

Carbon River Road: Emergency (2022) and Proposed Final Reconstruction

Biological Assessment

National Park Service, Mount Rainier National Park

55210 238th Ave E
Ashford, WA 98304

Western Federal Lands Highway Division

610 E. Fifth Street
Vancouver, WA 98661

Biological Assessment

Project Name: Carbon River Road Emergency (2022) and Proposed Final Reconstruction (2025)

Executive Summary

The National Park Service (NPS), in cooperation with the Federal Highway Administration / Western Federal Lands Highway Division (FHWA), has performed emergency interim road stabilization and is proposing to perform final reconstruction on the Carbon River Road on the northwest side of Mount Rainier National Park (MRNP), located in Lewis and Pierce Counties in Washington. This BA is prepared in accordance with the legal requirements set forth under Section 7 of the Endangered Species Act of 1973, as amended (16 USC 1536, et seq.), and follows the standards established in National Park Service Director’s Order 12 (DO- 12). The species considered in this document are listed in **Table 1**, along with an effect summary. The Partner Agencies consist of FHWA and the National Park Service (NPS).

TABLE 1. FEDERALLY LISTED, PROPOSED, AND CANDIDATE SPECIES WITH THE POTENTIAL TO OCCUR IN PROJECT AREA

Common Name (Scientific Name)	Federal Status	Emergency Reconstruction Effect	Final Reconstruction Effect
Marbled Murrelet (<i>Brachyramphus marmoratus marmoratus</i>)	FT	NLAA	NLAA
Northern Spotted Owl (<i>Strix occidentalis caurina</i>)	FT	NLAA	NLAA
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)	FT	No Effect	No Effect
Gray wolf (<i>Canis lupus</i>)	FE	NLAA	NLAA
North American Wolverine (<i>Gulo gulo luscus</i>)	PT	NJ, NLAA	NJ, NLAA
Monarch butterfly (<i>Danaus plexippus</i>)	FC	No effect	No effect
Whitebark pine (<i>Pinus albicaulis</i>)	FT	No effect	No effect
Mt. Rainier Ptarmigan (<i>Lagopus leucura rainierensis</i>)	FT	No effect	No effect
Bull trout (<i>Salvelinus confluentus</i>)	FT	LAA	LAA
Puget Sound Chinook Salmon (<i>Oncorhynchus tshawytcha</i>)	FT	LAA	LAA
Puget Sound Steelhead Trout (<i>Oncorhynchus mykiss</i>)	FT	LAA	LAA

FT= Federally Threatened; FE= Federally Endangered; PT= Federally Proposed Threatened; FC= Federal Candidate; LAA= likely to adversely affect; NLAA=May affect, not likely to adversely affect, No Jeopardy

In February 2020 and November 2021, heavy rains caused the Carbon River to wash away portions of the Carbon River Road immediately upstream of its confluence with June Creek, near the park boundary. An interim stabilization project was completed by NPS staff from August 22 through October 5, 2022. These emergency repairs included placement and installation of downed trees and riprap to help prevent further damage to

infrastructure and natural resources on south side of the road, which were in jeopardy from river erosion. Gravel was placed on top of the riprap to allow vehicular access across the repair area in advance of permanent repairs. The proposed final reconstruction to repair the site is anticipated to be completed in the summer of 2025 delivered by FHWA and is the subject of this BA. Proposed construction schedule and sequencing is provided in Chapter 4.

During the writing of this BA, it became clear that the impacts and effects of the emergency (2022) project and the proposed final project were nearly identical, with only minor differences in equipment used and amount of impervious surface generated by the action. As shown in Table 1, the effects determinations are the same for both actions, but for clarity they are described separately in Sections 6 and 7.

Contents

Chapter 1 - Project Overview	1
1.1 Federal Nexus.....	1
1.2 Project Description.....	1
1.2.1 Emergency (2022) Reconstruction	1
1.2.2 Proposed Final Reconstruction.....	2
1.3 Project Area and Setting.....	2
1.4 Consultation History	2
1.4.1 Emergency (2022) Reconstruction	2
1.4.2 Proposed Final Reconstruction.....	2
Chapter 2 - Federally Proposed and Listed Species and Designated Critical Habitat	4
2.1 USFWS Species	4
2.1.1 Marbled Murrelet	4
2.1.2 Northern Spotted Owl	4
2.1.3 Yellow-billed Cuckoo	6
2.1.4 Gray Wolf.....	6
2.1.5 North American Wolverine	6
2.1.6 Monarch Butterfly.....	7
2.1.7 Whitebark Pine.....	7
2.1.8 Mt. Rainier Ptarmigan +some other species (NPS placeholder)	Error! Bookmark not defined.
2.1.9 Bull Trout.....	8
2.2 NMFS Species.....	8
2.2.1 Puget Sound Chinook Salmon.....	8
2.2.2 Puget Sound Steelhead Trout	9
Chapter 3 - Environmental Baseline	10
3.1 Location and Setting	10
3.2 Existing Conditions	10
3.2.1 Terrestrial	10
3.2.2 Aquatic	10
Chapter 4 - Project Details	13
4.1 Emergency (2022) Reconstruction.....	13
4.1.1 Project Timeline and Sequencing.....	13
4.1.2 Construction Access and Staging	13
4.1.3 In-Water Work	13
4.1.4 Post-Project Site Restoration.....	13
4.2 Proposed Final Reconstruction.....	13
4.2.1 Project Timeline and Sequencing.....	14

4.2.2	Site Preparation	14
4.2.3	Construction Access and Staging	14
4.2.4	In-Water Work	14
4.2.5	Stormwater Management	14
4.2.6	Post-Project Site Restoration.....	14
4.2.7	Operations	14
4.2.8	Maintenance	14
Chapter 5 - Action Area		15
5.1	Action Area Determination- Terrestrial	15
5.1.1	Emergency (2022) Reconstruction	15
5.1.2	Application of Harassment Distances to Project Conditions.....	15
5.1.3	Analysis.....	17
5.1.4	Proposed Final Reconstruction.....	18
5.2	Action Area Determination - Aquatic	18
5.2.1	Emergency (2022) Reconstruction	18
5.2.2	Proposed Final Reconstruction.....	18
Chapter 6 - Effects Analysis		19
6.1	Terrestrial Effects Analysis for the Emergency (2022) Reconstruction.....	19
6.1.1	Marbled Murrelet	19
6.1.2	Designated Marbled Murrelet Critical Habitat	21
6.1.3	Northern Spotted Owl	21
6.1.4	Designated Northern Spotted Owl Critical Habitat	22
6.1.5	Gray Wolf.....	22
6.1.6	North American Wolverine	22
6.1.7	Yellow-billed Cuckoo	23
6.1.8	Monarch Butterfly	23
6.1.9	Whitebark Pine	23
6.1.10	Mt. Rainier Ptarmigan +some other species (NPS placeholder)	23
6.1.11	Conservation Measures that Occurred	23
6.1.12	Interrelated and Interdependent Actions and Activities that Occurred	23
6.1.13	Cumulative Effects that Occurred.....	27
6.2	Terrestrial Effects Analysis for the Proposed Final Reconstruction	27
6.2.1	Marbled Murrelet	28
6.2.2	Designated Marbled Murrelet Critical Habitat	28
6.2.3	Northern Spotted Owl	28
6.2.4	Designated Northern Spotted Owl Critical Habitat	29
6.2.5	Yellow-billed Cuckoo	29
6.2.6	Gray Wolf.....	29
6.2.7	North American Wolverine	30
6.2.8	Monarch Butterfly	30
6.2.9	Whitebark Pine	30
6.2.10	Mt. Rainier Ptarmigan +some other species (NPS placeholder)	30
6.2.11	Conservation Measures	30

6.2.12	Interrelated and Interdependent Actions and Activities	31
6.2.13	Cumulative Effects.....	32
6.3	Aquatic Effects Analysis for the Carbon River Road Emergency (2022) Reconstruction.....	32
6.3.1	Effect to Designated Critical Habitat	33
6.4	Aquatic Effects Analysis for the Proposed Final Reconstruction	34
6.4.1	Effect to Designated Critical Habitat	34
Chapter 7 - Effect Determinations		36
7.1	Effect Determination for the Emergency (2022) Reconstruction.....	36
7.1.1	Effect Determination for Marbled Murrelet	36
7.1.2	Effect Determination for Northern Spotted Owl	36
7.1.3	Effect Determination for MAMU and NSO Critical Habitat	36
7.1.4	Effect Determination for Yellow-billed Cuckoo	36
7.1.5	Effect Determination for Gray Wolf	37
7.1.6	Effect Determination for North American Wolverine.....	37
7.1.7	Effect Determination for Monarch Butterfly.....	37
7.1.8	Effect Determination for Whitebark Pine.....	37
7.1.9	Effect Determination for NPS Species	37
7.1.10	Effect Determination for Bull Trout.....	37
7.1.11	Effect Determination for Bull Trout Critical Habitat	38
7.1.12	Effect Determination for Puget Sound Chinook Salmon	38
7.1.13	Effect Determination for Puget Sound Chinook Salmon Critical Habitat.....	38
7.1.14	Effect Determination for Puget Sound Steelhead Trout.....	38
7.1.15	Effect Determination for Puget Sound Steelhead Trout Critical Habitat	38
7.2	Effect Determination for the Proposed Final Reconstruction	39
7.2.1	Effect Determination for Marbled Murrelet	39
7.2.2	Effect Determination for Northern Spotted Owl	39
7.2.3	Effect Determination for Marbled Murrelet and Northern Spotted Owl Critical Habitat....	39
7.2.4	Effect Determination for Yellow-billed Cuckoo	39
7.2.5	Effect Determination for Gray Wolf	40
7.2.6	Effect Determination for North American Wolverine.....	40
7.2.7	Effect Determination for Monarch Butterfly.....	40
7.2.8	Effect Determination for Whitebark Pine.....	40
7.2.9	Effect Determination for NPS Species	40
7.2.10	Effect Determination for Bull Trout.....	41
7.2.11	Effect Determination for Bull Trout Critical Habitat	41
7.2.12	Effect Determination for Puget Sound Chinook Salmon	41
7.2.13	Effect Determination for Puget Sound Chinook Salmon Critical Habitat.....	41
7.2.14	Effect Determination for Puget Sound Steelhead Trout.....	41
7.2.15	Effect Determination for Puget Sound Steelhead Trout Critical Habitat	41
7.3	Essential Fish Habitat.....	41
Chapter 8 - Preparers and Contributors.....		44

Chapter 9 - Bibliography45

Tables

Table 1. Federally Listed, Proposed, and Candidate Species With the Potential to Occur in Project Area..... i

Table 2. Summary of the Environmental Baseline in the Upper Carbon River Watershed (“Matrix of Pathways & Indicators”) 12

Table 3. Common Sound Levels for Action-Generated Equipment/Activities 16

Table 4. Ambient and Proposed Noise Levels and Approximate Impact Distances 17

Table 5. Effects of Emergency Interim Road Reconstruction on Habitat Pathways and Indicators 33

Table 6. Effects of Final Road Reconstruction on Habitat Pathways and Indicators 35

Appendices

- Appendix A – Project Figures
- Appendix B – Consultation History
- Appendix C – Emergency Interim (2022) and Final Reconstruction Project Plans
- Appendix D – Emergency Interim Repair Fish Mitigation Measures Report

Chapter 1 - Project Overview

1.1 Federal Nexus

This Biological Assessment (BA) addresses the proposed action in compliance with Section 7(c) of the Endangered Species Act (ESA) of 1973, as amended. Section 7 of the ESA requires that, through consultation with the U.S. Fish and Wildlife Service (USFWS) federal actions do not jeopardize the continued existence of any threatened, endangered, or proposed species or result in the destruction or adverse modification of critical habitat.

This BA evaluates the potential effects of the proposed transportation project on species that are federally listed under the ESA. This BA covers both USFWS and National Marine Fisheries Service (NMFS) jurisdictional species. Specific project design elements are identified that avoid or minimize adverse effects of the proposed project on listed species and/or critical habitat.

1.2 Project Description

The project is located in Pierce County, Washington (Figure 1 through 3, **Appendix A**) on the northwest side of MRNP, at the western edge of the park boundary. Between January 2020 and November 2021, heavy rains caused flooding in the Carbon River area that eroded an approximately 160-foot section of the Carbon River Road at the Mount Rainier National Park (MRNP) boundary. The damage left the road impassable and vulnerable to further damage during future flood events. The road and roadbed had been eroded away and only a narrow swath of land remained between the Carbon River and June Creek, which flows on the south side of the road and empties to Carbon River on the west side of the project.

Interim stabilization and preliminary road reconstruction was performed on an emergency basis in fall of 2022. The National Park Service requested emergency consultation and project communications are summarized in **Appendix B**. The final project to repair the site is proposed to be constructed in the summer of 2025. This BA is intended to support consultation on two separate actions:

1. After-the-fact consultation on the emergency (2022) stabilization and emergency repairs of Carbon River Road.
2. Consultation on the proposed completion of Carbon River Road reconstruction.

1.2.1 Emergency (2022) Stabilization and Emergency Repairs

An interim, emergency stabilization project was completed by NPS staff and JJH Earthworks, with work occurring between August 22 and October 5, 2022 (NPS 2022 and 2022b). In-water work was conducted during an extension through September 30 of the designated July 16 to August 15 window. These emergency repairs included placement of approximately 1,400 cubic yards of riprap and 50 pieces of large wood material (LWM) to fill the eroded area, stabilize the streambank, and re-establish the road prism (**Appendix C** and NPS 2022a). Willow live stakes (360 stakes) were planted to further stabilize the reconstructed streambank. Fill material and gravel was placed behind the riprap to allow interim vehicular access across the repaired area.

1.2.2 Proposed Final Reconstruction

Proposed final road reconstruction will consist of extending the rock and log structures that were installed in 2022 about 100 feet further downstream, to the June Creek culvert (**Appendix C**). The road subgrade and paved surface will be rebuilt, and signage and striping will be installed to complete the roadway. Additional plantings and placement of coarse woody debris will be implemented in the area of the emergency stabilization to help facilitate the establishment of native vegetation. The wingwall at the existing June Creek culvert outlet which had been damaged during the flood event will be repaired as well.

1.3 Project Area and Setting

The project is located on the northwest side of MRNP, at the western edge of the park boundary. It lies at approximately 1,780 feet in elevation, on a terrace at the base of north-facing slopes along the south bank of the Carbon River. South of this terrace, conifer forest slopes up steeply to the south. The wide, braided channel of the river occupies the north side of the project. Within the project area, Carbon River Road is a narrow one-lane gravel road, which shrinks from a two-lane paved road at the park boundary. The park vicinity is managed by the National Park Service (NPS) and consists of mid-successional West Cascades conifer forest habitat forest south of Carbon River Road. A narrow strip of forest north of the road, which is visible on previous air photos, was stripped away during floods prior to the emergency repair. There are large trees immediately adjacent to the road corridor on the south side of the road at the park boundary.

The project work area is located on the south bank of the Carbon River immediately upstream of the outfall of a box culvert carrying a small creek (June Creek), which flows from the southeast along the roadway in places. The Carbon River is a tributary of the Puyallup River in the Puget Sound watershed. It flows about 30 miles from its source on Mount Rainier's Carbon Glacier to its mouth at the Puyallup River at Orting, Washington (Figure 1). The project location is near river mile (RM) 24. The Carbon River is a glacial river with naturally high turbidity and a dynamic braided channel that aggrades in response to glacial inputs. It supports native fish species including Chinook and coho salmon, as well as steelhead trout and coastal cutthroat trout, and bull trout (USFS 1998).

1.4 Consultation History

1.4.1 Emergency (2022) Reconstruction

The National Park Service requested emergency consultation in early 2022. The primary USFWS point of contact was Thomas Faughnan. NPS also received input from Vince Harke at USFWS and received additional conservation measures from USFWS, which were incorporated into the emergency project. NMFS did not have staff or resources to coordinate at the time of the emergency reconstruction but did provide additional conservation recommendations which were incorporated into the project design. NPS coordinated all interim repair work through Thomas Faughnan, including the in-water work window extension, and a brief summary of these communications is included in **Appendix B**.

