest sites outside the breeding season. During the breeding season, do not operate off-road vehicles within 330 feet of the nest. In open areas, where there is increased visibility and exposure to noise, this distance should be extended to 660 feet.

Category E. Motorized Watercraft use (including jet skis/personal watercraft):

- No buffer is necessary around nest sites outside the breeding season. During the breeding season, within 330 feet of the nest, (1) do not operate jet skis (personal watercraft); and (2) avoid concentrations of noisy vessels (e.g., commercial fishing boats and tour boats), except where eagles have demonstrated tolerance for such activity. Other motorized boat traffic passing within 330 feet of the nest should attempt to minimize trips and avoid stopping in the area where feasible, particularly where eagles are unaccustomed to boat traffic. Buffers for airboats should be larger than 330 feet due to the increased noise they generate, combined with their speed, maneuverability, and visibility.

Category F. Nonmotorized recreation and human entry (e.g., hiking, camping, fishing, hunting, birdwatching, kayaking, canoeing):

- No buffer is necessary around nest sites outside the breeding season. If the activity will be visible or highly audible from the nest, maintain a 330-foot buffer during the breeding season, particularly where eagles are unaccustomed to such activity.

Category G. Helicopters and fixed-wing aircraft:

- Except for authorized biologists trained in survey techniques, avoid operating aircraft within 1,000 feet of the nest during the breeding season, except where eagles have demonstrated tolerance for such activity.

Category H. Blasting and other loud, intermittent noises:

- Avoid blasting and other activities that produce extremely loud noises within 0.5 mile of active nests, unless greater tolerance to the activity (or similar activity) has been demonstrated by the eagles in the nesting area. This recommendation applies to the use of fireworks classified by the Federal Department of Transportation as Class B explosives, which includes the larger fireworks that are intended for licensed public display.

Alternate nests

For activities that entail permanent landscape alterations that might result in bald eagle disturbance, these recommendations apply to both active and alternate bald eagle nests. Disturbance becomes an issue with respect to alternate nests if eagles return for breeding purposes and react to land use changes that occurred while the nest was inactive. The likelihood that an alternate nest will again become active decreases the longer it goes unused. If activities are planned in the vicinity of an alternate bald eagle nest and there is information to show that the nest has not been active during the preceding five breeding seasons, the recommendations provided in these guidelines for avoiding disturbance around the nest site could no longer be warranted. The nest itself remains protected by other provisions of the Eagle Act, however, and may not be destroyed (USFWS 2007d).

If special circumstances exist that make it unlikely an inactive nest will be reused before 5 years of disuse have passed, and the probability of reuse is low enough to warrant disregarding the recommendations for avoiding disturbance, documentation for this conclusion, including information regarding past use of the nest site, will be required by the USFWS. Without sufficient documentation, the guidelines must continue to be followed when conducting activities around the nest site. Contact the Lacy Field Office for consultation (USFWS 2007d).

This guidance is intended to minimize disturbance, as defined by Federal regulation. In addition to Federal laws, most states and some tribes and smaller jurisdictions have additional laws and regulations protecting bald eagles. In some cases those laws and regulations might be more protective (restrictive) than these Federal guidelines (USFWS 2007d).

Temporary Impacts

For activities that have temporary impacts, such as the use of loud machinery, fireworks displays, or summer boating activities, seasonal restrictions are recommended. These types of activities can generally be carried out outside of the breeding season without causing disturbance. The recommended restrictions for these types of activities can be lifted for alternate nests within a particular territory, including nests that were attended during the current breeding season but not used to raise young, after eggs laid in another nest within the territory have hatched (depending on the distance between the alternate nest and the active nest) (USFWS 2007d).

In general, activities should be kept as far away from nest trees as possible; loud and disruptive activities should be conducted when eagles are not nesting; and activity between the nest and the nearest foraging area should be minimized. If the activity is not specifically addressed in the guidelines, follow the

recommendations for the most similar activity addressed, or contact the Lacy Field Office for more information (USFWS 2007d).

