

Proposed Habitat Conservation Plan
and
Issuance of an Endangered Species Section 10(a)(1)(B) Permit
for the Incidental Take of the Grizzly Bear (*Ursus arctos horribilis*)
Related to BNSF Operations Within, and Adjacent to, the Northern Continental Divide
Ecosystem Population of Grizzly Bears
in Lincoln, Flathead, Glacier, and Toole Counties, Montana

June 2020

Title for Proposed Action: Implementation of Habitat Conservation Plan for the Threatened Grizzly Bear (*Ursus arctos horribilis*) Related to BNSF Operations on Approximately 206 miles of Railroad Right-of-Way in Lincoln, Flathead, Glacier, and Toole Counties, Montana.

Unit of Fish and Wildlife Service Proposing Action: U.S. Fish and Wildlife Service, Montana Ecological Services Office, 585 Shepard Way, Suite 1, Helena, Montana 59601

Legal Mandate for Proposed Action: Endangered Species Act of 1973, as amended, section 10(a)(1)(B), as implemented by 50 CFR 17.22 for the issuance of permits for scientific purposes, enhancement of propagation or survival, or for incidental taking.

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ACRONYMS AND ABBREVIATIONS

AAR - Association of American Railroads	MFWP - Montana Fish, Wildlife and Parks
Amtrak – National Railroad Passenger Corporation	MN – Minimization Measures
BE - Bitterroot Ecosystem	MOLF - Montana Outdoor Legacy Foundation
BNSF - BNSF Railway Company	MOU – Memorandum of Understanding
BNESA - Burlington Northern Environmental Stewardship Area	MPH – Miles per hour
CFR - Code of Federal Regulations	MT – Mitigation Measures
CTC - Centralized Traffic Control	NCDE - Northern Continental Divide Grizzly Bear Ecosystem
CYE - Cabinet-Yaak Ecosystem	NCE - North Cascades Ecosystem
CWR - continuously welded rail	NFS - National Forest System
DCA - Demographic Connectivity Areas	NPS - National Park Service
DMA – Demographic Monitoring Area	PCA - Primary Conservation Area
DNRC - Department of Natural Resources and Conservation	Permit - Incidental Take Permit
EP – Environmental Policy	PTC - Positive Train Control
ESA - Endangered Species Act	Recovery Plan - Grizzly Bear Recovery Plan
FIFRA - Federal Insecticide Fungicide and Rodenticide Act	SE - Selkirk Ecosystem
FRA - Federal Railroad Administration	Stracnet – Strategic Rail Corridor Network
GNESA - Great Northern Environmental Stewardship Area	USC - United States Code
GYE - Greater Yellowstone Ecosystem	USDA – United States Department of Agriculture
HCP - Habitat Conservation Plan	USFWS - United States Fish and Wildlife Service (Service)
IGBC - Interagency Grizzly Bear Committee	USFS - United States Forest Service
MDT – Montana Department of Transportation	

1.0 INTRODUCTION

The BNSF Railway Company (BNSF) is applying to the United States Fish and Wildlife Service (USFWS, Service) for an Incidental Take Permit (Permit) pursuant to Section 10 of the Endangered Species Act (ESA). Specifically, BNSF seeks authorization for the incidental taking of grizzly bears (*Ursus arctos horribilis*), which are listed as threatened under the ESA. As a component of the application, BNSF has developed this Grizzly Bear Habitat Conservation Plan (HCP) related to activities by the BNSF Railway and other railways operating on BNSF's track within approximately 206 miles of railroad right-of-way within, and adjacent to, the Northern Continental Divide Ecosystem (NCDE) in Lincoln, Flathead, Glacier, and Toole Counties, Montana. If granted, the Permit will authorize take of grizzly bears for a period of seven years, incidental to the otherwise lawful railway operations, maintenance and construction activities ("BNSF Operations") within the Permit Area.

The BNSF Railway within the Permit Area was originally a portion of the Great Northern Railway. The Great Northern line from Minneapolis to Seattle was completed in 1893. It ran over Marias Pass and along the Middle Fork of the Flathead River. The rail line has been in continuous use since 1893 and is a vital link for the movement of agricultural products, raw materials, and manufactured goods between the Midwest and the Pacific Coast. In addition, it helped to open this part of the country to tourism (e.g., Glacier National Park was created with the help of the Great Northern Railway), agriculture, and industry. Through a series of acquisitions and mergers over many years, the Great Northern Railway eventually became part of BNSF. Rail traffic through the Permit Area fluctuates. Approximately 29 - 34 freight trains and 2 passenger trains (operated by Amtrak) currently pass through the Permit Area every 24 hours.

1.1 History of BNSF's Partnership in Grizzly Bear Management in the NCDE

BNSF Operations are one cause of accidental grizzly bear mortality in the NCDE. The rail lines, built in the first half of the 20th century, are in grizzly bear habitat. Incidental take occurs because trains collide with grizzly bears on railroad tracks.