1.4.2 Proposed Final Reconstruction

Consultation for the proposed final Project included discussions with NPS, FHWA, NMFS, and USFWS to determine the structure and content of this BA. A summary of these communications is included in **Appendix B**, and the results of this early consultation are

summarized in **Table 1** in the Executive Summary. The USFWS point of contact was Thomas Faughnan, who attended the Carbon River BA kick-off meeting on January 20, 2023 with FHWA, NPS, USFS, and DEA. NMFS stated they do not have staff or resources to coordinate prior to submittal of the BA, but will be available once a BA is submitted and a staff member is assigned. Thomas Faughnan attended the NPS quarterly all-park projects meeting on March 14, 2023, which included discussion of this project. A summary of these communications is included in **Appendix B**, including conservation recommendations provided by USFWS and NOAA fisheries.

Chapter 2 - Federally Proposed and Listed Species and Designated Critical Habitat

This BA covers both USFWS and NMFS-jurisdictional species.

2.1 USFWS Species

The USFWS federally listed or proposed species with the potential to be affected by the project are shown in **Table 1** of the Executive Summary and are described below.

2.1.1 Marbled Murrelet

Within the park, approximately 26,500 acres of forested area is defined as suitable marbled murrelet (MAMU) nesting habitat (Raphael et al. 2006). MAMUs have been documented within four watersheds: the Carbon, Mowich, Puyallup, and Nisqually River basins (NPS 2009). Surveys conducted between 1991 and 2012 resulted in numerous detections within the Carbon River valley (NPS 2012). For example, in 2009 radar surveys were conducted in Mount Rainier National Park (MRNP) by ABR, Inc. between 6 and 11 July 2009, and the Carbon River site yielded 34 possible murrelet targets (19 landward).

There are large trees immediately adjacent to the road corridor on the south side of the road at the park boundary. MAMU (and Northern spotted owl) passive acoustic detections within MRNP in 2022 are shown in Figure 4 in **Appendix A**. Three MAMU were detected, all on the northwest corner of the park, and two detections occurred along Carbon River upstream of the project site, roughly 2 miles from the project. Although no active nests have been located within the park, based on the presence of suitable murrelet nesting habitat and multiple detections indicating presence or occupancy behaviors, it is assumed that murrelets are nesting in the Carbon watershed and it is possible that murrelets are nesting in or near the proposed project, though somewhat unlikely given the historic human disturbance along Carbon River Road. Critical habitat for MAMU is mapped along the north side of Carbon River but not within or near the project area.

2.1.2 Northern Spotted Owl

Based on known habitat preferences (Bart and Earnst 1992), there are approximately 80,000 acres of Northern spotted owl (NSO) habitat in the park. Excluding glacier ice, large areas of exposed rock, and stunted subalpine forest, suitable nesting habitat in the park can be found below 4800 feet and is dominated by Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), western red-cedar (*Thuja plicata*), and three species of true fir (*Abies* sp.) (Moir et al. 1977).

The majority of the park has been surveyed for NSO as part of a long-term demographic study. Surveys for NSOs have been conducted with varying degrees of effort since 1983. Data from eleven NSO Demographic Study Areas (DSAs) are used to monitor vital rates and inform management decisions throughout the range of the species in Washington, Oregon, and northern California. Eight of these study areas are also used for effectiveness monitoring of the Northwest Forest Plan (NWFP) as it relates to conservation and recovery of old-growth habitat (Davis et al. 2016). The Rainier DSA is the only long-term representative of NSO demography in the Western Washington Cascades. MRNP comprises 44 percent of the Rainier DSA and 50 percent of its monitored owl territories. Data from the Rainier DSA

contributes to range-wide population analyses every five years and is used to inform construction and maintenance projects for Endangered Species Act compliance.

Northern spotted owls were not detected in the Carbon River project area in park surveys conducted in 2020, 2021 and 2022. One NSO was detected in the southwest quadrant of the park in 2021, and one NSO was detected in the southeast quadrant in 2022. The nearest historical northern spotted owl territory on NPS lands is the June Creek territory, located about one mile away from the project area. The June Creek territory was last active in 2010 and has been surveyed and found unoccupied from 2011-2022. The Green Lake historical owl territory is located more than 2 miles away from the project area and has been surveyed and found unoccupied from 2017-2022. Prior to that, although individual owls have been detected, the last documented breeding attempts were in 2004 and 2005.

The 2021 NSO Annual Report and the 2022 Draft NSO Annual Report (Mitchell, et al. 2021, 2022) are summarized in the following paragraphs.

Banding and demographic monitoring of NSO based on current protocol began in 1997 and continued annually through 2022. In 2021, 35 Rainier DSA historical owl territories and 3 non-historical sites were surveyed within park boundaries to determine NSO occupancy and vital rates during the 2021 breeding season. In 2021, a single male NSO was detected at one site in the southwest quadrant of the park, and no pairs or juveniles were detected. NSOs typically nest every other year in the Pacific Northwest, so it was expected that the MRNP population might rebound to some degree in 2021 from previously low numbers. However, no evidence of a rebound was found, and the 2021 survey results represented the lowest level of site occupancy, pairing, reproduction, and number of individual NSOs in a single season since NPS began standard protocol monitoring in 1997. Surveyors neither captured nor banded any NSOs in 2021, and the lone male NSO located was a known previously banded individual.

Barred owls (*Strix varia*) were first discovered at MRNP in 1986 and their distribution has increased over time. For the thirteenth consecutive year, in 2021 barred owls were detected at a greater proportion of monitored territories than NSOs. Since barred owls compete with NSO and prey on them, they are likely affecting NSO populations in the park.

The 2022 draft report indicated little change in documented spotted owl occupancy from 2021, other than a further increase in barred owl detections. In 2022, 35 Rainier DSA historical owl territories and 1 non-historical site within park boundaries were surveyed to determine spotted owl occupancy and vital rates during the 2022 breeding season. In addition, passive acoustic monitoring was implemented to sample 20 percent of suitable spotted owl habitat via a systematic-random sampling design at 24 sites selected from a hexagonal grid using autonomous recording units (ARUs) at 96 points to obtain soundscape data. A single spotted owl of unknown sex was detected at one (3 percent of historical territories) site in the southeast area of the park. No spotted owl pairs or juveniles were detected. Because spotted owls typically nest every other year in the Pacific Northwest, it is possible that the MRNP population will rebound to some degree in 2023.

In 2022, an estimated 19 adult or subadult barred owls were detected at 12 (34 percent) Rainier DSA territories, and reproduction was confirmed at two (6 percent) sites. For the fourteenth consecutive year, barred owls were detected at a greater proportion of monitored territories than spotted owls. A potential Spotted Owl x Barred Owl hybrid was heard in 2020,

but the putative hybrid was never verified, and this individual was not detected in 2021 or 2022.

2.1.3 Yellow-billed Cuckoo

Just 20 sightings of yellow-billed cuckoos have been documented in Washington since the 1950s, with 19 occurring from 1974 to 2016 at an average rate of one sighting every 2.3 years. Sixteen of the twenty records occurred in eastern Washington. All or nearly all the birds recorded since the 1950s were very likely non-breeding vagrants or migrants, indicating that cuckoos are now functionally extirpated in the state. There has never been a documented sighting of yellow-billed cuckoo inside park boundaries. Cuckoos currently appear to be functionally extinct in Washington, and although there is suitable migratory habitat in the Carbon River Valley, based on lack of evidence of species presence it is highly unlikely that they would be present in the action area.

2.1.4 Gray Wolf

The gray wolf, being a keystone predator, is an integral component of the ecosystems to which it typically belongs. The wide range of habitats in which wolves can thrive reflects their adaptability as a species, and includes temperate forests, mountains, tundra, taiga, and grasslands (USFWS 2023). Following a February 10, 2022, court decision, gray wolves in the contiguous 48 states and Mexico, with the exception of the Northern Rocky Mountain population, are now protected under the Endangered Species Act as threatened in Minnesota and endangered in the remaining states. Critical habitat for gray wolves currently occurs only in Minnesota and Michigan.

Gray wolves are not currently known to occur in the park and were not detected during large mammal camera-trap and scat collection surveys conducted to date (pers. comms., Cascade Carnivore Project 2023). However, because suitable wolf habitat and a suitable prey base occur within the park, including within a mile of the project area, and because existing wolf packs are within dispersal distance of the park, it is possible that by the time the project is implemented, wolves will have recolonized portions of the park.

2.1.5 North American Wolverine

Wolverines are native to Washington's Cascade Range but are believed to have been extirpated from the state by the 1920s due to unregulated trapping, shooting, and poisoning associated with predator control efforts. Individual wolverines have since moved south out of Canada to recolonize the North Cascades. A revised Current Potential Extent of Occurrence map is provided in the wolverine Species Status Assessment (USFWS 2018). It is based on information received from Federal and State agencies and wolverine researchers, and although it is mapped at a very small scale, it shows more than ten sightings in the general vicinity of MRNP between 2014 and 2017. In 2017, a wolverine scat was confirmed by DNA analysis marking the first verifiable observation of the species in the park since the 1920s. The individual was confirmed to be a female documented reproducing outside the park in 2018 (pers. comms., Cascade Carnivore Project 2023).

By 2022, wolverines had been documented reproducing at MRNP for three consecutive years. During 2017 to 2022, eight individuals were confirmed in the park based on DNA analysis or photographs. All individuals with successful DNA analysis had the Wilson's C haplotype, suggesting they are derived from dispersers from B.C. or Alberta. Wolverine have been detected at numerous monitoring stations in the park (n=18), and the closest detection is near

Spray Park, which is approximately ten miles southeast of the project (toward Mt. Rainier), and approximately four thousand feet higher in elevation. This wide-ranging species is present throughout the park and has been documented around the mountain from low (3,800 feet) to high (6,900 feet) elevations. Thus, wolverines may use the project area while travelling around their territories. However, given the low elevation of the project area (approximately 1,780 feet in elevation) and the species' primary use of higher elevation habitats distant from human populations, it is likely that the primary use of the area, if any, would be limited (pers. comms., Cascade Carnivore Project 2023).

2.1.6 Monarch Butterfly

The monarch butterfly is a species of butterfly globally distributed throughout 90 countries, islands, and island groups. These butterflies are well known for their phenomenal long-distance migration in the North American populations. Two North American populations, the migratory populations located east and west of the Rocky Mountains, have been monitored at their respective overwintering sites in Mexico and California since the mid-1990s. While these populations fluctuate year-to-year with environmental conditions, these census data indicate long-term declines in the population abundance at the overwintering sites in both populations (USFWS 2020). These declining trends led to the petition of the U.S. Fish and Wildlife Service to list the monarch butterfly for protection under the Endangered Species Act of 1973, as amended, and their current Candidate status (CFR 87 FR 26152 26178).

Adult monarch butterflies are large and conspicuous, with bright orange wings surrounded by a black border and covered with black veins. The bright coloring of a monarch serves as a warning to predators that eating them can be toxic (USFWS 2022). During the breeding season, monarchs lay their eggs on their obligate milkweed host plant (primarily *Asclepias* spp.), and larvae emerge after two to five days (USFWS 2022). Based on NPS staff expertise and discussions with USFWS, neither the species nor the obligate milkweed host plant have been recorded within MRNP.

2.1.7 Whitebark Pine

Whitebark pine is a slow-growing, long-lived tree, documented at 500 to over 1,000 years old. Whitebark pine can grow to 40–60 feet and, rarely, up to 5 feet in diameter. They are shorter, or even shrub-like, at higher, windier elevations. Preferring full sunlight, whitebark pine commonly grow on ridges and just below tree line between (4,300–12,100 feet), at higher elevations than most other pines. They range from southwest Canada south to the Sierra Nevada in California and east to northern Nevada and Wyoming. Whitebark pine is a hardy conifer that tolerates poorly developed soils, steep slopes, and windy exposures. It is most commonly found at subalpine tree line at high elevations throughout its range, though it may also exist in mixed species stands below treeline. Primary seed dispersal occurs almost exclusively by Clark's nutcrackers (*Nucifraga columbiana*), and Clark's nutcrackers facilitate whitebark pine regeneration and influence its distribution and population structure through their seed caching activities (USFWS 2022).

The four key stressors for the species include the non-native pathogen white pine blister rust, the native mountain pine beetle, severe wildfire, climate change, and the potential influences of conservation efforts. Overall, range-wide data from the U.S. Forest Service (USFS) Forest Inventory and Analysis surveys indicate that 51 percent of all standing whitebark pine trees in the United States are now dead, with over half of the mortality occurring in the last two decades (USFWS 2022). Although efforts are being actively investigated and have the

potential to benefit whitebark pine, there is currently no efficient and effective method to reverse the effects of white pine blister rust on a meaningful scale.

According to USFWS mapping (USFWS 2023), the project lies outside the range of the species, which does not include the lower Carbon River Valley low elevation areas (approximately 1,780 feet in elevation).

2.1.8 Bull Trout

Bull trout were listed as a threatened species in the coterminous United States in 1999 (USFWS 1999). The lower 32.7 miles of the Carbon River, including the project area, has been designated as Critical Habitat for bull trout. The overall abundance of the Carbon River local population is currently unknown but is estimated to be less than 100 spawning adults. Surveys have detected juvenile, subadult, and adult bull trout in the upper Carbon River and in several tributary streams including June Creek in the project area, and park staff have documented bull trout spawning and redds in June Creek (USFWS 2004, Lofgren and DeAngelo 2019).

Spawning activity has generally been documented from late September into October in the Carbon River tributaries, but active spawning may begin as early as mid-September based on bull trout surveys in the upper White River basin (Marks et al. 2009, Lofgren and DeAngelo 2019).

Bull trout exhibit both resident and migratory life-history strategies. Resident bull trout complete their life cycles in the streams in which they spawn and rear. Migratory bull trout spawn in tributary streams where juvenile fish rear one to four years before migrating to either a lake (adfluvial form), river (fluvial form), or saltwater (anadromous form) to rear as subadults and to live as adults. Like steelhead trout, bull trout do not die after spawning, but migrate and spawn more than once in their lifetimes (USFWS 1999).

Bull trout are primarily found in colder streams (below 15 °C or 59 °F), and spawning habitats are generally characterized by temperatures that drop below 9 °C (48 °F) in the fall.

Preferred spawning habitat consists of low-gradient stream reaches with loose, clean gravel. Redds are often constructed in stream reaches fed by springs or near other sources of cold groundwater. Depending on water temperature, incubation is normally 100 to 145 days. After hatching, fry remain in the substrate, and time from egg deposition to emergence may surpass 200 days. Fry normally emerge from early April through May, depending on water temperatures and increasing stream flows (USFWS 1999).

2.2 NMFS Species

The NMFS federally listed or proposed species with the potential to be affected by the project are Puget Sound (PS) Chinook salmon and PS steelhead trout. The following provides a brief summary of these two species' biology and occurrence in or near the project.

2.2.1 Puget Sound Chinook Salmon

The PS Chinook salmon Evolutionarily Significant Unit (ESU) was listed as a threatened species on March 24, 1999, and threatened status was reaffirmed in 2005. The ESU includes all naturally spawned populations of Chinook salmon from rivers and streams flowing into Puget Sound including the Carbon River (NMFS 2005). Critical habitat for PS Chinook

salmon has been designated in the Carbon River up to about RM 22.7, immediately downstream of the project site.

The Puyallup River fall-run includes PS Chinook that spawn and rear in the Carbon River and its tributaries. Most fall-run PS Chinook enter the Puyallup River system in mid- to late July and spawn from mid-September to early November. Incubation occurs from mid-September to late February when the fry emerge from the gravel and begin their downstream migration. Most fall-run PS Chinook express an ocean type life history. After emergence from redds, ocean type Chinook fry migrate downstream to lower river and estuary habitats, where they rear through early August before out-migrating to the ocean as an age 0 smolt (Healy 1991).