If special circumstances apply to the situation that increase or diminish the likelihood of bald eagle disturbance, or if it is not possible to adhere to the guidelines, contact the Lacy Field Office for further guidance (USFWS 2007d).

5.1.4 Proposed Bald Eagle Permit Information

The permit process is currently being developed and specific timelines for permitting are not available. Projects with current Section 7 take permits will receive expedited processing of Eagle Act permits once they are in place and will not be charged a permit fee. Until the permit process is in place, the USFWS will honor existing ESA incidental take authorizations as long as any take is in full compliance with the terms and conditions of the incidental take statement (ITS).

Proposed Eagle Permit (section 22.26 take permit) authorizes (1) incidental take of bald and golden eagle, and (2) incidental take of bald eagles that complies with the terms and conditions of a previously granted section 7 ITS and section 10 incidental take permit where the bald eagle was the only listed species covered. Any permit under the Eagle Act will not need a permit under the MBTA.

A new term is being placed in the permit regulations (section 22.26) "important eagle-use area" has been defined as "an eagle nest, foraging area, or communal roost site that eagles rely on for sheltering and feeding, and the landscape features surrounding such nest, foraging area, or roost site that are essential for the continued viability of the site for breeding, feeding, or sheltering eagles."

Completed permit applications must contain the following:

1. A detailed activity description
2. Species and number of individuals
3. Maps and digital photos that show the project location and eagle nests, foraging areas, and concentration sites where eagles are likely to be affected including GPS coordinates of the activity area and eagle-use area(s) and the distance(s) between those areas
4. Line of sight information
5. Nature and extent of existing activities in the vicinity similar to that being proposed and the distance of those activities
6. Begin and end dates
7. Explanation of why the permit is needed
8. Explanation of why avoiding nonlethal take is not practicable and why it is unavoidable for lethal take
9. Minimization and mitigation measures for impacts
10. Other information requested by USFWS
11. For applications with current section 7 ITS, a copy of ITS and a certification that you are fully complying with the terms and conditions of ITS.

Required permit conditions:

- Comply with any minimization, mitigation, or conservation measures, monitor for up to 3 years, and submit an annual report every year that permit is valid or after termination of the permit. Report includes information of eagle use of important eagle-use area and description of activities conducted.
- Nest removal permits (section 22.27) have other items and conditions. Similar to our current MBTA requirements, harassment might be necessary and any take of nestlings or eggs must be conducted by a qualified permitted, designated person and nestlings and eggs must be taken to a rehab facility permitted for eagles and then placed in foster/recipient nests.
- Proposed user fees for the permits - Eagle take (Section 22.26) - $500 permit application fee and a $150 permit amendment fee. Nest take (Section 22.27) - $300 permit application fee and $150 permit amendment fee.
- Applications should be sent to the Migratory Bird Permit Office. The USFWS will provide guidance in the future on submitting a complete application package. Check with the Lacy Field Office for updated information.

5.2 Washington Department of Fish and Wildlife Guidelines

In December 2001, WDFW determined that timing restrictions are no longer required for building activities in the vicinity of bald eagle nests. Bald eagles have been listed as "threatened" in Washington State since 1978. Following the Federal delisting, WDFW is expected to recommend to the Washington Fish and Wildlife Commission that the bald eagle be downlisted to "sensitive" status. The WDFW bald eagle management plans discussed below will still be required after the state downlisting (Tirhi 2007).

5.2.1 WDFW Bald Eagle Management Plans

WDFW EMPs ensure that development will have the least impact possible on eagles and their habitat. There are no specific requirements established by the enabling language of the rule, but to ensure consistency across landowners, WDFW has established basic guidelines. Management guidelines are used by WDFW biologists in developing EMPs and ensure that fair and even treatment is extended to all landowners. The EMP guidelines have changed significantly since the bald eagle management planning process was begun in 1986. These changes reflect the increasing population of eagles, the apparent increasing tolerance of at least some eagle pairs, and WDFW's interest in accommodating landowner goals and reducing landowner burdens while minimizing impacts on critical eagle habitat (WDFW 2007a).