In 1991, in response to concerns about grizzly bear mortality due to railroad operations in the area between Marias Pass and Whitefish, BNSF entered into an agreement with federal, state, tribal, and local agencies, conservation groups, and industry representatives to form the Burlington Northern Environmental Stewardship Area (BNESA). The organization's name was later changed to the Great Northern Environmental Stewardship Area (GNESA). In addition to BNSF, GNESA members have included representatives from the following agencies, groups, and companies: Flathead National Forest, Glacier National Park, Montana Fish Wildlife and Parks (MFWP), Flathead Land Trust, Montana Department of Natural Resources and Conservation (DNRC), Montana Department of Transportation (MDT), citizen members, the Great Bear Foundation, Glacier area rafting companies, Lewis and Clark National Forest, the Blackfeet Nation, Flathead County, Glacier County, The Nature Conservancy, the Service, NorthWestern Energy Corporation, Flathead Electric Cooperative, Glacier Electric Cooperative, Qwest Communication, and National Parks Conservation Association.

GNESA has fostered a positive working relationship between industry, government, and conservation interests, to implement grizzly bear programs in the area between Marias Pass and Whitefish and on

adjacent lands resulting in reduced grizzly bear mortalities. In 2008, this unique public/private partnership model was recognized by the U.S. Department of the Interior with a Cooperative Conservation Award commending the organization for achieving “excellence in conservation through collaboration and partnerships.”

GNESA partnered with BNSF to identify programs and measures that could be implemented to minimize bear-train conflicts in the area between Marias Pass and Whitefish, primarily the identification and removal of potential attractants from the railroad right-of-way, installation of deterrents in physically constrained portions of the railroad right-of-way, a rapid response program for grain spills, and employee education. BNSF also provided funding to GNESA to facilitate GNESA financial support of various bear education programs, bear-related projects such as waste management and funding bear manager positions, and general habitat improvement projects including projects relating to the management of noxious weeds. In addition to its work with GNESA, BNSF has provided funding to support conservation efforts in the Plan Area (as defined below) for several years through the National Fish & Wildlife Foundation. Bear Managers working on the GNESA Technical Committee agree that BNSF’s efforts have minimized grizzly bear take incidental to BNSF Operations to the maximum extent practicable. Nevertheless, take of grizzly bears incidental to BNSF Operations still occurs in portions of the Permit Area. Because BNSF Operations are conducted on property it acquired via patents from the State of Montana or the United States or lands acquired by deed from a third party and there is no other practicable means to eliminate the remaining incidental take, BNSF elected to pursue an HCP and Permit under Section 10 of the ESA.

1.2 Development of the HCP

To aid in the development of the HCP, a GNESA technical committee was formed. The committee consisted of bear managers from the state, federal, and tribal agencies that participated in GNESA from its onset. These members are the most knowledgeable biologists actively managing the NCDE population of grizzly bears.

1.2.1 The Role of GNESA in HCP Development

Since 1991, GNESA has successfully coordinated the efforts between BNSF and federal, state, and tribal agencies to reduce the potential for train-caused mortality and human-caused mortality of grizzly bears in the railway right-of-way. GNESA has convened meetings to discuss grizzly bear recovery issues, has participated in meetings convened by the Service and others to discuss grizzly bear recovery issues, and has helped BNSF and the Service bring the HCP technical committee together to formulate strategies for minimizing grizzly bear mortality and mitigating take of grizzly bears incidental to BNSF Operations.

GNESA convened a technical committee whose members varied over the years, but which always included at least one representative of the MFWP grizzly bear managers, National Park Service (NPS), Blackfoot Nation, United States Forest Service (USFS), and BNSF, with the Service providing an advisory role through GNESA.

As described in Section 1.1, the Service and the GNESA technical committee worked with BNSF to reduce grizzly bear train strikes and these measures were ultimately incorporated into this HCP. The technical committee also contributed to the development of the HCP’s mitigation program and has

morphed into the HCP technical committee. The HCP technical committee evaluated the factors that contribute to human-caused grizzly bear mortality, assessed strategies to help reduce human-caused grizzly bear mortality in the NCDE, and proposed specific solutions which could be funded by BNSF to offset the effects of its incidental take on the grizzly bear population in the NCDE and the Permit Area. The HCP technical committee was instrumental in developing and validating the assumptions necessary to analyze the level of incidental take authorized by the Permit and to recommend most of the measures for minimizing and mitigating take of grizzly bear incidental to BNSF Operations.

1.2.2 The Role of GNESEA and the MOLF in HCP Administration

GNESEA has been reorganized as an advisory committee within the Montana Outdoor Legacy Foundation (MOLF). MOLF is the foundation arm of MFWP and supports a variety of outdoor experiences, access, wildlife projects, and other non-profit partnerships. The types of projects MOLF typically funds include wildlife/wildlands management and care, education, and land access projects.