The majority of PS Fall Chinook spawning in the Carbon River basin occurs in South Prairie Creek and the lower 11 miles of the River (Marks et al. 2009). The upper limit of potential Chinook salmon distribution within the Carbon River has not been clearly defined. The Carbon River watershed analysis shows potential Chinook distribution to include the project area (USFS 1998). Suitable spawning habitat for Chinook is present in the upper Carbon River along channel margins and pool tailouts. Stream surveys by park fisheries staff have not, however, detected Chinook spawning within the park (Marks et al. 2019).

2.2.2 Puget Sound Steelhead Trout

The PS steelhead Distinct Population Segment (DPS) was listed as a threatened species in 2007. The DPS includes all naturally spawned anadromous winter-run and summer-run steelhead populations, in river basins draining to Puget Sound, including the Carbon River. (NMFS 2007). Critical habitat for PS steelhead has been designated in the Carbon River up to about RM 22.5, about one-half mile downstream of the project site.

The majority of steelhead returning to the Carbon River are winter-run fish that generally enter the Puyallup river from January through June. Peak migration occurs from mid-April through early May. The majority of PS steelhead spawning in the Carbon River basin occurs in South Prairie Creek and in the lower 11 miles of the Carbon River. From the Mount Rainier National Park boundary at RM23 up to approximately RM 26, the gradient remains low enough to potentially provide some spawning opportunities along channel margins, but past surveys within the park boundaries have not documented spawning PS steelhead in this area (Marks et al. 2019).

Depending on spawning timing, steelhead eggs and alevins can be present in stream gravels into early July. Juvenile steelhead will rear in freshwater for one to four years before migrating to marine waters in the spring. After spending between one to four years in saltwater; adult winter steelhead will return to the Puyallup River system at three to seven years of age, with most returning after two to three years in saltwater (Marks et al. 1999).

Chapter 3 - Environmental Baseline

3.1 Location and Setting

The project lies at approximately 1,780 feet in elevation at the base of north-facing slopes along the bank of the Carbon River. The land is managed by the NPS, and it consists of early to mid-successional West Cascades conifer forest habitat south of Carbon River Road.

3.2 Existing Conditions

3.2.1 Terrestrial

The project area lies at approximately 1,780 feet in elevation and consists of the roadway and the immediately adjoining roadside areas. The project area passes through mid-seral conifer forest typical of the Vancouverian Lowland & Montane Forest Group: North Pacific Maritime Douglas-fir - Western Hemlock Forest Alliance (Ramm-Granberg et al. 2021). This lowland forest is dominated by western hemlock, silver fir (*Abies amabilis*), and Douglas-fir. Salal (*Gaultheria shallon*), huckleberry (*Vaccinium* spp), and dull Oregon-grape (*Mahonia nervosa*) are the dominant shrubs in the understory. The moist Western Hemlock-Douglas-fir and Foamflower (*Tiarella trifoliata*) Forest is mapped on valley bottoms, toe slopes, and concave lower slopes. This community contains more western redcedar, tall shrubs, and a lush understory dominated by drought-intolerant forbs and ferns. Red alder (*Alnus rubra*) and black cottonwood (*Populus trichocarpa*) are the dominant broadleaf trees, which occur in wetter areas. The narrow strip of forest north of the road was stripped away during floods prior to emergency repair. Conifer forest still occurs south of the road, as shown in Figure 3 and as described by Nielson et. al (2021), and there are large trees immediately adjacent to the road corridor on the south side and within 165 ft of the road at the park boundary. According to NPS this forest is unique in the park, categorized as “C03 Sitka spruce, western hemlock and wood-sorrel forest.”

3.2.2 Aquatic

Baseline conditions for the Carbon River Watershed according to the NMFS Matrix of Pathways and Indicators is presented in **Table 3**. The existing conditions in the watershed were compared to standards established by NMFS (1996) to determine the “baseline conditions” category. These watershed-wide classifications are based largely on the assessment documented for the recent Biological Assessment of the Wonderland Trail re-establishment along an upstream reach of the Carbon River (Chestnut et al 2021). Water quality status was obtained from the Washington Department of Ecology (WDOE 2023).

The mainstem Carbon River has the distinctive characteristics of a glacial stream, with naturally high levels of suspended sediment and bedload, and an unstable, aggrading braided channel.

Water quality indicators other than suspended sediment, such as water temperature and contaminants, have not been monitored consistently. However, the Washington Department of Ecology (WDOE) water quality database indicates there are no water quality impairment 303d listings noted for the Carbon River (WDOE 2023). Due to its largely undeveloped drainage basin, there are few potential sources of contamination or man-made hydrologic alterations.

In the action area, the river forms a braided channel which is typical of glacially fed rivers that have a high sediment supply. The channel is dynamic and unstable with bedload consisting of large rubble, boulders, and pockets of fine sorted materials (Kerwin 1999). Sediment loading from forest management and logging related activities is not significant compared to the natural glacial sediment load (USFS 1998). Between 1990 and 1996, the active channel widened by up to 100 feet in several locations, and the channel has aggraded rapidly.

The condition of habitat in the action area is evaluated in terms of seven broad classes of habitat features (pathways), each of which has a related set of specific metrics (indicators) that are rated based on their functional condition. Baseline conditions for each indicator are described on a relative scale of functionality (functioning properly, functioning at risk, or not properly functioning). This analytical framework is referred to as the Matrix of Pathways and Indicators (NMFS 1996). The scale of this analysis is at the upper Carbon River 6th-field watershed. The environmental baseline information for the watershed is based primarily on the USFS's 1998 Carbon River Watershed Analysis (USFS 1998).

TABLE 2. SUMMARY OF THE ENVIRONMENTAL BASELINE IN THE UPPER CARBON RIVER WATERSHED (“MATRIX OF PATHWAYS & INDICATORS”)

Pathway	Indicator	Baseline Conditions	Rationale/Comments
Water Quality	Temperature	Functioning properly	Not 303d listed
	Sediment / Turbidity	Functioning properly	High natural turbidity from glacial sources in Carbon River
	Chemical Contamination & Nutrients	Functioning Properly	Not 303d listed
Habitat Access	Physical Barriers	Functioning at Risk	Culverts on several tributary streams present partial or full barriers to fish passage.
Habitat Elements	Substrate	Functioning at Risk	Chronic road sediment sources delivered to key tributary streams along Carbon River Road
	Large Woody Debris	Functioning at Risk	Past logging on private and National Forest lands in watershed has reduced old-growth riparian to less than 50%
	Pool Frequency / Quality	Functioning at Risk	Pool habitat potentially limited in Carbon River due to increasing bedload from Carbon Glacier
	Large Pools	Functioning at Risk	Pool habitat potentially limited in Carbon River due to increasing bedload from Carbon Glacier
	Off-Channel Habitat	Functioning at Risk	Side channel habitats constrained or directly impacted by location of Carbon River road in several areas
	Refugia	Functioning at Risk	Refugia habitats are present but are currently reduced due to passage barriers.
Channel Conditions & Dynamics	Width/Depth Ratio	Functioning at Risk	Width/depth ratio has increased in Carbon River due to rapid channel widening in response to peak flood events and increasing bedload from Carbon Glacier
	Streambank Condition	Functioning at Risk	Rapid channel widening and bank erosion in response to peak flood events and increasing bedload from Carbon Glacier
	Floodplain Connectivity	Functioning at Risk	Bank armoring with riprap to is present in several locations both above and below park boundary
Flow / Hydrology	Peak / Base Flows	Functioning at Risk	Peak flow events may be increasing due to effects of Carbon Glacier recession
	Drainage Network	Functioning at Risk	Moderate increase in drainage network – road density is 1.33 mi/mi ² (USFS 1998)
Watershed Conditions	Road Density / Location	Functioning at Risk	Low road density overall (<2 mi/mi ²), but presence of valley bottom roads causes chronic flood damage and sediment delivery to tributary streams (USFWS 2004)
	Disturbance History	Functioning at Risk	Past logging on private and National Forest lands in watershed has reduced old-growth to less than 50% but recent clearcuts are less than 15%
	Riparian Areas	Functioning at Risk	Past logging on private and National Forest lands in watershed has reduced old-growth riparian to less than 50% (USFS 1998)

Chapter 4 - Project Details

4.1 Emergency (2022) Stabilization and Repairs

Emergency repair equipment used:

- Mobilization: Standard vehicle (pickup trucks and cars)
- Embankment work: Backhoe, dump truck, excavator, generator, pumps, chainsaws
- Demobilization: Standard vehicle (pickup trucks and cars)

4.1.1 Project Timeline and Sequencing

Work was accomplished August 22 through October 5, 2022.

4.1.2 Construction Access and Staging

The construction site was accessed directly from the Carbon River Road.

4.1.3 In-Water Work

The emergency interim work within the channel consisted of filling the void left by the washed-out road segment with 1,400 cubic yards of Class 4 and Class 7 riprap to reconstruct and stabilize the roadway embankment. This was overlain with streambed gravel mix in the lower streambed section (**Appendix C**). Large rootwads (23 pieces) were embedded in this rock material at about 10-foot intervals with roots extending horizontally into the river flow. These were further anchored with 19 large timber poles driven vertically into the ground and extending several feet above the reconstructed riverbed. About 200 linear feet of bank logs were also installed as part of the structure. Adjoining work beyond the ordinary high water mark consisted of additional rock fill, and a gravel road surface to allow interim passage of traffic. To minimize adverse effects to listed fish species, the in-water work area was isolated from the river, and Park aquatics staff conducted fish salvage to remove and relocate fish from the project area (NPS 2022). Work was coordinated with jurisdictional agencies to extend beyond the state-designated in-water work window.

4.1.4 Post-Project Site Restoration

Temporarily disturbed areas were seeded with grass. Willow live stakes were planted among the streamside riprap between the installed logs.

4.2 Proposed Final Reconstruction

Proposed final repair equipment to be used:

- Mobilization: Standard vehicle (pickup trucks and cars)
- Embankment and culvert work (will occur during the in-water work window): Backhoe, dump truck, excavator, generator, pumps, chainsaws
- Roadway paving (will occur after in-water work is completed): Backhoe, compactor (ground), dump truck, excavator, grader, paver, roller
- Demobilization: Standard vehicle (pickup trucks and cars)

4.2.1 Project Timeline and Sequencing

Final reconstruction of the road is to be performed in 2025. In-water work will be performed during the July 16 to August 15 designated in-water work window. An extension will be requested during construction if unavoidable delays become apparent. The project will include additional reconstruction of the road embankment similar to that described for the interim (emergency) construction and repairs to the damaged wing wall of the June Creek culvert. Additional plantings and placement of coarse woody debris would occur in the area of the emergency stabilization to help facilitate the establishment of native vegetation. In addition, the road will be paved and completed with striping and signage.

4.2.2 Site Preparation

A National Pollution Discharge Elimination System (NPDES) General Construction Permit will be obtained, and an Erosion and Sediment Control Plan developed for the project. Erosion control will be installed according to approved plans and permits but will likely follow standard FHWA specifications.

4.2.3 Construction Access and Staging

Access will occur using the Carbon River Road. A portion of the road would also be used for staging.

4.2.4 In-Water Work

In-water final reconstruction work will consist of extending the rock and log structures that were installed in 2022 about 100 feet farther downstream, to the June Creek culvert. Approximately 20 LWM pieces will be embedded into the bank (**Appendix C**). The wingwall at the existing June Creek culvert outlet will be repaired as well. The work will be performed during the in-water work window designated by Washington State. In-water work isolation and fish salvage will be performed to avoid and minimize adverse effects to listed fish species.

4.2.5 Stormwater Management

About 0.15 acre of pavement will be restored during final reconstruction. Erosion control will follow NPDES permit requirements, and road runoff will be expected to infiltrate into the porous material downslope of the road surface as it did prior to project initiation. Best Management Practice erosion control features (BMPs) will be installed to protect water quality and pavement runoff from the design storm is anticipated to infiltrate the road shoulders and prism.

4.2.6 Post-Project Site Restoration

Temporarily disturbed areas will be revegetated with native species approved or provided by NPS. Additional native shrub and tree planting may be incorporated into the streambank.

4.2.7 Operations

Road signage and occasional flagging will occur as part of operations.

4.2.8 Maintenance

After construction, maintenance of the roadway will return to normal, pre-project maintenance.

Chapter 5 - Action Area

5.1 Action Area Determination- Terrestrial

5.1.1 Emergency (2022) Reconstruction

The action area is defined as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action” (50 CFR §402-02). The action area for the emergency reconstruction included all areas within the construction limits (project area) and areas where terrestrial species listed in **Table 1** could potentially be impacted by project noise and visual disturbance. The action area extended 165 feet from the project area and was determined as described below. It should be noted that all emergency work occurred after the NSO early nesting season (March 15-July 31), which reduced potential for adverse effects to the species.

USFWS guidance designed for NSO (USFWS 2006) was used to define the action area by assessing potential indirect impacts from noise. Through this guidance, the USFWS describes NSO behaviors that reasonably characterize when disturbance effects rise to the level of take (i.e., harass), as defined in the implementing regulations of the Endangered Species Act of 1973, as amended (the Act). These behaviors include:

- Flushing an adult or juvenile from an active nest during the reproductive period
- Precluding adult feeding of the young for a daily feeding cycle
- Precluding feeding attempts of the young during part of multiple feeding cycles

This evaluation is based on the difference between ambient sound levels and sound levels produced during construction. The following caveat should also be heeded in regard to this analysis: “Given the many sources of variability in such an analysis, such as the differences in individual bird response, variation in actual sound level produced by similar sources, variability in sound transmission during daily weather patterns, and non-standardization in sound metrics reported in the published literature, exact estimates of harassment distances are currently infeasible, and likely will remain so” (USFWS 2006). In spite of this, the following gives the best available approximation of potential indirect noise impacts that occurred from the emergency repair.

5.1.2 Application of Harassment Distances to Project Conditions

The following USFWS methodology was used to estimate the approximate distance at which project-generated sound exceeds ambient conditions to such an extent that the NSO may be subject to harassment due to sound disturbance.

Step 1: The action area was reviewed to determine the existing ambient sound level, including any sound sources occurring in the action area, prior to and not part of the proposed action, that create ambient sound levels higher than the "natural" background. Ambient sound levels within the project area consist of light and occasional traffic, including occasional traffic from large pickup trucks. Therefore, the ambient noise level was considered to be “Moderate” according to the following USFWS definition (2006):

“*Moderate*: Typically 71-80 decibels (dB), generally characterized by the presence of passenger vehicles and street-legal motorcycles, small trail cycles (not racing), small gas-powered engines (e.g., lawn mowers, small chain saws, portable generators), and high-tension power lines. Includes electric hand tools (except circular saws, impact wrenches and similar).”

Step 2: The proposed action was reviewed to determine the types of equipment, tools, etc., anticipated that were used during the project, and the resulting USFWS sound level category. Action-generated sound sources should include all major sources necessary to complete the proposed action. These results are shown in **Table 3**, where the high end of the range is listed. As shown, the equipment is categorized as medium (typically 71-80 dB) or high (typically 81-90 dB).

TABLE 3. COMMON SOUND LEVELS FOR ACTION-GENERATED EQUIPMENT/ACTIVITIES

Equipment	Range of Reported dBA Values @ Distance Measure		Relative Noise Level
	Spec. 721.560 L _{max} @ 50 feet (slow)	Measured L _{max} @ 50 feet (slow, averaged)	
Interim Repair			
Pickup Truck	55	75	Medium
Backhoe	80	78	High
Dump Truck	84	76	High
Excavator	85	81	High
Generator	82	81	High
Pumps	77	81	High
Chainsaws	85	84	High
Proposed Final Repair			
Pickup Truck	55	75	Medium
Backhoe	80	78	High
Dump Truck	84	76	High
Excavator	85	81	High
Generator	82	81	High
Pumps	77	81	High
Chainsaws	85	84	High
Compactor	80	83	High
Grader	85	n/a	High
Paver	85	77	High
Roller	85	80	High

Source: FHWA Environmental Handbook 2006

As shown, the source for **Table 3** is the 2006 FHWA Environmental Handbook, which includes values per equipment specification (Column 2, Spec 721.560) and measured values (Column 3). Since these differ slightly, the higher value was used for each piece of equipment in order to conservatively estimate impacts. Although some pieces of equipment would fall below 80 dBA, only pickup trucks are listed under 80 dBA in both columns (and therefore are categorized as Medium).