An EMP constitutes an agreement by the landowner to protect the eagle habitat on their property. The plan remains in effect indefinitely. However, a change of ownership or a request for a new activity might lead to a new EMP. If a landowner believes that the site is no longer capable of supporting bald eagles, the landowner can also request a review by WDFW to determine if the EMP is no longer needed. This is determined by reviewing the history of the site, as well as the physical state of the habitat. In general, WDFW uses a guideline of 5 consecutive years of absence throughout the whole territory (not just at a single nest site) to determine whether a site is truly "not active." Documenting absence for a period of 5 years is the responsibility of the landowner (WDFW 2007a).

EMP zones (see **Figure 3-4** in **Section 3** for the management zones for Camp Murray) are defined by distance from a bald eagle active nest tree:

- Within 400 feet (requires a site-specific EMP from WDFW)
- From 400 to 800 feet (eligible for a Standard 1-Page WDFW EMP)
- Shoreline Zone: within 250 feet of shoreline if also within a 0.5 mile of a nest (eligible for a Standard 1-Page WDFW EMP).

The standard bald eagle plan is also known as the county short plan. The following basic conditions are applied:

1. Retain all known perch trees and all conifers greater than or equal to 24 inches diameter at breast height (dbh), measured at 4.5 feet above the ground.
2. Retain all cottonwoods greater than or equal to 20 inches dbh, in counties where cottonwood nests occur.
3. Retain at least 50% of pre-clearing or pre-construction conifer stand with diameter distributions representative of the original stand (> 6 feet tall).
4. Windowing and low limbing of trees is acceptable provided no more than 30% of the live crown is removed. Topping of trees is not allowed.

The conditions listed above are pre-approved by WDFW for activities that do not require a Department of Natural Resources (DNR) permit. The standard plan is available from many county and city permit desks for parcels and activities that meet the distance definitions. No site visit by WDFW is necessary in these cases.

If the standard conditions cannot be met for any reason, then a site-specific or custom plan can be used.

A site-specific plan is required for activities that remove trees within 400 feet of an eagle nest. A site-specific plan can also be requested by any landowner who feels that the conditions of the standard short plan cannot be met. A site-specific plan is also required for any forest practice application that is within 0.5 mile of an eagle nest (but see no conditions plan). A site-specific plan is also required for any activity within 0.25 mile of a bald eagle communal roost.

There is no cost to the site-specific plan, but it is more time consuming to obtain. Typically, a site-specific plan can be obtained in 2 to 6 weeks, depending on the complexity. To request a site-specific bald eagle management plan, provide the following information to the WDFW bald eagle biologist for Pierce County (Michelle Tirhi at 253-813-8906 or at tirhimjt@dfw.wa.gov).

1. Landowner name, mailing address, telephone number, and email address
2. Requestor's name, mailing address, telephone number, and email address (if different from above)
3. County in which the activity will occur
4. Parcel number
5. Site address of parcel (if available)
6. Parcel map (available from county) or Forest Practice Base Map (available from DNR) showing the parcel/activity area and the Township, Range, Section, and Quarter Section

7. A site map showing the activity:
    a. Forest Practice Activities: the timber harvest boundary and buffer boundaries must be marked, with the location of the eagle nest shown.
    b. Subdivisions and short plats: include the plat map and show the location of the eagle nest, and the location of currently forested areas.
    c. Building Permits (and related permits, like clearing and grading and septic). Show the
        i. Location of the eagle nest, and the locations of conifer trees greater than or equal to 24 inches dbh that will be affected by the activity.
        ii. Also show the locations of conifer trees greater than or equal to 24" dbh that will be protected and retained.
        iii. Show the proposed locations of house, driveway, garage, septic, and any other clearing activity.