MOLF/GNESEA will serve as the clearinghouse for the distribution of the HCP mitigation funds to offset incidental take for this HCP. The HCP includes funds to compensate MOLF/GNESEA for HCP administration, monitoring, reporting, coordination, and supporting the HCP technical committee.

The roles and responsibilities of BNSF, the Service, MOLF/GNESEA, the Blackfeet Fish & Wildlife Office, Amtrak and the HCP technical committee are described in the Implementing Agreement contained in Appendix A. Briefly, MOLF/GNESEA is expected to serve in an advisory capacity to BNSF; administer the HCP mitigation funds and, if triggered, reserve funds; support implementation and monitoring of the HCP by preparing annual summaries of data collected by the HCP technical committee (*e.g.*, representatives of MFWP and the Blackfeet Nation) and report how the funds were distributed and the conflict mitigation actions that were implemented. The Service will maintain an advisory role.

1.2.3 The Role of HCP Technical Committee

Upon issuance of the HCP, an HCP technical committee will be formed comprised of at minimum, one representative from each of the following: BNSF, MFWP, Amtrak, and the Blackfeet Nation. An offer to participate will be extended to Glacier National Park and the USFS. The Service will maintain an advisory role.

The HCP technical committee will serve the following role in implementation and administration of the HCP:

1. The HCP technical committee will serve as a forum for communication of HCP-related issues and conflict mitigation actions.
2. The HCP technical committee will meet at least once a year (meetings to be convened by MOLF/GNESEA) to review the circumstances surrounding any reported train strikes in the Permit Area; to assess grizzly bear management issues in the Permit Area and Plan Area; to report on conflict mitigation actions implemented in the Plan Area through HCP mitigation funds; to recommend conflict mitigation actions and programs for funding for the following year; and to evaluate conflict mitigation actions implemented by HCP funds.

3. The HCP technical committee will coordinate all public statements about train-related grizzly bear incidental take in the Permit Area.
4. The HCP technical committee members will provide annual reports to MOLFG/NEESA regarding the progress of implementation of the HCP mitigation program and conflict mitigation actions.
5. The HCP technical committee will provide recommendations pertaining to adaptive management under the HCP. After review of recommendations submitted by the HCP technical committee, MOLFG/NEESA will make recommendations to BNSF for consideration within the adaptive management framework.
6. The HCP technical committee will coordinate with other agencies on opportunities and applications for grants that advance the purposes of the HCP, including section 6 grants through the Service's HCP Land Acquisition Program.

1.3 Public Scoping During Development of the HCP

When BNSF decided to pursue a Permit for incidental take of grizzly bears, the Service and BNSF initiated public scoping. The scoping period extended between February 11, 2004 and April 15, 2004. A press release was prepared and distributed to a variety of Montana media, including several local newspapers and public service announcements on local radio stations.

Public scoping meetings were held in Kalispell, Montana on February 10; in Essex, Montana on February 11; and in Browning, Montana on February 12, 2004. The scoping meetings were structured in an open house format. Through the scoping notice and the scoping meetings, BNSF and the Service invited public comment on the minimization and mitigation measures proposed at that time and on issues of concern to be considered in the National Environmental Policy Act compliance process. A scoping fact sheet encouraged participants to provide input on the following topics:

1. The overall scope of the project.
2. Identification of railroad operation and maintenance activities that may affect grizzly bears in the railway corridor.
3. Suggestions to reduce the effects of railroad operation and maintenance on grizzly bears.
4. Perspectives regarding other activities in the railway corridor that may contribute to train-caused and human-caused mortality of grizzly bears.
5. Suggestions to reduce the risk of train-caused and human-caused mortality of grizzly bears.
6. Specific information sources that would strengthen the analysis of take in support of the HCP.

A total of 15 people attended the three public scoping meetings. Letters were received from Glacier National Park, MFWP, The Great Bear Foundation, and from two private individuals. Defenders of Wildlife and four private individuals submitted comments via email. A summary of scoping comments is contained in the *Scoping Report for the BNSF Railway Grizzly Bear HCP* (USFWS 2004).

The comments largely supported the measures already included in the draft HCP at the time. The public suggested BNSF also examine its ability to limit train speeds, modify its containers to eliminate spills, attach high frequency sound warning devices to deter wildlife, fence the corridor, and incorporate crossing structures. The public identified potential measures purported to reduce incidental take in the Permit Area but did not identify concerns relative to the effects of implementing a draft HCP on other aspects of the human or natural environment.

BNSF and the Service recognize that considerable time has passed since the initial scoping. They also recognize that: (1) the grizzly bear population has grown and is increasing (Kendall et al. 2009, Mace et al. 2012, Costello et al. 2016, C.M. Costello 2019, *in litt.*), (2) grizzly bears are ranging far beyond the original NCDE recovery zone boundaries, (3) train-caused mortality attributed to attractants in the right-of-way has decreased, and (4) during the time that 1 through 3 has occurred, BNSF has voluntarily implemented most of the avoidance and minimization measures described in Section 5.3 of this HCP in the Corridor. During the preparation of this HCP, the status of the grizzly bear population and the measures implemented throughout the NCDE have been a topic of conversations at Interagency Grizzly Bear Committee (IGBC) and NCDE subcommittee meetings (Meeting summaries are available at <http://igbconline.org/n-continental-divide-subcommitte/>). Through these meetings, the public has had, and continues to have, opportunities to provide input into grizzly bear mortality issues, including the measures BNSF is voluntarily implementing in the proposed Permit Area.