Step 3: A theoretical impact distance from a construction or noise activity was generated by comparing the existing (ambient) noise level with the anticipated decibel level of noise

generated by the emergency action. The table used to generate these calculations can be seen in the USFWS guidance document, but the results of the calculations have been provided in **Table 4** below. **Table 4** provides an estimate of the distance within which increased sound level may have harassed an owl. These values are reported as a distance from the outer edge of the project area into occupied or presumed occupied suitable habitat, unless site-specific information indicates sound sources may be more localized within the project area.

TABLE 4. AMBIENT AND PROPOSED NOISE LEVELS AND APPROXIMATE IMPACT DISTANCES

Anticipated Action-Generated Sound level category, and approximate impact distance (in feet)		
Ambient Pre-project sound level category	General Construction- Pickup = Medium	Heavy Construction- Dozer, etc. = High
Interim Repair		
Moderate	0 feet	165 feet
Proposed Final Repair		
Moderate	0 feet	165 feet

Source: Modified from USFWS 2006.

Step 4: When significant topographic features occur within the sound environment, appropriate consideration may be given to their sound attenuating capabilities. However, the analyst should have a full understanding of the effects of topography on sound attenuation, especially when the species involved typically nests at a substantial distance above the ground. That is, topography may substantially attenuate sound between the source and the receiver (i.e., owl nest site) when that topographic barrier is sufficiently high to block line-of-sight transmission between the source and receiver. For species such as owls that normally nest high in tall trees, topography or other barriers provide little attenuation unless very close to the sound source, or very high.

Since the project lies on a terrace and the land slopes upslope from the project area for several hundred feet to the south without obvious barriers such as ridgelines or cliffs, no additional considerations for sound attenuation were needed, and the 165-foot distance was used to define the action area.

5.1.3 Analysis

The existing ambient sound level within the project area matches the classification of "moderate" (71-80 dB) described in USFWS (2006). Traffic noise and human activity is common in the project area, which serves a gateway to the northwest side of the park. Because of its low elevation, the Carbon River entrance area is generally accessible to park visitors year-round, although winter snowstorms or treefall may temporarily impede access to the area. Background noise levels likely range from about 50 to 70 decibels and result from natural processes such as rivers, and human activities such as cars, motorcycles, and trucks arriving and parking at the entrance; administrative UTVs traveling through the area; and human voices at parking areas and along the hike-bike trail.

Before the road was damaged in 2020 and 2021, public vehicles were able to access the developed area just past the entrance. Currently most visitors must park along the road on the west side of the washout and walk the short distance to the entrance area. Amenities within the development include an intermittently staffed visitor station, vault toilet, short loop trail,

and parking area. A park maintenance area is located about a quarter mile away. Beyond the developed area, the road has been closed to public vehicles since 2006 when a major flood washed out significant portions of the 5-mile-long road. Visitors generally park and then begin their journey by foot or bike up the former park road, which was converted to a hike-bike trail after the 2006 flood. The Carbon River Hike-Bike Trail provides access to several wilderness trailheads along the route and to the former automobile camp located at the end of the road (now trail). The campground continues to provide walk-in/bike-in camping. Administrative access includes the use of UTVs for trail and campground maintenance, which primarily occurs spring through fall.

Chainsaws are the greatest sources of manmade sound to be considered here, as they exceed the level of the other tools. From the above-described sound levels, we anticipated that action-generated sound levels fit into the "High" category. Choosing the appropriate row (Ambient = Moderate) and column (Action-generated = High) Table 3^{(c)(3)} and Table 3^{(c)(3)}, we estimated that noises disturbance could have occurred within NSO nesting, roosting, or foraging (NRF) habitat up to 165 feet from the project area. This 165-foot distance was used to describe potential effects, as discussed further in the next chapter. No blasting occurred during the emergency (2022) reconstruction. Noise levels from construction equipment were (at most) approximately 15dBA higher than ambient sound levels.

5.1.4 Proposed Final Reconstruction

As shown in the previous section, since equipment from the proposed final reconstruction does not exceed the noise levels of the emergency repair, the noise distance analysis is the same for emergency and proposed final work. Therefore, the same determination of 165 feet for the action area would be applicable to the proposed final reconstruction effort. No blasting is proposed for the final reconstruction. Noise levels from construction equipment are estimated to be (at most) approximately 15dBA higher than ambient sound levels.

5.2 Action Area Determination - Aquatic

5.2.1 Emergency (2022) Reconstruction

As per NMFS precedent and guidance, the aquatic action area includes the project-area reach of the Carbon River at RM 24, and thence downstream including all downstream reaches of the Carbon River and the Puyallup River to its mouth at Puget Sound (Figure 1). This NMFS guidance is based on the potential extent of measurable effects due to the dispersion of contaminants remaining in project stormwater following on-site water quality treatment.

5.2.2 Proposed Final Reconstruction

The action area for the proposed final work is the same as that for the emergency interim construction. The work is located within and immediately downstream of the emergency reconstruction site (**Appendix C**).

Chapter 6 - Effects Analysis

Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action. [50 CFR §402.17].

This section considers and discusses effects on the listed species that are caused by the proposed action and are reasonably certain to occur, including the effects of other activities that would not occur but for the proposed action.

Effects are discussed separately for emergency (2022) reconstruction and proposed final reconstruction. As discussed in Section 4, the two actions involve similar construction equipment and similar in-channel rock and log road base structure installation. The only differences are that the emergency reconstruction involved more material in a larger area, and the final reconstruction involves restoring impervious surface to the project within the footprint of the roadway, which was paved prior to the washout.

6.1 Terrestrial Effects Analysis for the Emergency (2022) Reconstruction

Since work occurred in previously disturbed areas within the existing road prism (and the stream area where the washout occurred), no standing trees needed to be removed, and expansion of the roadway did not occur, habitat for listed terrestrial species was not reduced as a result of the emergency reconstruction.

Background noise levels likely range from about 50 to 70 decibels, and result from natural processes such as rivers, human activities such as cars, motorcycles, and trucks arriving and parking at the entrance; administrative UTVs traveling through the area; and human voices at parking areas and along the hike-bike trail. No blasting occurred during the emergency (2022) reconstruction. Noise levels from construction equipment were (at most) approximately 15 dBA higher than ambient sound levels, as described in Chapter 5, and noise is the primary potential impact to listed species, as discussed in the following sections.

6.1.1 Marbled Murrelet

No reduction of available habitat for MAMU occurred since no trees were removed. Suitable MAMU habitat was present in the project vicinity and the species is known to use the Carbon River valley. However, habitat adjacent to the roadway has been historically disturbed by humans along the roadway prior to the emergency project.

To date there is limited information concerning murrelet vulnerability to disturbance effects. In general, responses to noise disturbance at nest sites have been modifications of posture and on-nest behaviors without flushing or abandoning the nest (Long and Ralph 1998, USFWS 2003, Hebert and Golightly 2006). Significant disturbance occurs when noise or project activity causes a murrelet to become so agitated that it flushes away from an active nest site or aborts a feeding attempt during incubation or brooding of nestlings

(USFWS 2003). Such events are considered significant because they have the potential to result in reduced hatching success, fitness, or survival of juveniles.

The USFWS (2003) review of murrelet responses to disturbance concluded that the use of heavy equipment within 35 yards of a nest tree could cause a murrelet to flush. This distance was derived from a reported instance of two murrelets flushing from a tree in response to people slamming car doors and talking loudly within a distance of 30 m (98 feet) from the tree. Long and Ralph (1998) noted that adult murrelets would abort feeding attempts or flush off the nest branch during attempted food deliveries when people on the ground were visible to the birds and within a distance of 15 to 40 m (49 to 131 feet), or occasionally when vehicles passed directly under a nest tree.

Murrelet chicks appear to be much more difficult to disturb than adults, and there are no documented instances of a nestling murrelet falling due to sound or visual disturbance, including disturbances due to researchers climbing nest trees, handling young, and placing cameras close to young (USFWS 2003). Based on this review, the USFWS concluded that significant disturbance with a potential for injury for murrelets would only occur as a result of an adult murrelet flushing from the nest during incubation or brooding, or adults aborting a feeding of the chick (USFWS 2003).

Overall, it appears that murrelets are not easily disrupted from nesting attempts by human disturbance except when confronted at or very near the nest itself. The study completed by Hebert and Golightly (2006) monitored murrelet responses to disturbance events in a controlled manner. In this study, adult murrelets exposed to people operating chainsaws or groups of hikers passing nearby on park trails did not flush from the nest. Murrelets have evolved several mechanisms to avoid predation; they have cryptic coloration, are silent around the nest, minimize movement at the nest, and limit incubation exchanges and chick feeding to twilight hours (Nelson 1997). Hebert and Golightly (2006) suggest that flushing because of a disturbance or activity on the ground might not provide a benefit compared to the potential risk of exposure to predators. When confronted with the presence of potential predators, murrelets remain on the nest in alert or defensive postures (Hebert and Golightly 2006), and do not flush unless confronted directly by a large predator such as a raven (Singer et al. 1991).

Based on the best available information concerning murrelet responses to disturbance associated with noise, activity, and human presence, the USFWS (2003) concluded the following:

“Adult murrelets are most likely to exhibit a flush response while attempting to deliver food to the chick at dawn or dusk. Therefore, disturbance activities that occur near occupied nests during dawn or dusk periods can cause adult murrelets to flush and abort a feeding attempt. For this analysis, they define close proximity as 35 yards for ground-based activities with motorized equipment.

Adult murrelets that are incubating an egg are not likely to flush from disturbance, unless the birds are exposed to sounds 92 dB or greater. Short-term ground-based disturbance events (such as operating a chainsaw for 15 minutes or less during mid-day periods) do not appear to have any significant effect to murrelet adults or chicks.

The normal behavior of incubating adults is to rest and remain motionless during the day. Prolonged disturbance disrupts this normal behavior by causing the adults to remain vigilant and alert during a time when they are normally resting. For this analysis, prolonged exposure is defined as more than two days of activity in the same location during the incubation period. Adult murrelets exchange incubation duties approximately once every 24 hours at dawn (Nelson 1997). It is assumed that each adult can tolerate noise disturbance for a one-day cycle without consequence to individual fitness or increased predation risk to the egg. Murrelet chicks appear to be mostly unaffected by disturbance. The greatest risk to murrelet chicks from disturbance is the potential for missed feedings, which occur primarily during dawn and dusk periods.”

Since MAMU were not exposed to sounds 92 dBA or greater, it is unlikely that significant impacts to MAMU within the action area occurred. No change to predator-prey relationships would be anticipated to occur as a result of the project, as MAMU typically forage in marine waters. There would be no significant change to habitat conditions in the park, or to MAMU dispersal in or out of the park.

6.1.2 Designated Marbled Murrelet Critical Habitat

The USFWS designated critical habitat for the Marbled Murrelet in 1996 (USFWS 1996). Critical habitat was not designated in national parks. However, adjacent national forest lands that border Mount Rainier National Park are designated as critical habitat. The primary constituent elements identified in the marbled murrelet critical habitat rule include (1) individual trees with potential nesting platforms, and (2) forested areas within 0.5 mile of individual trees with potential nesting platforms, and a canopy height of at least one-half the site potential tree height. This includes all such forests, regardless of contiguity (USFWS 1996). Actions associated with the emergency (2022) reconstruction had no direct or indirect effects to the primary constituent elements of designated marbled murrelet critical habitat. Therefore, the proposed action had no effect to designated marbled murrelet critical habitat.

6.1.3 Northern Spotted Owl

All work occurred in previously disturbed areas, and no reduction of available habitat for NSO occurred. Based on annual nesting surveys indicating no recent nesting activity in the action area, and because work was conducted outside of the early nesting season, direct impacts to NSO were unlikely. Only one NSO was detected within the park in each of the 2021 and 2022 survey years, and those detections occurred several miles from the action area, in the southwest and southeast quadrants of the park, respectively. Construction noise levels above ambient sound levels may have briefly interfered with NSO dispersal or feeding activities, if they were present, but impacts to nesting owls were highly unlikely to have occurred.

Materials hauling, equipment mobilization, and general construction-related transportation may have increased traffic noise and risk of collisions with NSOs along travel routes that pass through suitable habitat, although the small size of the road and limited speeds made this less likely than along larger roads in the park. Collision risk within the construction zone was further lessened by reduced travel speeds of construction vehicles. Noise disturbance and collision risk along the hauling routes outside the construction zone was reduced by limiting hauling to daytime hours to avoid times when NSOs are most active.

Construction debris (including trash and food) can provide an unnatural attractant to birds and other types of wildlife. Predators of NSO eggs and young include corvids such as common ravens, Steller's jays, and gray jays (who are opportunistic and feed on discarded roadside trash and food). The project included mitigation measures for trash disposal and food storage, and given the short duration of the effort, no change to predator-prey relationships likely occurred. Although the project may have briefly altered use of the area by prey species, NSO (if present) are expected to have foraged in other nearby suitable habitat during the short duration of the project. The project did not result in a significant change to habitat conditions in the park or affect owl dispersal.

6.1.4 Designated Northern Spotted Owl Critical Habitat

The USFWS originally designated critical habitat for the northern spotted owl in 1992. The 1992 designation was superseded by a revision to the critical habitat designation in 2008 (USFWS 2008). Under both designations, critical habitat was not designated in national parks. The nearest NSO designated Critical Habitat is located a few miles to the northeast of the action area, in national forest lands that border Mount Rainier National Park. The primary constituent elements identified in the spotted owl critical habitat final rule include forest types that support the spotted owl across its geographic range when they occur in concert with a) nesting, roosting, foraging, and/or dispersal habitat, or b) lands capable of developing one or more of these habitats in the future (USFWS 2008). The emergency project had no direct or indirect effects to the primary constituent elements of spotted owl critical habitat and had no effect to designated northern spotted owl critical habitat.

6.1.5 Gray Wolf

Construction noise levels above ambient sound levels may have displaced dispersing gray wolves or disturbed gray wolves during rendezvous activities. Although no gray wolf activity has been documented in the park, individual dispersing gray wolves may have occurred in the vicinity of the project where there is habitat and there are prey species. Construction work, including excavation, occurred August 22 through October 5, outside the typical April through July denning period and after pups would have been moved from the den to a rendezvous site at about eight weeks of age, further decreasing the likelihood of effect.

During repair, materials hauling, equipment mobilization, and general construction-related transportation noise were somewhat higher than existing traffic on Carbon River Road. No change to predator-prey relationships occurred as a result of the project. Although the project may have briefly altered use of the area by prey species, gray wolf territories are large, and wolves would have been able to forage for prey outside the project area.

No long-term habitat alteration that would affect wolves occurred. The effects of limited ground-disturbing construction work are unlikely to have had long-term effects on potential denning or rendezvous sites. The limited ground disturbance did not result in a significant change to overall wolf habitat conditions in the park or affect gray wolf dispersal.

6.1.6 North American Wolverine

Construction noise levels above ambient sound levels may have displaced dispersing or wandering wolverine, but denning in or near the project area would not have occurred due to the low elevation of the project. Although the closest recorded wolverine activity is 4

miles (and several thousand vertical feet) distant, individual dispersing wolverine may have occurred in the vicinity of the project during construction.

Materials hauling, equipment mobilization, and general construction-related transportation were somewhat higher than ambient traffic levels on Carbon River Road. No change to predator-prey relationships occurred as a result of the project. Although the project may have briefly altered use of the area by prey species, wolverine territories are large, and the species was able to forage for prey outside the project area.

No long-term habitat alteration that would affect wolverine occurred. The limited ground disturbance did not result in a significant change to overall wolverine habitat conditions in the park or affect dispersal.