A site visit from a WDFW biologist could be required for activities within 400 feet of a nest site. A site visit might not be required for site-specific plans that amend the standard plan for sites more than 400 feet from a nest site (WDFW 2007a).

5.2.2 A Forest Practices Application

A Forest Practices Application (FPA) is the name of the permit that the Washington DNR issues for activities that involve cutting trees or other activities that could involve impacts on the resources of the state, such as road-building. Forest Practice Rules (WAC 222-16-080 6e) require an EMP for activities within 0.5 mile of an eagle nest or 0.25 mile of an eagle roost. Contact the DNR at 360-902-1400 or see *http://www.dnr.wa.gov/forestpractices* to find out if an FPA is required for the activity (WDFW 2007a).

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6. Bald Eagle Management Guideline Summary for Camp Murray

This section provides a summary of the bald eagle management guidelines and recommendations for Camp Murray. It also provides a summary of the USFWS guidelines if an active bald eagle nest should occur on the camp in the future.

6.1 Maintain Landscape Buffers and Protect Perch Trees and Wintering Habitat

There are currently no active nests on the camp, but the perch trees are considered protected habitat by the WDFW. As long as a tree is capable of supporting a new nest (e.g., contains canopy or supporting limbs that can hold a nest), the tree is protected as a nest site. Individual nest sites within a territory are removed from the list of protected sites only if the tree falls naturally or limbs break in such a way as to prevent new nest construction (WDFW 2007a).

A landscape buffer provides a visual buffer between eagles and surrounding activity. If an active nest is not visible, the recommended USFWS guidelines are not as stringent. The WAANG should avoid removing the trees surrounding both perch trees.

6.2 Minimize Disturbances During the Nesting Season and Wintering Season

Minimize activities discussed in Section 4 around the perch trees in January at the beginning of the nesting season. If a nest is built, avoid the activities during the critical nesting time (March to May) and minimize them after May until the end of the season (July).

6.3 Educate Camp Personnel

Educate WAANG personnel about proper recreational use of American Lake. Provide personnel with educational materials regarding eagles, their breeding season, and the location of the perch trees on Camp Murray with the times to avoid the area surrounding the trees. Personnel should also be made aware of the location of nest trees on Fort Lewis, so they can use the recreational facilities without disturbing the eagles.

Personnel should also be made aware of the dangers of the improper disposal of trash. Eagles have been known to take dead fish with attached fishing line to feed young. A hatchling wrapped in fishing line was found dead near a nest on Fort Lewis in 2005. Eagles might also inadvertently take fishing line and lures or plastic bags when constructing a nest.

All hazardous materials should be properly used and disposed of per Air National Guard (ANG) regulations to avoid contamination to eagles and their eggs.

6.4 Monitoring

Monitor the perch trees twice annually (at the start and in the middle of the breeding season) for new nest activity. Coordinate with Fort Lewis for results of the annual new bald eagle nest survey. Fort Lewis also conducts a helicopter survey once a year.

Coordinate annual surveys of nest activity and wintering bald eagle surveys with Fort Lewis and the Army Guard on Camp Murray. Fort Lewis conducts these surveys annually and biweekly between 15 December and 31 March.

6.5 Maintenance of Food Sources

Coordinate with Fort Lewis, the Army Guard on Camp Murray, and the WDFW about maintaining and possibly increasing the fish population in American Lake. Projects that enhance the waterfowl habitat on American Lake will also be beneficial. Monitor the shoreline for invasive species that can create habitat loss and erosion such as reed canary grass (*Phalaris arundinacea*) and English ivy (*Hedera helix*).