Once the Service receives BNSF's Permit Application and Final HCP, they will publish a notice of availability in the Federal Register providing an opportunity for public comment prior to any decision on whether to issue a permit for this HCP.

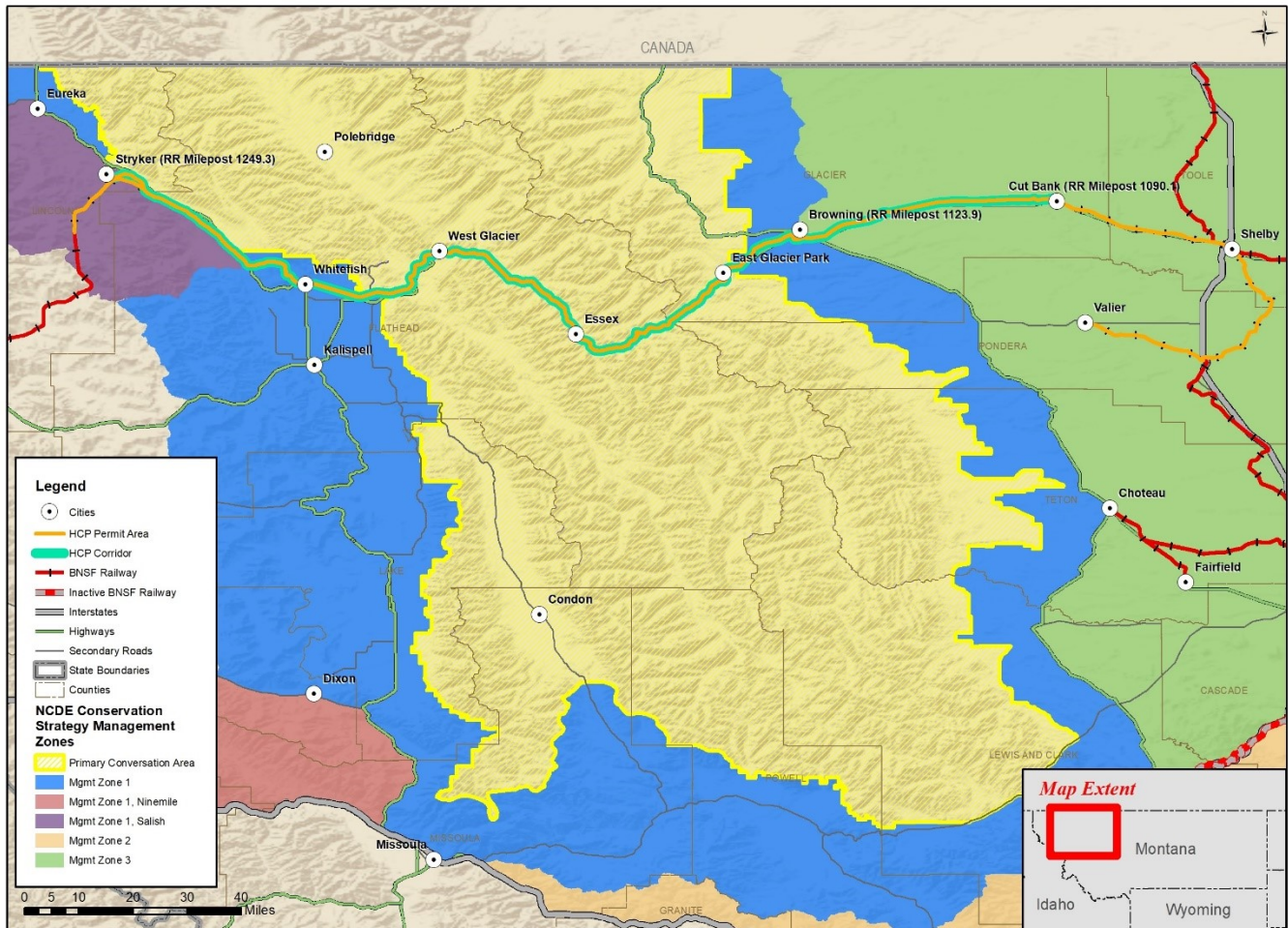
1.4 Elements of the HCP

1.4.1 HCP Permit Area

The "HCP Permit Area" includes approximately 206 miles of railroad right-of-way between Brimstone West, Montana (RR Milepost 1253.8) to the west and Shelby, Montana (RR Milepost 1066) to the east, including the spur line that extends southwest to Valier ([Figure 1](#)). This area generally incorporates the area of known incidental take of grizzly bears attributed to BNSF Operations in Montana and this is the area for which BNSF has requested authorization for incidental take.