6.1.7 Yellow-billed Cuckoo

There has never been a documented sighting of yellow-billed cuckoo inside park boundaries. Cuckoos currently appear to be functionally extinct in Washington, and although there is suitable migratory habitat in the Carbon River Valley, based on lack of evidence of species presence it is highly unlikely that they would be present in the action area. Further, since the action area is lacking in deciduous riparian habitat suitable for the species, it is assumed that no impacts to the species occurred.

6.1.8 Monarch Butterfly

Based on NPS staff expertise and discussions with USFWS, obligate milkweed host plants were not known or expected to occur in the park; therefore, no impacts to monarch butterfly from the emergency (2022) project occurred, since they depend on milkweed plants for their presence.

6.1.9 Whitebark Pine

No impacts to whitebark pine occurred since the species does not occur at the elevation of the project.

6.1.10 Mt. Rainier Ptarmigan +some other species

No impacts to Mt. Rainier Ptarmigan occurred since the species does not occur within the action area.

6.1.11 Conservation Recommendations Incorporated into Project

Work Area Isolation

1. Isolate any work area within the wetted channel from the active stream whenever ESA-listed fish are reasonably certain to be present, unless NPS and FWS agree in writing (email) that the work can be done with less potential risk to listed fish without isolating and dewatering the work area (e.g., placing large woody debris).
2. Engineering design plans for work area isolation will include all isolation elements and fish release areas.
3. Dewater the shortest linear extent of work area practicable, unless wetted instream work is deemed to be minimally harmful to fish and is beneficial to other aquatic species.

Bull Trout

1. If practicable, allow listed fish species to migrate out of the work area or remove fish before dewatering; otherwise remove fish from an exclusion area as it is slowly dewatered with methods such as hand or dip-nets, seining, or trapping with minnow traps (or gee-minnow traps).
2. Fish capture will be supervised by a qualified fisheries biologist, with experience in work area isolation and competent to ensure the safe handling of all fish.
3. Conduct fish capture activities during periods of the day with the coolest air and water temperatures possible, normally early in the morning to minimize stress and injury of species present.
4. Monitor the nets frequently enough to ensure they stay secured to the banks and free of organic accumulation.
5. Install block nets above and below the project area. Conduct fish removal with seine and kick nets first, and then electrofishing if necessary. Electrofishing will not be conducted if naturally occurring high turbidity limits visibility of fish.
6. Begin electrofishing with a minimum pulse width and recommended voltage, then gradually increase to the point where fish are immobilized.
7. Immediately discontinue electrofishing if fish are killed or injured, i.e., dark bands visible on the body, spinal deformations, significant de-scaling, torpid or inability to maintain upright attitude after sufficient recovery time. Recheck machine settings, water temperature and conductivity, and adjust or postpone procedures as necessary to reduce injuries
8. If buckets are used to transport fish:
 - a. Minimize the time fish are in a transport bucket.
 - b. Keep buckets in shaded areas or, if no shade is available, covered by a canopy.
 - c. Limit the number of fish within a bucket; fish will be of relatively comparable size to minimize predation.
 - d. Use aerators or replace the water in the buckets at least every 15 minutes with cold clear water.
 - e. Release fish in an area upstream with adequate cover and flow refuge; downstream is acceptable provided the release site is below the influence of construction.

In channel Gravel Removal

1. Limited excavation of river gravels and cobbles for project fill is permitted. Gravel excavation is limited to dry gravel bars within the main Carbon River channel only. The following technical provisions apply to gravel removal projects:
 - a. Gravel removal from a watercourse shall be limited to removal from exposed bars and shall not result in a lowering, over time, of the average channel cross-section profile through the project area or downstream.
 - b. An "excavation line" shall be established. "Excavation line" means a line on the dry bed, at or parallel to the water's edge. The excavation line should be established at a distance that will avoid excavation disturbance within the wetted channel. The excavation line may change with water level fluctuations.

- c. An "excavation zone" shall be defined as the area between the "excavation line" and the bank or the center of the bar. The "excavation zone" shall be identified by the NPS project manager.
- d. Excavation shall begin at the excavation line and proceed toward the bank or the center of the bar, perpendicular to the alignment of the watercourse.
- e. Bed material shall not be removed from the water side of the excavation line.
- f. Equipment shall not enter or operate within the wetted perimeter of the watercourse, except at designated equipment crossing sites.
- g. Gravel may be removed within the excavation zone from a point beginning at the excavation line and progressing upward toward the bank or the center of the bar on a minimum two percent gradient. It may be necessary to survey the excavation zone upon completion of the gravel removal operation to ensure the two percent gradient is maintained and that no depressions exist.
- h. The depth of gravel excavation from exposed bars is limited to the depth of the adjacent water level.
- i. No excavation of gravels from within wetted channels is allowed.
- j. At the end of each workday the excavation zone shall not contain pits, or potholes, or depressions that may trap fish as a result of fluctuation in water levels.
- k. The upstream end of the gravel bar shall be left undisturbed to maintain watercourse stability waterward of the ordinary high water mark. At the end of construction, any natural gravel berms that were used as part of construction will be left to naturally erode.
- l. Large woody material shall be retained waterward of the ordinary high water mark and repositioned within the watercourse. Other debris shall be disposed of so as not to reenter the watercourse.
- m. Equipment shall be inspected, cleaned, and maintained to prevent loss of petroleum products waterward of the ordinary high water mark.

Staging, Storage, and Stockpile Areas

1. Designate and use staging areas to store hazardous materials, or to store, fuel, or service heavy equipment, vehicles, and other power equipment with tanks larger than 5 gallons, that are at least 150 feet from any natural water body or wetland, or on an established paved area, such that sediment and other contaminants from the staging area cannot be deposited in the floodplain or stream.
2. Natural materials that are displaced by construction and reserved for restoration, e.g., LW, gravel, and boulders, may be stockpiled within the 100-year floodplain and covered to avoid runoff of sediment and natural materials due to precipitation.
3. Dispose of any material not used in restoration and not native to the floodplain outside of the functional floodplain.
4. After construction is complete, obliterate all staging, storage, or stockpile areas, stabilize the soil, and revegetate the area. Areas where vegetation has been temporarily removed must be revegetated with trees, brush, and grasses native to the watershed. The long-term goal shall be to mimic the diversity and stocking levels of nearby undisturbed plant communities, while also incorporating those plants needed to minimize erosion in the near- and medium-term future. The stocking levels for planted trees and shrubs shall include consideration of possible

future mortality rates. Revegetation efforts require monitoring that incorporates metrics that may trigger additional planting to achieve the desired future condition that is defined in the revegetation plan.

Hazardous Material Safety

At the project site:

1. Post written procedures by the grantee for notifying environmental response agencies, including an inventory and description of all hazardous materials present, and the storage and handling procedures for their use.
2. Maintain a spill containment kit, with supplies and instructions for cleanup and disposal, adequate for the types and quantity of hazardous materials present.
3. Workers are trained in spill containment procedures, including the location and use of the spill containment kits.
4. Temporarily contain any waste liquids generated under an impervious cover, such as a tarpaulin, in the staging area until the wastes can be properly transported to, and disposed of, at an appropriate receiving facility.

Equipment, Vehicles, and Power Tools

Select, operate, and maintain all heavy equipment, vehicles, and power tools to minimize damage to natural vegetation and permeable soils, e.g., low pressure tires, minimal hard-turn paths for track vehicles, use of temporary mats or plates to protect wet soils.

1. Before entering wetlands or working within 150 feet of a water body:
 - a. Power wash all heavy equipment, vehicles, and power tools, allow them to fully dry, and inspect them for fluid leaks, and to make certain no plants, soil, or other organic material are adhering to the surface.
 - b. Ensure all equipment to be operated below ordinary high water is leak free or operating with biodegradable products. This does not apply to vehicles and equipment that are doing road work and/or passing through a project area (e.g., dozers, graders, etc.).
 - c. Repeat cleaning as often as necessary during operation to keep all equipment, vehicles, and power tools free of external fluids and grease, and to prevent a leak or spill from entering the water
 - d. Avoid use of heavy equipment, vehicles, or power tools below OHW for riverine systems unless project specialists determine such work is necessary, or if it is a temporary stream crossing or would result in less risk of sedimentation or other ecological damage than work above that elevation.
 - e. Before entering the water, inspect any watercraft, waders, boots, or other gear/equipment to be used in or near water and remove any plants, soil, or other organic material adhering to the surface.
 - f. Ensure that any generator, crane, or other stationary heavy equipment that is operated, maintained, or stored within 150 feet of any water body is also protected as necessary to prevent any leak or spill from entering the water.

Streambank Restoration

1. Without changing the location of the bank toe, restore damaged streambanks to a natural slope, pattern, and profile suitable for establishment of permanent woody vegetation.
2. Complete all soil reinforcement earthwork and excavation in the dry. Use soil layers or lifts that are strengthened with biodegradable fabrics and penetrable by plant roots.
3. Include large wood in each streambank restoration action to the maximum extent feasible. Large wood must be intact, hard, and undecayed to partly decaying, and should have untrimmed root wads to provide functional refugia habitat for fish. Wood that is already within the stream or suspended over the stream may be repositioned to allow for greater interaction with the stream.

Marbled Murrelet

1. Food and garbage shall be stored properly and removed to minimize attraction of predatory birds.
2. No suitable, potential, or critical marbled murrelet habitat is to be removed or downgraded as part of this action.
3. Project activities occurring from April 1 to September 23 must be conducted between 2 hours after sunrise and 2 hours before sunset as a daily timing restriction to minimize impacts to murrelets.

6.1.12 Interrelated and Interdependent Actions and Activities that Occurred

Interrelated actions include actions that are part of a larger action and depend on the larger action for justification. Interdependent actions are defined as actions with no independent utility apart from the proposed action. The project actions described above do not represent a new level of service for the roadway and will not result in other dependent projects. However, the emergency stabilization and the permanent road repairs are interrelated actions since NPS would not have implemented the emergency stabilization work if not for the intent to restore the road for long-term and permanent access.

6.1.13 Cumulative Effects that Occurred

Cumulative effects are defined as the effects of future state, local, or private activities that are reasonably certain to occur in the project's watershed. Future Federal actions, such as repairs to other portions of roadway within the park, are subject to the consultation requirements established in section 7 of the ESA, and therefore, are not considered cumulative to the proposed action. Road maintenance and repair by the U.S. Forest Service and Pierce County have occurred in the past and are proposed in the future along the Carbon/Fairfax Road adjacent to the NPS project, as well as ongoing use of the area for recreation, which includes both day use parking and extensive dispersed camping during the summer months on adjacent USFS lands. No other significant non-Federal projects are known to have occurred near the action area.

6.2 Terrestrial Effects Analysis for the Proposed Final Reconstruction

All work would occur in previously disturbed areas within the existing road prism and stream, and no reduction of available habitat for listed terrestrial species would occur since no trees or other undisturbed habitat would be removed.

Background noise levels likely range from about 50 to 70 decibels, and result from natural processes such as rivers, human activities such as cars, motorcycles, and trucks arriving and parking at the entrance; administrative UTVs traveling through the area; and human voices at parking areas and along the hike-bike trail. No blasting will occur for this project. Construction activities during the proposed final reconstruction would result in noise levels that are at most approximately 15dBA higher than ambient sound levels, as described in Chapter 5. Since no direct impacts to standing trees would occur from the final reconstruction project, noise is the primary potential impact that is discussed in the following sections.

6.2.1 Marbled Murrelet

No reduction of available habitat for MAMU would occur since no trees would be removed. Although suitable MAMU habitat is present in the project vicinity and the species is known to use the Carbon River valley, habitat adjacent to the roadway is historically disturbed by humans during the nesting season.

There is limited information concerning murrelet vulnerability to disturbance effects, and the information provided in USFWS 2003, which was discussed in the previous section, would apply to the proposed final reconstruction.

MAMU will not be exposed to sounds 92 dBA or greater, but could be exposed to equipment noise up to 85 dBA. Based on USFWS 2003, it is assumed that impacts to MAMU within the action area would be limited and would not occur outside the action area.

No change to predator-prey relationships would be anticipated to occur as a result of the project, as MAMU typically forage in marine waters. There would be no significant change to habitat conditions in the park, or to MAMU dispersal in or out of the park.

6.2.2 Designated Marbled Murrelet Critical Habitat

Actions associated with the project would have no direct or indirect effects to the primary constituent elements of designated marbled murrelet critical habitat. Therefore, the proposed action would have no effect to designated marbled murrelet critical habitat.

6.2.3 Northern Spotted Owl

All work would occur in previously disturbed areas within the existing road prism and stream, and no reduction of available habitat for NSO would occur since no trees would be removed. Based on annual nesting surveys indicating no recent nesting activity in the area, no direct impacts to nesting NSO would be likely. Construction noise levels above ambient sound levels may disturb and interfere with NSO dispersal or feeding activities, if they were present, but no NSO activity has been documented in or near the action area recently. Only one NSO was detected within the park in each of the 2021 and 2022 survey years, and those detections occurred several miles from the action area, in the southwest and southeast quadrants of MRNP, respectively, as shown in the Figure in **Appendix A**.

Materials hauling, equipment mobilization, and general construction-related transportation may increase traffic noise and risk of collisions with NSOs along travel routes that pass through suitable habitat; however, the project site is at the park entrance and materials

hauling and other activities will not occur within the NPS boundary other than within the project action area. Noise disturbance and collision risk along the hauling routes outside the construction zone would be reduced by limiting hauling to daytime hours to avoid times when NSOs are most active.

Construction debris (including trash and food) can provide an unnatural attractant to birds and other types of wildlife. Predators of NSO eggs and young include corvids such as common ravens, Steller's jays, and gray jays (who are opportunistic and feed on discarded roadside trash and food). Specific mitigation measures are listed in the Conservation and Mitigation Measures section for trash disposal and food storage to prevent unnatural attractants to birds. No change to predator-prey relationships would be anticipated to occur as a result of the project. Although the project may briefly alter use of the area by prey species, NSO (if present) would be expected to forage in other nearby suitable habitat during the short duration of the project. The project would not result in a significant change to habitat conditions in the park or affect owl dispersal.

6.2.4 Designated Northern Spotted Owl Critical Habitat

Actions associated with this project would have no direct or indirect effects to the primary constituent elements of spotted owl critical habitat. Therefore, the proposed action would have no effect to designated northern spotted owl critical habitat.

6.2.5 Yellow-billed Cuckoo

There has never been a documented sighting of yellow-billed cuckoo inside park boundaries. Cuckoos currently appear to be functionally extinct in Washington, and although there is suitable migratory habitat in the Carbon River Valley, based on lack of evidence of species presence it is highly unlikely that they would be present in the action area. Further, since the action area is lacking in deciduous riparian habitat suitable for the species, it is assumed that no significant impacts to the species would occur, even if they were moving through the vicinity undetected.

6.2.6 Gray Wolf

Construction noise levels above ambient sound levels may displace dispersing gray wolves or disturb gray wolves during denning and rendezvous activities. Although no gray wolf activity has been documented within a mile of the action area, and the project area is typically disturbed by traffic and human activity during the construction period (primarily summer), individual dispersing gray wolves may occur in the vicinity of the project, and occupation of suitable denning or rendezvous sites is possible where there is habitat. Construction work, including excavation, would begin in May and would continue through October. Road opening and construction work would therefore likely coincide with the first few weeks of pup development, before pups are moved to a rendezvous site at about eight weeks of age.

Materials hauling, equipment mobilization, and general construction-related transportation noise are somewhat higher than existing traffic on Carbon River Road. Collision risk within the construction zone will be lessened by reducing travel speeds of construction vehicles and by limiting hauling to daytime hours. No change to predator-prey relationships would be anticipated to occur as a result of the project. Although the project may briefly alter use of the area by prey species, gray wolf territories are large, and wolves would be able forage for prey outside the project area.

No long-term habitat alteration that would affect wolves is anticipated from the project. The effects of limited ground-disturbing construction work is unlikely to have long-term effects on potential denning or rendezvous sites. The limited ground disturbance would not result in a significant change to overall wolf habitat conditions in the park or affect gray wolf dispersal.