6.6 Recommendations for Avoiding Disturbance at Foraging Areas and Communal Roost Sites from the USFWS

1. Minimize potentially disruptive activities and development in the eagles' direct flight path between their nest and roost sites and important foraging areas.
2. Locate long-term and permanent new water-dependent facilities, such as boat ramps and marinas, away from important eagle foraging areas.
3. Avoid recreational and commercial boating and fishing near critical eagle foraging areas during peak feeding times (usually early to mid-morning and late afternoon), except where eagles have demonstrated tolerance to such activity.
4. Do not use explosives within 0.5 mile (or within 1 mile in open areas) of communal roosts when eagles are congregating, without prior coordination with the USFWS and your state wildlife agency.
5. Locate aircraft corridors no closer than 1,000 feet vertical or horizontal distance from communal roost sites.

Table 6-1 provides a summary of the USFWS management guidelines for active eagle nests.

6.7 Additional Management Practices from the USFWS

1. Protect and preserve potential roost and nest sites by retaining mature trees and old growth stands, particularly within a 0.5 mile from water.
2. Where nests are blown from trees during storms or are otherwise destroyed by the elements, continue to protect the site in the absence of the nest for up to three complete breeding seasons. Many eagles will rebuild the nest and reoccupy the site.
3. To avoid collisions, site wind turbines, communication towers, and high voltage transmission power lines away from nests, foraging areas, and communal roost sites.
4. Employ industry-accepted best management practices to prevent birds from colliding with or being electrocuted by utility lines, towers, and poles. If possible, bury utility lines in important eagle areas.
5. Where bald eagles are likely to nest in human-made structures (e.g., cell phone towers) and such use could impede operation or maintenance of the structures or jeopardize the safety of the eagles, equip the structures with either (1) devices engineered to discourage bald eagles from building nests, or (2) nesting platforms that will safely accommodate bald eagle nests without interfering with structure performance.

Table 6-1. Summary of Bald Eagle Management Guidelines for Active Nests

Activities Covered	Category Divisions	Nest Site Visible	Nest Site Not Visible	Timing of Restriction
Construction (e.g., roads, buildings, linear const., utilities)	Similar Activity < 1 mile	660 feet or as close as similar activity	330 feet or as close as similar activity	Nesting
	Similar Activity > 1 mile	660 feet	330 feet	Nesting
Pedestrian-Use Watercraft		---	330 feet	Nesting
Off-road Vehicle Use		660 feet	330 feet	Nesting
Tree Removal or Forest Practices	Clear Cutting	330 feet	330 feet	Anytime
	Selective Removal	660 feet	660 feet	Nesting
Blasting or Other loud Intermittent noise		1.0 mile*	0.5 mile*	Nesting or Wintering
Aircraft		1,000 feet *	1,000 feet *	Nesting or Wintering

Source: USFWS 2007d

Note: * Also includes communal roost sites.

6. Do not intentionally feed bald eagles. Artificially feeding bald eagles can disrupt their essential behavioral patterns and put them at increased risk from power lines, collision with windows and cars, and other mortality factors.

7. Use pesticides, herbicides, fertilizers, and other chemicals only in accordance with Federal and state laws.

8. Monitor and minimize dispersal of contaminants associated with hazardous waste sites (legal or illegal), permitted releases, and runoff from agricultural areas, especially within watersheds where eagles have shown poor reproduction or where bioaccumulating contaminants have been documented. These factors present a risk of contamination to eagles and their food sources.

Figures 6-1 and **6-2** provide the USFWS management buffers that would be required depending on the proposed activity if either of the perch trees became active nesting trees.

Figure 6-1. Bald Eagle 330-Foot Buffer Zone

Figure 6-2. Bald Eagle 660-Foot Buffer Zone

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APPENDIX A

FEDERAL REGISTER FOR FINAL RULE ON BALD EAGLE DELISTING

APPENDIX B

NATIONAL BALD EAGLE MANAGEMENT GUIDELINES

APPENDIX C

USFWS DRAFT POST DELISTING MONITORING PLAN

APPENDIX D

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