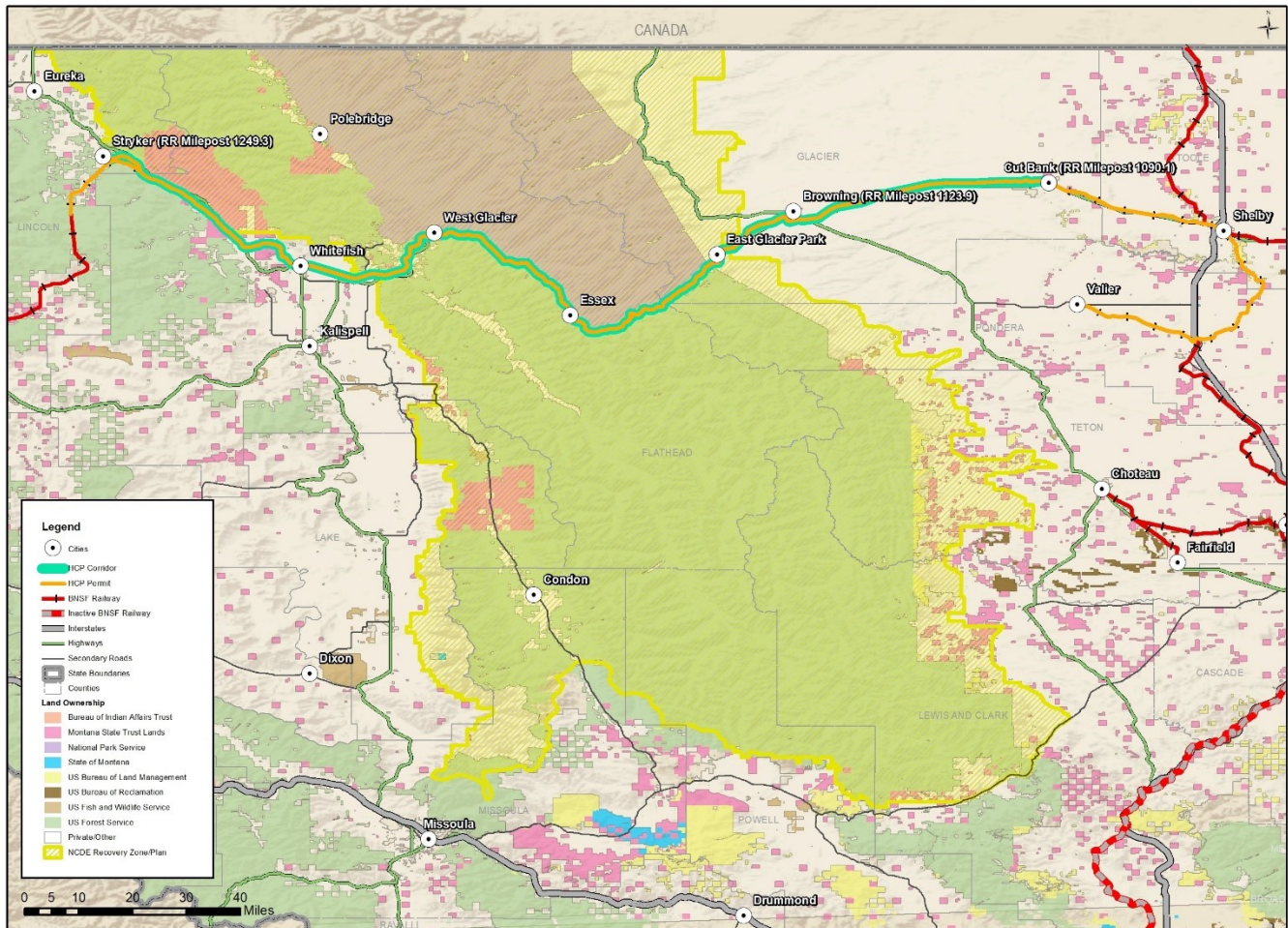
BNSF Operations through the HCP Permit Area are generally conducted on property it acquired via patents from the State of Montana or the U.S. or lands acquired by deed from a third party. Property adjoining or adjacent to the right of way includes federal, state, and private lands.

Figure 1. Location and Vicinity



From Brimstone West, Montana east to Conkelly, Montana the HCP Permit Area is bounded by the Stillwater State Forest and private lands to the north and private lands and the Kootenai National Forest to the south (Figure 2). From Conkelly, Montana east to East Glacier, Montana, the HCP Permit Area is generally bounded by Glacier National Park to the north and the Flathead National Forest to the south. From East Glacier, Montana to Cut Bank, Montana, the HCP Permit Area traverses the Blackfeet Indian Reservation. The HCP Permit Area traverses private lands from Cut Bank, Montana to the eastern boundary at Shelby, Montana.