6.2.7 North American Wolverine

Construction noise levels above ambient sound levels may displace dispersing or wandering wolverine, but denning in or near the project area would not occur due to low elevation of the project. Although no wolverine activity has been documented within a mile of the action area, and the project area is typically disturbed by traffic and human activity during the construction period (primarily summer) individual dispersing wolverine may occur in the vicinity of the project.

Materials hauling, equipment mobilization, and general construction-related transportation are somewhat higher than existing traffic on Carbon River Road. Collision risk within the construction zone will be lessened by reducing travel speeds of construction vehicles and by limiting hauling to daytime hours. No change to predator-prey relationships would be anticipated to occur as a result of the project. Although the project may briefly alter use of the area by prey species, wolverine territories are large, and the species would be able to forage for prey outside the project area.

No long-term habitat alteration that would affect wolverine is anticipated from the project. The limited ground disturbance would not result in a significant change to overall wolverine habitat conditions in the park or affect dispersal.

6.2.8 Monarch Butterfly

Based on NPS staff expertise and discussions with USFWS, obligate milkweed host plants are not known or expected to occur in the park; therefore, no impacts to monarch butterfly are anticipated, since they depend on milkweed plants for their presence.

6.2.9 Whitebark Pine

Whitebark pine does not occur at the elevation of the project. Since the species does not occur near the project, and none of the four key stressors for the species (white pine blister rust, mountain pine beetle, severe wildfire, and climate change) would be increased or exacerbated by the project, no impacts are anticipated.

6.2.10 Mt. Rainier Ptarmigan

Mt. Rainier Ptarmigan does not occur at the elevation of the project, no impacts are anticipated.

6.2.11 Conservation Measures

- Project will carry forward conservation recommendations as described in Section 6.1.11 above.
- Implement time of day restrictions, which requires construction to occur between two hours after sunrise and end at least two hours before sunset during the MAMU nesting season.
- Mufflers will be placed on equipment during operation to minimize noise.

- No blasting or pile-driving will occur.
- Construction personnel will be informed of the occurrence and status of special status species (including federally listed species) and will be advised of the potential impacts to the species and potential penalties for taking or harming a special status species.
- Feeding or approaching wildlife will be prohibited.
- A litter control program will be implemented during construction to eliminate the accumulation of trash. All food items will be stored inside vehicles, trailers, or wildlife-resistant receptacles except during actual use to prevent attracting wildlife.
- Equipment will not be allowed to idle longer than 15 minutes when not in use.
- All motor vehicles and equipment will have mufflers conforming to original manufacturer specifications that are in good working order and are in constant operation to prevent excessive or unusual noise, fumes, or smoke.
- Mufflers and sound attenuation devices (such as rubber strips or sheeting) will be installed and maintained on all equipment. This will include truck tail and other gate dampeners (both opening and closing) for all dump trucks on the project.
- Use of un-muffled engine brakes or Jake Brakes is prohibited in the park unless required for safety.
- Use of air horns within the park will be limited to emergencies only.
- No asphalt batch plants or rock crushing plants will be allowed within the park boundaries.
- No hauling during night hours will be allowed outside the construction zone.
- Construction vehicle speeds will not exceed construction zone posted speed limits to decrease wildlife/vehicular incidents, as the existing over steepened road edge provides little escape terrain for wildlife using the road corridor. Speed limits outside the construction zone will default to the posted speed limit.
- Road kill or wildlife collisions will be reported to the park immediately.
- If wolves are documented (e.g., through WDFW tracking, NPS surveys, or confirmed wildlife reports) within one mile of the action area during the years prior to or during project implementation, the NPS will reinitiate consultation with the USFWS to determine whether additional conservation measures are needed and if formal consultation is required.
- If during construction an active wolf den or rendezvous site becomes established within the project area, no ground-disturbing work will occur within 0.25 mile of the den or rendezvous site until wolves are no longer using the site for denning or as a rendezvous site.

6.2.12 Interrelated and Interdependent Actions and Activities

Interrelated actions include actions that are part of a larger action and depend on the larger action for justification. Interdependent actions are defined as actions with no independent utility apart from the proposed action. The project actions described above do not represent

a new level of service for the roadway and will not result in other dependent projects. However, the emergency stabilization and the permanent road repairs are interrelated actions since NPS would not have implemented the emergency stabilization work if not for the intent to restore the road for long-term and permanent access.

6.2.13 Cumulative Effects

Cumulative effects are defined as the effects of future state, local, or private activities that are reasonably certain to occur in the project's watershed. Future Federal actions, such as repairs to other portions of roadway within the park, are subject to the consultation requirements established in section 7 of the ESA, and therefore, are not considered cumulative to the proposed action. USFS and Pierce County road and bridge projects could be considered cumulative for effects purposes, as well as ongoing use of the area for recreation, which includes both day use parking and extensive dispersed camping during the summer months on adjacent USFS lands. No other significant non-Federal projects are known to have occurred near the action area.

6.3 Aquatic Effects Analysis for the Carbon River Road Emergency (2022) Reconstruction

Fish present in the in-water work area for emergency interim work were captured by several methods, including seining, netting, electrofishing, and released outside the project area. Five bull trout were captured and released by seining. No steelhead or chinook salmon were found. However, five fish identified as rainbow trout (*O. mykiss*) rather than steelhead were captured by seine or dip net and released unharmed. Although all captured fish survived, it is known that such salvage stresses fish and may increase chances of injury or death (Frisch and Anderson 2000; Kelsch and Shields 1996). In addition, although none were identified, it is possible that some fish of all three listed species may have escaped capture and salvage, to be inadvertently killed or injured during the in-water road reconstruction work.

Construction activity produced minor short-term discharges of turbidity when riprap and logs were installed in the washed-out area. High levels of turbidity can adversely affect fish and have lethal or sublethal effects depending on the sediment concentration and the duration of exposure (Newcombe and Jensen 1996). However, high natural background levels of turbidity are common during the proposed work window due to copious glacier meltwater loaded with fine sediment. Background turbidity was measured upstream and downstream of the project area during September 22 in-water work isolation efforts. Upstream readings ranged from 325 to 435 Nephelometric Turbidity Units (NTU) (NPS 2022). Turbidity and sediment from the construction work was insignificant compared to these high natural turbidity levels.

The road washout event removed a narrow roadside swath of vegetation including several trees. No additional trees were felled during the emergency interim reconstruction. Woody debris that was already down at the site was incorporated into the new structures. This includes 9 rootwads, and several downed trees that were found in the riverbed.

The emergency interim reconstruction created no new impervious surface and did not change riparian drainage patterns.

6.3.1 Effect to Designated Critical Habitat

The project area is within designated critical habitat for bull trout. The emergency interim reconstruction of the Carbon River Road displaced remnant roadway subgrade in the recently washed-out road segment, including remnant trees and root wads as described in the Appendix D: Aquatic Mitigations Repair Report. Partially downed trees and exposed root wads were incorporated into the new interim stabilization structure. During relocation of the woody material, dewatering of project area, and general construction activity, sediment discharged to downstream critical habitat would have had a potential temporary effect on aquatic habitat.

As described in Section 2, PS chinook salmon critical habitat has been designated in the Carbon River up to about RM 22.7, immediately downstream of the project site and PS steelhead designated critical habitat is designated approximately 0.5 miles downstream of the project area. Based on similar projects at MRNP, we anticipate the potential downstream effects of the project were limited to increased turbidity with potential to affect up to 0.5 miles downstream of the project. A summary of effects to the aquatic habitat pathways and indicators as defined by NMFS is presented in **Table 5**.

TABLE 5. EFFECTS OF EMERGENCY INTERIM ROAD RECONSTRUCTION ON HABITAT PATHWAYS AND INDICATORS

Pathway	Indicator	Effects of the Action (Restore-Maintain- Degrade)
Water Quality	Temperature	Maintain—riparian tree canopy was not altered
	Sediment/Turbidity	Temporary Increase in background turbidity levels
	Chemical Contamination & Nutrients	Maintain – no change
Habitat Access	Physical Barriers	Maintain – no change to passability
Habitat Elements	Substrate	Maintain – no alterations to streambed substrate
	Large Woody Debris	Restore – numerous large wood pieces were incorporated into the emergency interim reconstruction.
	Pool Frequency/ Quality	Maintain
	Large Pools	Maintain
	Off-Channel Habitat	Maintain
	Refugia	Maintain – no change in access to tributaries
Channel Condition & Dynamics	Width/Depth Ratio	Maintain – insignificant effect compared to pre-existing conditions
	Streambank Condition	Restore – reconstructed a stable streambank with large wood habitat elements
	Floodplain Connectivity	Maintain – no alteration of floodplain connection
Flow/Hydrology	Peak/Base Flows	Maintain – no impervious surface was added
	Drainage Network	Maintain-no change to length or configuration of ditches
Watershed Conditions	Road Density/Locations	Maintain – restored road in prior alignment
	Disturbance History	Maintain-no change
	Riparian Areas	Maintain

6.4 Aquatic Effects Analysis for the Proposed Final Reconstruction

Fish present in the in-water work area for emergency interim work will be captured by several methods including seining, netting, and electrofishing, and released outside the project area. Fish salvage stresses fish and may inadvertently kill fish directly or increase chances of injury or death (Frisch and Anderson 2000; Kelsch and Shields 1996). In addition, it is possible that some listed fish may escape capture and salvage, to be inadvertently killed or injured during the in-water work.

Listed fish species at or immediately downstream of the project site could be exposed to short-term increased turbidity if there are discharges from in-water construction activity. High levels of turbidity can adversely affect fish and have lethal or sublethal effects depending on the sediment concentration and the duration of exposure (Newcombe and Jensen 1996). However, high natural background levels of turbidity are common in the Carbon River during the proposed work window due to copious glacier meltwater loaded with fine sediment. Background turbidity measured upstream of the project area during the September 2022 emergency interim road reconstruction work ranged from 325 to 435 NTU (NPS 2022). Temporary minor discharge of turbidity and sediment from the final road reconstruction work would likely be insignificant compared to these high natural turbidity levels.

The road washout event removed a narrow roadside swath of vegetation including several trees. No additional trees or riparian vegetation will be removed during the final road reconstruction. Trees used for the permanent repairs would either come from recent downed trees located along the adjacent Carbon River hike/bike trail, or may come from removal of danger trees on the adjacent Fairfax Carbon Road in coordination with the U.S. Forest Service.

Final reconstruction will restore 0.15 acre of impervious road pavement that had been destroyed in the road washout event. Stormwater runoff from this area during the operational life of the road will sheet flow to infiltrate the road shoulder during the design storm. Discharge of roadway runoff to the river from this area during exceptional storm events will have an insignificant effect on listed fish, and will not measurably alter the peak flow, base flow, or pollutant loading of the river.

6.4.1 Effect to Designated Critical Habitat

The project area is within designated critical habitat for bull trout. The final reconstruction of the Carbon River Road will displace primarily areas of remnant roadway subgrade in the recently washed-out road segment rather than pre-existing aquatic habitat. Therefore, the project is likely to have an insignificant effect on the primary constituent elements of designated bull trout critical habitat. As described above, any minor temporary sedimentation discharged to downstream critical habitat would be insignificant because of the high ambient levels of natural glacial sediment.

As described in Chapter 2, PS chinook salmon and PS steelhead designated critical habitat is present within 0.5 miles of the project area as described above. A summary of effects to the aquatic habitat pathways and indicators as defined by NMFS is presented in **Table 6**.

TABLE 6. EFFECTS OF FINAL ROAD RECONSTRUCTION ON HABITAT PATHWAYS AND INDICATORS

Pathway	Indicator	Effects of the Action (Restore-Maintain- Degrade)
Water Quality	Temperature	Maintain–riparian tree canopy will not be altered, no trees proposed for removal.
	Sediment/Turbidity	Temporary Increase in background turbidity levels
	Chemical Contamination & Nutrients	Maintain – no change
Habitat Access	Physical Barriers	Maintain – no change to passability
Habitat Elements	Substrate	Maintain – no alterations to streambed substrate
	Large Woody Debris	Restore – additional large wood pieces will be incorporated into the final road reconstruction.
	Pool Frequency/ Quality	Maintain
	Large Pools	Maintain
	Off-Channel Habitat	Maintain
	Refugia	Maintain – no change in access to June Creek
Channel Condition & Dynamics	Width/Depth Ratio	Maintain – insignificant effect on this indicator
	Streambank Condition	Restore – will reconstruct a stable streambank with large wood habitat elements
	Floodplain Connectivity	Maintain – no alteration of floodplain connection
Flow/Hydrology	Peak/Base Flows	Maintain – reconstruction of impervious surface will not significantly affect river flows
	Drainage Network	Maintain-no change to length or configuration of ditches
Watershed Conditions	Road Density/Locations	Maintain – restored road in prior alignment
	Disturbance History	Maintain-no change
	Riparian Areas	Maintain

Chapter 7 - Effect Determinations

For both terrestrial and aquatic species, effect determinations are identical for the emergency (2022) reconstruction and proposed final reconstruction. However, effects determinations are provided separately for each project stage to recognize the emergency nature and after the fact consultation of the original repair and more standard consultation prior to the final reconstruction work.

7.1 Effect Determination for the Emergency (2022) Reconstruction

7.1.1 Effect Determination for Marbled Murrelet

Surveys indicate the Carbon River valley probably supports the highest density of nesting murrelets of any location within the park. Old-growth forest in the park and the adjacent Wilderness areas provide high quality murrelet nesting habitat that is mostly free from development and the presence of people. However, the Carbon River Road access corridor has a long history of recreational use, and likely supports a higher density of murrelet nest predators.

Considering the level of human disturbance from the roadway in project area, the use of construction equipment below 92 dBA, lack of blasting, and the mitigation of potential effects of the proposed action by limiting the time of day that construction was permitted, the project **may have affected, but is not likely to have adversely affected, the MAMU.**

7.1.2 Effect Determination for Northern Spotted Owl

Based on NSO surveys conducted since the 1980s, there is low likelihood of NSO nesting within 0.7 miles of the project area, which indicates the potential effect to the species would have been insignificant. Construction did not appreciably change conditions adjacent to the existing roadway, and the duration of effects were (at most) for a single breeding season. The area already contained a relatively active roadway with associated traffic and visual disturbance, and the temporary increase in these disturbances was discountable.

Considering the current status of the NSO in the project area, and the direct, indirect, and cumulative effects of the proposed action, the proposed project **may have affected, but is not likely to have adversely affected the NSO.**

7.1.3 Effect Determination for MAMU and NSO Critical Habitat

No Critical Habitat for NSO lies within the action area. Critical Habitat for MAMU is directly southwest of the project, adjacent to the park boundary. Actions associated with the project had no direct or indirect effects to the primary constituent elements of designated marbled murrelet critical habitat, and therefore the project had **no effect on Critical Habitat for NSO or MAMU.**

7.1.4 Effect Determination for Yellow-billed Cuckoo

Cuckoos currently appear to be functionally extinct in Washington and have never been detected in the park. Since the action area was lacking in riparian habitat suitable for the species, it is highly unlikely they occupied the area during the emergency repair, and the proposed project had **no effect on yellow-billed cuckoo.**

7.1.5 Effect Determination for Gray Wolf

Although recent gray wolf survey efforts in this area of the park have not detected the presence of this species, wolf dispersal into the park within the timeframe of the project is possible. Although the project crosses through suitable habitat, the park contains a large amount of suitable habitat available for the species to utilize. Construction within and immediately adjacent to the roadway did not appreciably change conditions to the adjacent habitat. The increase in noise and visual disturbance associated with construction along this active roadway was temporary.

Given the low likelihood that wolf denning or rendezvous sites were established within the project area within the project timeframe, and the conservation measures to minimize the chance of adverse impacts to wolves, and considering the direct, indirect, and cumulative effects of the proposed action, the proposed project **may have affected, but is not likely to have adversely affected, gray wolf.**

7.1.6 Effect Determination for North American Wolverine

Although the project crosses through wolverine dispersal habitat, the park contains a large amount of suitable habitat available for the species to utilize, and denning or sustained presence of wolverine in or near the action area would be highly unlikely. Construction within and immediately adjacent to the roadway did not appreciably change conditions to the adjacent habitat. The increase in noise and visual disturbance associated with construction along this active roadway was temporary.

Given the low likelihood of their presence, and the conservation measures to minimize the chance of adverse impacts to wolverine, and considering the direct, indirect, and cumulative effects of the proposed action, the project **did not jeopardize the continued existence of the North American wolverine.**

7.1.7 Effect Determination for Monarch Butterfly

The species has never been detected in the park, and its obligate food source is absent from the action area, and it is highly unlikely they would occupy the area. Given the lack of documented presence and lack of habitat within the action area, the project had **no effect on monarch butterfly.**

7.1.8 Effect Determination for Whitebark Pine

Whitebark pine does not occur at the low elevation occupied by the project, and none of the four key stressors for the species were increased or exacerbated by the project. Given the lack of potential habitat in the project vicinity, the project had **no effect on whitebark pine.**

7.1.9 Effect Determination for Mt. Rainier Ptarmigan

Mt. Rainier Ptarmigan do not occur within the action area and the project had **no effect of Mt. Rainier Ptarmigan.**

7.1.10 Effect Determination for Bull Trout

The action **may have affected, and is likely to have adversely affected, bull trout.** Bull trout were captured and handled during fish salvage, which constitutes harassment and possible injury. In-water work including deposition of rock and log material into the

wetted channel could have directly killed or injured fish not removed during isolation and dewatering, although there is no evidence that this occurred. There is a discountable chance that bull trout may have been affected by minor temporary sediment discharge during construction.

7.1.11 Effect Determination for Bull Trout Critical Habitat

The action may have affected, but is not likely to have adversely affected, bull trout critical habitat. The Carbon River is a dynamic river, where channels and pools move from year to year. The emergency stabilization and interim repairs of the Carbon River Road displaced remnant roadway subgrade in the recently washed-out road segment. Construction activities at the site resulted in temporary construction-related increases in turbidity. Downed trees and exposed root wads within and adjacent to the project area were incorporated into the new bank stabilization structure. While there was no net loss in aquatic habitat, woody debris was relocated.

7.1.12 Effect Determination for Puget Sound Chinook Salmon

The action **may have affected, and is likely to have adversely affected PS chinook salmon.** In-water work including deposition of rock and log material into the wetted channel could have directly killed or injured fish during isolation and dewatering, although there is no evidence this occurred. No individuals were captured during the dewatering and fish exclusion effort. There is a discountable chance that PS Chinook salmon may have been affected by minor temporary sediment discharges during construction.

7.1.13 Effect Determination for Puget Sound Chinook Salmon Critical Habitat

Critical habitat for PS Chinook salmon has been designated in the Carbon River up to about RM 22.7, immediately downstream of the project site. Because the potential downstream impacts of the project will be limited to a temporary transmission of turbidity with the potential to affect approximately 0.5 miles downstream of the project, the effect determination is **may affect, not likely to adversely affect, PS Chinook critical habitat.**

7.1.14 Effect Determination for Puget Sound Steelhead Trout

The action **may affect, and is likely to adversely affect PS steelhead trout.** In-water work including deposition of rock and log material into the wetted channel during isolation and dewatering could have directly killed or injured fish, although there is no evidence this occurred. Some rainbow trout were captured during the fish exclusion, but it is unknown if the individuals were PS steelhead trout or residential rainbow trout. There is a discountable chance that PS steelhead trout may have been affected by minor temporary sediment discharges during construction.

7.1.15 Effect Determination for Puget Sound Steelhead Trout Critical Habitat

Critical habitat for PS steelhead has been designated in the Carbon River up to about RM 22.5, about one-half mile downstream of the project site. Because the potential downstream impacts of the project are limited to a temporary increase of turbidity with an estimated effect up to 0.5 miles downstream of the project, the effect determination is **may affect, not likely to adversely affect PS Steelhead critical habitat.**

7.2 Effect Determination for the Proposed Final Reconstruction

7.2.1 Effect Determination for Marbled Murrelet

Surveys indicate the Carbon River valley probably supports the highest density of nesting murrelets of any location within the park. Old-growth forest in the park and the adjacent Wilderness areas provide high quality murrelet nesting habitat that is mostly free from development and the presence of people. However, the Carbon River Road access corridor has a long history of recreational use, and likely supports a higher density of murrelet nest predators.

Considering the level of human disturbance from the roadway in project area, the use of construction equipment below 92 dBA, lack of blasting, and the mitigation of potential effects of the proposed action by limiting the time of day that construction would be permitted, the proposed project **may affect, but is not likely to adversely affect, the MAMU**. Due to this finding of effect, initiation of informal consultation in accordance with Section 7 of the ESA is requested.

7.2.2 Effect Determination for Northern Spotted Owl

Based on NSO surveys conducted since the 1980s, there is low likelihood of NSO nesting within 0.7 miles of the project area, which indicates that potential effect to the species would be insignificant. Although the project crosses through suitable habitat and historic NSO nesting territories, the park contains a large amount of suitable habitat which is available for the species to utilize. Construction will not appreciably change conditions adjacent to the existing roadway, and the duration of effects will be for a single breeding season. The area already contains a relatively active roadway with associated traffic and visual disturbance, and the temporary increase in these disturbances would be discountable.

Considering the current status of the NSO in the project area, and the direct, indirect, and cumulative effects of the proposed action, the proposed project **may affect, but is not likely to adversely affect the NSO**. Due to this finding of effect, initiation of informal consultation in accordance with Section 7 of the ESA is requested.

7.2.3 Effect Determination for Marbled Murrelet and Northern Spotted Owl Critical Habitat

No Critical Habitat for NSO lies within the action area, and the closest is across the Carbon River floodplain to the northeast. Noise disturbance (or any other disturbance) would not be anticipated to affect the Critical Habitat at this distance. Since no critical habitat for NSO occurs in or near the action area, the proposed project has **no effect on Critical Habitat for NSO. Critical Habitat for MAMU occurs adjacent to the park boundary southwest of the project area**. No effects to primary constituent elements of MAMU Critical Habitat will occur from proposed actions, and the proposed project will have **no effect on Critical Habitat for MAMU**.

7.2.4 Effect Determination for Yellow-billed Cuckoo

Cuckoos currently appear to be functionally extinct in Washington and have never been detected in the park. Since the action area is currently lacking in riparian habitat suitable for the species, it is highly unlikely they would occupy the area, and the proposed project will have **no effect on yellow-billed cuckoo**.

7.2.5 Effect Determination for Gray Wolf

Although recent gray wolf survey efforts in this area of the park have not detected the presence of this species, wolf dispersal into the park within the timeframe of the project is possible. Although the project crosses through suitable habitat, the park contains a large amount of suitable habitat available for the species to utilize. Construction within and immediately adjacent to the roadway will not appreciably change conditions to the adjacent habitat. The increase in noise and visual disturbance associated with construction along this active roadway will be temporary.

Given the low likelihood that wolf denning or rendezvous sites would become established within the project area within the project timeframe, and the conservation measures to minimize the chance of adverse impacts to wolves, and considering the direct, indirect, and cumulative effects of the proposed action, the proposed project **may affect, but is not likely to adversely affect, gray wolf**. Due to this finding of effect, initiation of informal consultation in accordance with Section 7 of the ESA is requested.

7.2.6 Effect Determination for North American Wolverine

Although the project crosses through wolverine dispersal habitat, the park contains a large amount of suitable habitat available for the species to utilize, and denning or sustained presence of wolverine in or near the action area would be highly unlikely. Construction within and immediately adjacent to the roadway will not appreciably change conditions to the adjacent habitat. The increase in noise and visual disturbance associated with construction along this active roadway will be temporary.

Given the low likelihood of their presence, and the conservation measures to minimize the chance of adverse impacts to wolverine, and considering the direct, indirect, and cumulative effects of the proposed action, the proposed project **will not jeopardize the continued existence of the species, and may affect, but is not likely to adversely affect, North American Wolverine**. Due to this finding of effect, initiation of informal consultation in accordance with Section 7 of the ESA is requested.

7.2.7 Effect Determination for Monarch Butterfly

The species has never been detected in the park, and its obligate food source is absent from the action area, and it is highly unlikely they would occupy the area. Given the lack of documented presence and lack of habitat within the action area, the proposed project has **no effect on monarch butterfly**.

7.2.8 Effect Determination for Whitebark Pine

Whitebark pine does not occur at the low elevation occupied by the project, and none of the four key stressors for the species would be increased or exacerbated by the project. Given the lack of potential habitat in the project vicinity, the proposed project has **no effect on whitebark pine**.

7.2.9 Effect Determination for Mt. Rainier Ptarmigan

The species is not present in the action area. The proposed action would have **no effect on Mt. Rainier Ptarmigan**.

7.2.10 Effect Determination for Bull Trout

The action **may affect, and is likely to adversely affect, bull trout**. Bull trout may be captured and handled during fish salvage, which constitutes harassment and possible injury. In-water work including deposition of rock and log material into the wetted channel that may directly kill or injure fish. There is a discountable chance that bull trout may be insignificantly affected by minor temporary sediment discharge during construction.

7.2.11 Effect Determination for Bull Trout Critical Habitat

The action **may affect, but is not likely to adversely affect, bull trout critical habitat**. The reconstruction of the Carbon River Road will displace remnant roadway subgrade in the recently washed-out road segment adjacent to the interim repairs and will not remove or alter pre-existing aquatic habitat. Therefore, the project will have no significant effect on the primary constituent elements of designated bull trout critical habitat. Potential sedimentation effects to downstream critical habitat will have an insignificant impact on primary constituent elements.

7.2.12 Effect Determination for Puget Sound Chinook Salmon

The action **may affect, and is likely to adversely affect, PS chinook salmon**. In-water work including deposition of rock and log material into the wetted channel may directly kill or injure fish. There is a discountable chance that PS chinook salmon may be insignificantly affected by sediment discharge during construction or by operational stormwater runoff from the minor amount of reconstructed pavement.

7.2.13 Effect Determination for Puget Sound Chinook Salmon Critical Habitat

Critical habitat for PS Chinook salmon has been designated in the Carbon River up to about RM 22.7, immediately downstream of the project site. Because the potential downstream impacts of the project will be limited to a temporary transmission of turbidity with the potential to affect approximately 0.5 miles downstream of the project, the effect determination is **may affect, not likely to adversely affect, PS Chinook critical habitat**.

7.2.14 Effect Determination for Puget Sound Steelhead Trout

The action **may affect, and is likely to adversely affect, PS steelhead trout**. In-water work including deposition of rock and log material into the wetted channel could directly kill or injure fish. There is a discountable chance that PS steelhead trout may be insignificantly affected by sediment discharge during construction or by operational stormwater runoff from the minor amount of reconstructed pavement.

7.2.15 Effect Determination for Puget Sound Steelhead Trout Critical Habitat

Critical habitat for PS steelhead has been designated in the Carbon River up to about RM 22.5, about one-half mile downstream of the project site. Because the potential downstream effects of the project are expected to be limited to a temporary increase in turbidity with the potential to affect approximately 0.5 miles downstream of the project, the effect determination is **may affect, not likely to adversely affect, PS steelhead trout**.

7.3 Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires federal agencies to

consult with NOAA Fisheries on activities that may adversely affect essential fish habitat (EFH). The objective of this EFH assessment is to determine whether or not the proposed actions “may adversely affect” designated EFH for relevant commercially, federally managed fisheries species within the proposed action area.

Adverse effects include the direct or indirect physical, chemical, or biological alternations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH (50 CFR 600.810). Mandatory contents of an EFH Assessment are: a description of the proposed action; an analysis of the potential adverse effects of that action on EFH and the managed species; the Federal action agency’s conclusions regarding the effects of the action on EFH; and proposed mitigation, if applicable (50 CFR 600.920(e)).

Identification of Essential Fish Habitat in the Project Action Area

EFH has been designated to protect waters and substrates necessary for fish spawning, breeding, feeding, or growth to maturity (MSA § 3(10)). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable artificial barriers, and longstanding, naturally impassable barriers. The geographic extent of freshwater EFH is specifically inclusive of all aquatic habitats within entire watersheds.

For this action, the Puyallup River basin (USGS hydrologic unit number 17110014) is identified as EFH for Chinook salmon, coho salmon, and pink salmon (*O. gorbuscha*).

Chinook salmon

As described in the previous sections, the number of PS Chinook that spawn in the upper Carbon River within the park is unknown but is expected to be very low given the depressed population status. No PS Chinook have been documented in the park, but surveys for these fish in the park have been limited.

Coho salmon

Coho salmon are distributed throughout all reaches of the Puyallup River basin that are accessible to anadromous fish. Juvenile coho were observed by park fisheries staff in June Creek in 2008. It is reasonable that coho could occur within the project area.

Pink salmon

The distribution of pink salmon in the Puyallup River basin is limited primarily to the mainstem Puyallup River; the lower Carbon and White Rivers; South Prairie Creek and Fennel Creek. In the Carbon River, pink salmon have not been documented above RM 8 (Marks et al. 2009), well below the project action area. Therefore there would be no effect to EFH for pink salmon.

Description of the Proposed Action

The description of the proposed action and the associated conservation measures designed to minimize impacts to listed fish species and critical habitats are described in the previous sections of this document.

Potential Adverse Effects of the Proposed Project

Streambank disturbance and short term increases in turbidity during project construction

The proposed permanent repairs to the damaged section of road and stabilization of the June Creek culvert would require additional disturbance within the project area during the installation of additional large woody material, root wads, and rip rap used as ballast. Temporary dewatering and fish exclusion would be required to complete this work and would be accomplished during the in-water work window. Increased turbidity during construction is expected to result from this work and may affect up to approximately 0.5 river miles below the project. These effects would be limited in physical scope and of short duration. No new long-term adverse effects to EFH are expected. Increased turbidity during construction is expected to be insignificant given the high turbidity levels present in the Carbon River.

Essential Fish Habitat Conservation Measures and Effect Determination

The incorporation of woody material rather than a direct replacement-in-kind of the previous large rip-rap is intended to help avoid the potential for new adverse effects to fish habitat associated with the existing Carbon River Road. Additional conservation measures are described in earlier sections of this document.

Considering the current status of Chinook, Coho, and Pink salmon in the project area, and the effects of the proposed action, we conclude that the project may affect, but is not likely to adversely affect EFH. As a result of the project design and timing, we conclude there will be only minor impacts to EFH.

Chapter 8 - Preparers and Contributors

Phil Rickus, DEA Ecologist, and John Macklin, DEA Biologist prepared the draft report. Ethan Rosenthal, DEA Biologist completed quality review. Further review, species information, analysis and quality review was provided by NPS representatives: Rebecca Lofgren, Aquatic Ecologist; Matt Larson, Fish Biologist; Beth Fallon, Plant Ecologist; Teri Tucker, Planning & Compliance Lead; Tara Chestnut, Wildlife Ecologist; and Julie Hover, Outdoor Recreation Specialist. Sara Gilbert, DEA Graphics Specialist, prepared report figures. Corie Peters, DEA Administrative Assistant, prepared document formatting and review of the DEA Draft.