Figure 2. Land Ownership in the HCP Plan Area



Basemap Source: Eri World Terrain Basemap.
 Coordinate System: GCS WGS 1984
 Datum: WGS 1984
 Units: Degree
 Acreage and Railway mileage calculated in NAD_1983_2011_StatePlane_Montana_FIPS_2500 Lambert_Conformal_Conic

1.4.2 HCP Corridor

The “HCP Corridor” is a subset of the Permit Area extending for approximately 160 miles between Cutbank, Montana (RR Milepost 1090.1) to the east and Stryker, Montana (RR Milepost 1249.3) to the west (see Figure 1).

The HCP Corridor represents the portion of the HCP Permit Area where the HCP avoidance and minimization measures, described in Section 5.3, would be applied. The majority of grizzly bear train-strikes attributed to BNSF Operations has occurred in the HCP Corridor.¹

¹ There was a single grizzly bear mortality near Shelby, MT in 2017 and two grizzly bear mortalities near Trego, MT in 2019. No attractants or other contributing factors were identified at the site of these mortalities. Therefore, the avoidance and minimization measures are limited to the HCP Corridor where there is a documented record of attractants contributing to grizzly bear train strikes.

1.4.3 Plan Area

The Plan Area includes the Permit Area as well as the greater NCDE where the HCP mitigation measures are applied to reduce human-caused mortalities (see Figure 1). Grizzly bear management in the NCDE is described in Section 3.4. Landownership in the Plan Area is primarily public lands administered by state or federal agencies (84 percent) (see Figure 2). The remaining lands are Tribal, State, and local governments and private ownership. Federally managed land is primarily divided among Glacier National Park and five National Forests (Flathead, Helena, Kootenai, Lewis and Clark and Lolo). Thirty two percent of all lands inside the Plan Area are designated Wilderness Areas.

1.4.4 HCP Covered Species

This HCP covers the federally listed grizzly bear.

1.4.5 Permit Duration

BNSF intends to implement a seven-year HCP in exchange for a seven-year Permit. The term of the HCP and Permit were determined in consultation with the Service. BNSF expects that within seven years, the NCDE population of grizzly bears will be delisted and the post-delisting monitoring period of the population will be complete. At that time, it is anticipated that the NCDE grizzly bears population will continue to be managed through a conservation strategy implemented through Federal, Tribal, State, and local stakeholders in the region (NCDE Subcommittee 2019). At the end of the Permit duration, BNSF may voluntarily continue its HCP conservation strategy. If the NCDE population is not successfully delisted within the seven-year Permit duration, BNSF may apply for a Permit renewal.

1.4.6 HCP Covered Activities

The HCP covers all BNSF Operations (as defined in Section 1.0) in the railroad right-of-way within the Permit Area. These activities are described in greater detail in Section 2.0 below.

2.0 PROJECT DESCRIPTION AND COVERED ACTIVITIES

This section describes railroad operations and procedures in the Permit Area, including the various regulations governing BNSF operations.

2.1 BNSF Operating Procedures

2.1.1 Environmental Principles

BNSF Railway believes it is both good citizenship and good business to minimize its impact on the environment, and it is proud of the role it plays in safely and efficiently moving millions of tons of consumer and agricultural products and other freight across the country every day.

BNSF promotes operations that protect the environment. BNSF's Environmental Policy (<http://www.bnsf.com/in-the-community/environment/>) and environmental commitments lay the ground work for minimizing and mitigating take of grizzly bears incidental to BNSF Operations in the Permit Area.

2.1.2 Operating Regulations in the Permit Area

The safe and efficient operation of trains in the Permit Area is governed by rules, procedures, and practices that are contained in federal statutes, rules, regulations and railroad documents including, but not limited to, the following documents (as updated)²:

- General Code of Operating Rules³;
- BNSF Air Brake and Train Handling Rules;
- BNSF System Special Instructions;
- BNSF Signal Aspects and Indications;
- BNSF Montana Division Timetable;
- BNSF Montana Division General Orders, Order 515;
- BNSF Montana Division Superintendent Notices; and
- BNSF Train Dispatcher's/Operator's Manual.

Regulatory requirements pertaining to railroad transportation are generally found in the Code of Federal Regulations (CFR), Title 49 (Transportation), Volume 4, Chapter II.

2.1.3 Safety in the Permit Area

Freight cars and locomotives are subject to 49 CFR Part 215 (Railroad Freight Car Safety Standards) and 49 CFR Part 229 (Railroad Locomotive Safety Standards). The Permit Area is part of an integrated, national network of freight railroads. Freight cars and locomotives are freely interchanged between rail carriers, subject to the regulations and industry standards described above, including those defined by the Association of American Railroads (AAR)⁴. The AAR specifications are contained in various publications of the association, including the Field Manual of the Interchange Rules and the Manual of Standards and Recommended Practices. The consistency provided by these regulations and standards helps ensure the safety and quality of freight cars and locomotives operating throughout the nation's rail system.