Chapter 9 - Bibliography

- Bart, J., and Earnest. 1992. Suitable habitat for Northern Spotted Owls: an update. Recovery plan for the Northern Spotted Owl – final draft. U.S. Department of the Interior. V. 2, Appendix B, pp. 17-54.
- Cascades Carnivore Project. 2023. Personal email communication with Jocelyn Akins, PhD, Conservation Director, Cascades Carnivore Project, in March and April, 2023.
- Chestnut, T., Bagnall, K. King, W., Lofgren, R., Hover, J., Montgomery, J., Wagner, M. 2021. Biological assessment for Re-establishing Tread on 25 Yards of the Wonderland Trail in the Carbon River Corridor.
- Courtney, S.P., J.A. Blakesley, R.E. Bigley, M.L. Cody, J.P. Dumbacher, R.C. Fleischer, A.B. Franklin, J.F. Franklin, R.J. Gutiérrez, J.M. Marzluff, L. Sztukowski. 2004. Scientific evaluation of the status of the Northern Spotted Owl. Sustainable Ecosystems Institute. Portland, Oregon. September 2004.
- Federal Highway Administration 2006. Federal Highway Administration Construction Noise Handbook (FHWA-HEP-06-015). Available online at: https://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/
- Federal Register. 1986. Interagency cooperation- Endangered Species Act of 1973, as amended. Volume 51. No 106. Final Rule. pp. 19957-19963.
- Forsman, E.D. et al. 2002 and multiple years. Unpublished. Annual reports from Northern Spotted Owl demography study areas. On file at the USFWS, Oregon State Office.
- Forsman, E.D., E.C. Meslow, and H.M. Wight. 1984. Distribution and biology of the spotted owl in Oregon. *Wildlife Monographs* 87:1-64.
- Forsman, E.D., R.G. Anthony, J.A. Reid, P.J. Loschl, S.G. Sovern, M. Taylor, B.L. Biswell, A. Ellingson, E.C. Meslow, G.S. Miller, K.A. Swindle, J.A. Thrailkill, F.F. Wagner, and D. E. Seaman. 2002. Natal and breeding dispersal of Northern Spotted Owls. *Wildlife Monographs* 149:1-35.
- Frisch, A.J., and T.A. Anderson. 2000. The response of coral trout (*Plectropomus leopardus*) to capture, handling and transport and shallow water stress. *Fish Physiology and Biochemistry* 23(1):23-24.
- Hamer, T.E., S.K. Nelson, and T.I. Mohagen II. 2003. Nesting chronology of the marbled murrelet in North America. Hamer Environmental, Mount Vernon, WA.
- Healey, M.C. 1991. Life history of Chinook salmon (*Oncorhynchus tshawytscha*). Pages 311- 393 in C. Groot and L. Margolis, editors. *Life History of Pacific Salmon*. University of British Columbia Press, Vancouver, BC.
- Hébert, P. N., and R. T. Golightly. 2006. Movements, nesting, and response to anthropogenic disturbance of Marbled Murrelets (*Brachyramphus marmoratus*) in Redwood National and State Parks, California. Unpublished report, Department of Wildlife, Humboldt State University, Arcata, California and California Department of Fish and Game Report 2006- 02, Sacramento, California.
- Kelsch, S.W., and B. Shields. 1996. Care and handling of sampled organisms. Pages 121-155 (Chapter 5) in Murphy, B., and D. Willis (eds.). *Fisheries Techniques*, 2nd Edition.
- Kerwin, J. 1999. Salmon habitat limiting factors report for the Puyallup River basin (Water Resource Inventory Area 10). Washington Conservation Commission, Olympia, Washington. July 1999. 123 pp.

- Marks, E.L., R.C. Ladley, B.E. Smith, A.G. Berger, and K. Williamson. 2019. Puyallup Tribal Fisheries Annual Salmon, Steelhead and Bull Trout Report: Puyallup/White River Watershed--Water Resource Inventory Area 10, 2018-2019. Puyallup Tribal Fisheries, Puyallup, WA.
- Long, L., and C.J. Ralph. 1998. Regulation and observation of human disturbance near nesting marbled murrelets. USDA Forest Service, Pacific Southwest Research Station, Redwood Sciences Laboratory, Arcata, California.
- Marks, E.L., R.C. Ladley, B.E. Smith, A.G. Berger, and K. Williamson. 2019. Puyallup Tribal Fisheries Annual Salmon, Steelhead and Bull Trout Report: Puyallup/White River Watershed--Water Resource Inventory Area 10, 2018-2019. Puyallup Tribal Fisheries, Puyallup, WA.
- Moir, W.H., F.D. Hobson, M. Hemstrom, and J.F. Franklin. 1977. Forest Ecosystems of Mount Rainier National Park. USDI Mount Rainier National Park.
- National Marine Fisheries Service (NMFS) 1996. Making Endangered Species Act determinations of effect for individual or grouped actions at the watershed scale. Unpublished agency document prepared by the National Marine Fisheries Service Environmental and Technical Services Division Habitat Conservation Program, Portland, OR. 29 pp.
- Ramm-Granberg, T., F. J. Rocchio, C. Copass, R. Brunner, and E. Nielsen. 2021. Revised vegetation classification for Mount Rainier, North Cascades, and Olympic national parks: Project summary report. Natural Resource Report NPS/NCCN/NRR—2021/2225. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/nrr-2284511>.
- NMFS 2005. Endangered and threatened species; designation of critical habitat for 12 Evolutionarily Significant Units of west coast salmon and steelhead in Washington, Oregon, and Idaho; final rule. Federal Register / Vol. 70, No. 170 / Friday, September 2, 2005: 52630-52858.
- NMFS 2007. Endangered and threatened species: Final listing determination for Puget Sound steelhead. Federal Register / Vol. 72, No. 91 / Friday, May 11, 2007: 26722-26735.
- NMFS 2023. Essential Fish Habitat Mapper https://www.habitat.noaa.gov/apps/efhmapper/?page=page_4
- National Park Service (NPS) 2022. Mount Rainier National Park, Carbon River Road Repair Fish Mitigation Measures. November 2022, unpublished.
- NPS 2022a. Mount Rainer National Park, Carbon River Road Joint Aquatic Resource Permit Application. Unpublished preliminary draft.
- NPS 2022b. COR/Inspector Daily Report logs. Reports by Zack Martin.
- National Park Service (NPS) 2021. Personal Communication with Teri Tucker, Planning & Compliance Lead, and Julie Hover, Outdoor Recreation Planner, Mount Rainier National Park, November 5, 2021.
- NPS 2019. Draft Mount Rainier National Park vegetation map. Unpublished data. Mount Rainier National Park, Ashford, Washington.
- NPS 2012. Marbled Murrelet survey effort and detections at Mount Rainier National Park (1991-2012). Unpublished report provided by Mount Rainier National Park. Paper data sheets are filed in Longmire building L238. No electronic data or report located.
- NPS 2009. Mount Rainier National Park marbled murrelet 2009 progress report. Draft report prepared by J. Dhundale. August 2009. National Park Service Mount Rainier National Park, Ashford, WA. 23 pp.

- Nelson, S.K. 1997. Marbled Murrelet (*Brachyramphus marmoratus*). In: (A. Poole and F. Gill, eds.). *Birds of North America*, No. 276. The Academy of Natural Sciences, Philadelphia, PA, and the American Ornithologists Union, Washington DC.
- Nelson, S.K., and T.E. Hamer. 1995. Nesting biology and behavior of the Marbled Murrelet. Pages 57-67 in C.J. Ralph, G.L. Hunt, M.G. Raphael, and J.F. Piatt (eds.). *Ecology and conservation of the Marbled Murrelet*. General Technical Report. PSW-GTW-152. Pacific Southwest Experimental Station, U.S. Forest Service, Albany, CA. 420 pp.
- Newcombe, C.P. and J.O.T. Jensen. 1996. Channel suspended sediment and fisheries: a synthesis for quantitative assessment of risk and impact. *North American Journal of Fisheries Management* 16:693-727.
- Raphael, M.G., G.M. Gelleher, M.H. Huff, S.L. Miller, S.K. Nelson, and R. Young. 2006. Spatially- explicit estimates of potential nesting habitat for the Marbled Murrelet. Chapter 5 in: *Marbled Murrelet Effectiveness Monitoring Team; M. Huff, Tech. Coord. Northwest Forest Plan – The first 10 years (1994- 2003): Status and trend of populations and nesting habitat for the Marbled Murrelet*. Gen. Tech. Report. PNW-GTR-650. USDA Forest Service, Pacific Northwest Research Station, Portland, Oregon.
- Singer, S.W., N.L. Naslund, S.A. Singer, and C.J. Ralph. 1991. Discovery and observations of two tree nests of the marbled murrelet. *Condor* 93:330-339.
- Thomas, J.W., E.D. Forsman, J.B. Lint, E.C. Meslow, B.R. Noon, and J. Verner. 1990. A conservation strategy for the Northern Spotted Owl. Interagency Scientific Committee to address the conservation of the Northern Spotted Owl. USDA Forest Service, USDI Bureau of Land Management, USDI Fish and Wildlife Service, and USDI National Park Service. Portland, Oregon. 458 pp.
- USFS 1998. Carbon River watershed analysis. Mt. Baker-Snoqualmie National Forest. White River Ranger District. USDA Forest Service Pacific Northwest Region. Mountlake Terrace, WA. September 1998.
- U.S. Fish and Wildlife Service (USFWS). 1990. Procedures leading to the assessment of incidental take of spotted owls. Rescinded guidelines 1990. USFWS, Portland, OR.
- USFWS 1996. Endangered and threatened wildlife and plants; determination of critical habitat for the marbled murrelet; final rule. *Federal Register* Vol. 61:26256-26320. May 14, 1996.
- USFWS 1999. Endangered and threatened wildlife and plants; determination of threatened status for bull trout in the coterminous United States. *Federal Register* / Vol. 64, No. 210 / Monday, November 1, 1999: 5891058936.
- USFWS 2003. Biological Opinion and letter of concurrence for effects to bald eagles, marbled murrelets, northern spotted owls, bull trout, and designated critical habitat for marbled murrelets and northern spotted owls from Olympic National Forest program of activities for August 5, 2003, to December 31, 2008. FWS Reference 1-3-03-F-0833. U.S. Fish and Wildlife Service, Lacey, Washington.
- USFWS 2004. Draft recovery plan for the Coastal-Puget Sound Distinct Population Segment of Bull Trout (*Salvelinus confluentus*). Volume I (of II). Puget Sound Management Unit. U.S. Fish and Wildlife Service, Portland, Oregon. 389 + xvii pp.
- USFWS 2006. Estimating the Effects of Auditory and Visual Disturbance to Northern Spotted Owls and Marbled Murrelets in Northwestern California. Arcata Fish and Wildlife Office. July 26, 2006.

- USFWS, 2008. Final rule: Revised Designation of Critical Habitat for the Northern Spotted Owl, August 13, 2008. (50 CFR Part 17 [FWS-R1-ES-2008-0051; 92210-1117-0000- FY08-B4] RIN 1018-AU37). Available online at: <http://www.fws.gov/pacific/ecoservices/nsofch.html>
- USFWS, 2018. Species status assessment report for the North American wolverine (*Gulo gulo luscus*). Version 1.2. March 2018. U.S. Fish and Wildlife Service, Mountain-Prairie Region, Lakewood, CO.
- USFWS, 2020. Monarch (*Danaus plexippus*) Species Status Assessment Report. V2.1 96 pp + appendices.
- USFWS, 2022. Recovery outline for whitebark pine. Wyoming Ecological Services Field Office, Cheyenne, Wyoming. 21pp.
- USFWS, 2023. The Information, Planning, and Consultation System (IPaC) Database System results for the Carbon River Road Emergency and Final Reconstruction Project. February 22, 2023. Available online at: <https://www.fws.gov/ipac/index.html>
- Washington Department of Ecology (WDOE), 2023. Online Water Quality Atlas of 303d listings. <https://apps.ecology.wa.gov/waterqualityatlas/wqa/map?CustomMap=y&BBox=-13608936,5929102,-13555051,5966712&RT=0&Layers=27&Filters=y,n,n,n,n,n&F1.4=n,n,n,n,y>
- Washington State Department of Natural Resources (WDNR) 1997. Permanent Rules for the Northern Spotted Owl (1996) and the Marbled Murrelet (1997). WDNR Forest Practices Board, Olympia, Washington.
- Washington State Department of Transportation (WSDOT), 2013. Biological Assessment Preparation Advanced Training Manual Version 02-2013. Available online at: http://www.wsdot.wa.gov/NR/rdonlyres/589E3BE5-C468-4334-B0A0-52AE10911336/0/BA_ManualChapter13.pdf

Appendix A — Project Figures

Appendix B — Consultation History

Carbon Road Interim Repairs & ERFO permanent repairs

The NPS coordinates regularly with the U.S. Fish & Wildlife Service (USFWS) regarding current and proposed projects that the agencies will engage in Section 7 consultation pursuant to the Endangered Species Act. Staff from Mount Rainier National Park held a project coordination call with staff from USFWS on November 4, 2021, to provide an update on park projects, including the proposed permanent repairs to the section of the Carbon River Road that was damaged in 2020 by storm activity. NPS reached out to USFWS and NOAA Fisheries via email on November 22, 2021 following additional damage to the Carbon River Road in the same location as a result of a recent storm event.

The NPS hosted an interagency call on January 6, 2022, to share information with the USFWS, NOAA Fisheries, the State Historic Preservation Office (SHPO) and the U.S. Army Corps of Engineers (ACOE) regarding the 2021 storm damage and emergency repairs proposed for February 2021. NPS provided notes from the call to meeting participants and requested emergency consultation and conservation recommendations from the USFWS and NOAA Fisheries. USFWS provided initial recommendations via email on 1/14/2022 and NOAA Fisheries provided additional conservation recommendations via email on 1/21/2022.

When it became clear that emergency repairs would be delayed, NPS reached out on 3/28/2022 to USFWS and NOAA Fisheries via telephone and email to provide an update regarding the project timing and request any changes to the previously provided conservation recommendations. No additional measures were provided at this time.

Tom Faughnan from USFWS met with NPS staff at the location of the road washout on July 14, 2022. On 8/04/2022 the NPS emailed USFWS and NOAA Fisheries to provide notice that the emergency repairs were scheduled to begin that month. USFWS responded with updated conservation recommendations on 8/11/2022. On 10/05/2022 the NPS emailed the USFWS to provide notice that the emergency repairs were complete and that we would request formal consultation for the proposed permanent repairs to the Carbon River Road and would include the emergency interim repairs within the same biological assessment.

On 2/15/2023 the NPS provided an initial draft BA outline and preliminary effects determinations to USFWS for the upcoming BA. This was also discussed during a project update call on 3/14/2023, which was also attended by Holly Weiss-Racine (FHWA).

- **11/04/2021** Call with USFWS to provide project updates, including proposed repairs to Carbon River Road damaged by 2020 storm activity.
- **11/22/2021** Email to USFWS and NOAA regarding new storm damage to Carbon River Road in same location as an earlier 2020 partial road washout with early notice that the park was preparing emergency response plans and would be requesting emergency consultation.

- **1/06/2022** Call with USFWS, NOAA, FHWA, USACE, SHPO re: storm damage to Carbon River Road and proposed emergency interim bank stabilization in advance of permanent repairs.
- **1/14/2022** Email from USFWS provided initial conservation recommendations
- **1/21/2022** Email from David Price, NOAA providing conservation recommendations
- **3/28/2022** Call from NPS to USFWS and NOAA followed up by email notifying that proposed emergency repairs were delayed and that work was proposed to occur during summer. Request for any update/change to conservation recommendations.
- **7/14/2022** Site visit with Tom F to view Carbon River Road damaged section where proposed interim stabilization work is proposed.
- **8/04/2022** Email to Tom F. & Forrest Carpenter (NOAA) notifying that interim repairs to Carbon Road are scheduled to begin that month. Tom F. replied with updated conservation recommendations on **8/11/2022**.
- **10/05/2022** Email to Tom F. notifying that interim road repairs were complete (forwarded email from Zack Martin).
- **2/15/2023** Email to Tom F. with Carbon BA outline and draft effects call
- **3/14/2023** MRNP project coordination call. Notes: **Carbon River Road Repairs**
 - Formal consultation, Draft BA expected in mid-April (Holly to confirm/update). BA will include emergency repairs and upcoming permanent repairs. – *discussed preliminary effects calls. NLAA for northern spotted owl, LAA for marbled murrelet, NLAA for wolf, NE for monarch and Whitebark pine, NJ/NLAA for wolverine, LAA for bull trout and bull trout CH. Seeking input re: NLAA or NE for yellow-billed cuckoo based on presence of suitable habitat.* Tom confirmed that if the County is consulting on part of Carbon River Road, and it crosses onto NPS land, the Park will not need to consult on this. The USFWS will work through that when the BA comes in (County has not yet submitted the BA).
- **5/01/2023** NPS provided copy of Draft Carbon River Road BA to Tom F. for early review.

Appendix C – Emergency Interim (2022) and Proposed Final Project Plans