Engineers and conductors are trained and tested on operation, safety and health, and train handling rules. These employees also attend rules classes annually. Under 49 CFR Part 240 (Qualification and Certification of Locomotive Engineers), engineers must be certified before performing service, and must recertify every three years.

² With the exceptions noted below, these documents are internal BNSF documents that are not generally available from public sources. They have been provided to the Service, who will maintain copies.

³ The General Code of Operating Rules is a set of operating rules for railroads in the United States. It is used by Class I railroads west of the Chicago, most of the Class II railroads, and many Short-line railroads. The 7th Edition of the General Code of Operating Rules (effective April 1, 2015) is implemented by numerous railroads including BNSF, Union Pacific Railroad, Canadian Pacific Railway, and Montana Rail Link.

The track structure in the HCP Permit Area is designated as Class 4⁵, and all rail in the Permit Area is “continuously welded” rail (CWR)⁶. Track maintenance standards and requirements are identified in 49 CFR Part 213 (Track Safety Standards) and in internal BNSF processes, procedures, and instructions.

BNSF conducts regular and rigorous track, bridge and rail inspections. BNSF uses ultrasound, radar and machine vision systems to look deep inside the rails and supporting cross-ties for tiny flaws imperceptible to the human eye. This work is done using manned and unmanned track geometry rail cars “Geo Cars” that travel around the BNSF system - including through the Permit Area - to measure track wear and tear. Data from the Geo Cars is collected and analyzed to identify and prioritize track maintenance.

In addition to the track inspection done by Geo Cars, the track in the Permit Area is visually inspected at the frequencies required by the Federal Railroad Administration (FRA). Qualified inspectors travel through the area looking for any variations from the established track standards to ensure safe train operations at authorized speeds.

BNSF also has 39 trackside warning detectors in the Permit Area (more than the number required by the FRA). These detectors evaluate passing trains and alert on-board employees (engineers and conductors) of potential or actual equipment defects or failures.

BNSF has installed Positive Train Control (PTC) infrastructure on its network, covering more than 11,500 route miles, including the Permit Area. PTC stops a train before certain types of accidents occur. It is a predictive, advanced safety technology designed to prevent train-to-train collisions, enforce speed limits, protect roadway workers and equipment, and prevent the movement of a train through an improperly positioned switch.

2.1.4 Speed of Trains in the Permit Area

Based on current track design, trains⁷ in the HCP Permit Area may operate at speeds between 25 and 79 miles per hour (mph). Additional speed restrictions are currently in place at specific locations within the Permit Area based on existing track features. BNSF freight trains operate at speeds between 25 and 60 mph⁸. Amtrak trains operate at speeds up to 79 mph.

During public scoping, it was suggested that BNSF reduce the speed at which its trains run through the Permit Area. Reducing speeds in the Permit Area is not practicable for at least two reasons. First, trains are operated at speeds designed to maximize efficiency (without exceeding speed limits). Reducing speeds would create inefficiencies that would affect consumers and the environment. Second, the

⁵ 49 CFR 213.9 identifies the maximum allowable speed for freight and passenger trains that meet all of the prescribed standards of Part 213 for a particular class of track.

⁶ CWR replaces jointed rail. Continuously welded rail provides for a better ride and requires less maintenance than jointed rail because there are fewer joints.

⁷ Currently, light engine consists (e.g., a business car or Helper) may operate at passenger speeds, not to exceed 79 MPH on track through the Permit Area.

⁸ Train speeds do not include restricted speeds associated with the Whitefish railyard or Valier spur. Train speeds identified in the text are maximum speeds (speed limits). Trains may operate at speeds lower than the max allowable speed on a particular portion of track. Actual train speed, up to the maximum limited, is dictated by several factors including, but not limited to, track features, train scheduling, and fuel efficiency.

Permit Area is a small but important segment of the BNSF system. For the entire system to work efficiently, and meet demands of interstate commerce and foreign trade, the speeds throughout the system must be coordinated as a whole, rather than in parts. Slowing speeds in the Permit Area would create a choke point in the system that would affect transportation for thousands of miles around the Permit Area.

2.1.5 Train Frequency, Volume, and Seasonality in the Permit Area

BNSF is a common carrier and, as such, has a statutory duty to provide “transportation or service on reasonable request.” 49 United States Code (USC) 11101(a). On average, current rail traffic consists of approximately 29-34 freight trains and 2 passenger trains (operated by Amtrak) per day. These average figures are lower than the capacity of the line through the Permit Area. Indeed, the frequency and volume of traffic through the Permit Area is seasonal (*e.g.*, there are more frequent grain shipments at harvest time and more containers filled with consumer goods before the holiday season), so actual traffic at a given point in time may be higher than the average. There is no evidence that greater frequency or volume through the Permit Area results in a higher number of grizzly mortalities.

During public scoping, commenters suggested that train schedules could be modified to reduce the potential for grizzly bear train strikes. This is not a practicable measure because reducing service to certain hours or reducing the number of trains that operate in the Permit Area would also reduce system capacity. This would have the same deleterious effect on interstate commerce as discussed above under Speed of BNSF Trains in the Permit Area. Further, grizzly bears are documented crossing the right-of way at all times of day and grizzly bear strikes have similarly been reported at all times of day (Waller 2005). There is no evidence that changing the schedule of trains will reduce grizzly bear train strikes.

2.1.6 Track Control in the Permit Area

The BNSF Railway in the Permit Area is part of BNSF Montana Division Hi Line and Kootenai River Subdivisions. Train operations and mechanical and maintenance activities are generally managed and coordinated by the Montana Division headquartered in Whitefish, Montana.

All trains in the Permit Area operate according to Centralized Traffic Control (CTC), a form of railway signaling that consolidates train routing decisions that were historically executed by local signal operators or the train crews themselves. Movement in the Permit Area is coordinated through train dispatchers at the BNSF Network Operations Center in Fort Worth, Texas.

2.1.7 Other Operators and Railcar Ownership in the Permit Area

BNSF operates many of the trains that run through the Permit Area and is responsible for maintaining the right-of-way. Amtrak trains also operate in the Permit Area on BNSF rail lines pursuant to the current version of the Agreement Between National Railroad Passenger Corporation and Burlington Northern Railroad Corporation and Atchison, Topeka and Santa Fe Railway Company, dated September 1, 1996, and amended August 1, 2017 (Amtrak Operating Agreement). Amtrak’s obligations under the HCP and the Permit are addressed in the Implementing Agreement contained in Appendix A.

Importantly, BNSF does not own all railcars that travel through the Permit Area but is obliged to carry a customer’s load (49 USC §11101). Similarly, BNSF does not own the Amtrak equipment that operates

in the Permit Area. Commenters suggested that BNSF could modify locomotives and rail cars to: (1) prevent product leakage in the right-of-way or (2) reduce the risk of an injury to a grizzly bear struck by a train. BNSF cannot unilaterally modify the equipment it owns, or the equipment of others (private railcars and Amtrak equipment) that run across its system. Any modification to a freight car must be reviewed and be accepted by the AAR before the car may be utilized in interchange service. Additionally, any modifications to locomotives or cars must meet the applicable safety regulations. See, *e.g.*, 49 CFR Part 231 (Railroad Safety Appliance Standards) and 49 CFR 229 (Railroad Locomotive Safety Standards). As a common carrier operating under a federal permit, BNSF cannot refuse to include private cars that meet these standards.

2.2 BNSF Covered Activities in the Permit Area

As noted above, this HCP covers BNSF Operations in the Permit Area.

2.2.1 Operations

BNSF Operations include the safe transport of people and freight through the Permit Area. BNSF Operations also include construction, mechanical and maintenance work, as well as responding to potential hazards that may impact the safe and efficient transport of people and freight.

2.2.2 Construction in the Permit Area

BNSF contemplates that track expansion projects could be constructed in the Permit Area during the term of the Permit. This includes the design and building of new lines and any necessary structures (permanent or temporary) adjacent to the line.

While it is not possible to anticipate all future construction projects (some of which may be needed to address emergent safety concerns or new regulations), any new construction would take place adjacent to existing rail lines, within the existing right-of-way, or on neighboring lands that are leased or purchased. BNSF will submit any new construction plans for federal, state, and/or local approvals/permits as required by law.

2.2.3 Maintenance in the Permit Area

Local management of train and track maintenance activities in the Permit Area is provided by supervisors in Whitefish, Essex, and Shelby, Montana. Mechanical oversight is provided by supervisors in Whitefish, Montana.

Maintenance in the right-of-way includes, but is not limited to, repairing and replacing damaged track, repairing and replacing ties, repairing and replacing roadbed, work on structures, repairing and replacing fences and gates, repairing and replacing switches, trackside warning detectors, and warning lights, repairing and replacing signage along the right-of-way, repairing and replacing warnings at at-grade crossings, maintenance on culverts, bridges, trestles, and snow sheds, maintenance of storage facilities and access roads, and vegetation control.

BNSF implements vegetation management measures to reduce vegetation growing in the railway roadbed that may attract grizzly bears or other wildlife. Herbicides used in this process are regulated by the Federal Insecticide Fungicide and Rodenticide Act (FIFRA). Persons applying these herbicides must

be licensed pesticide applicators or work under the direct supervision of a licensed applicator. All herbicide labels must be complied with during application. BNSF actively manages vegetation 14 feet from the center line on either side of track. BNSF Manager of Vegetation Management is also available to evaluate and, as needed, address concerns relating to an attractant growing within the right-of-way, but outside the area of active vegetation management.

BNSF uses the same method for selecting seed mixtures that is used by MDT when revegetating right-of-way lands that have been disturbed due to construction, derailments, or other land disturbances. The process includes working with contractors and interested parties to select seed mixtures that will stabilize soils without attracting animals (grazing animals and/or predators).

2.3 Amtrak Operations

Amtrak currently operates two passenger trains per day within the Permit Area. Amtrak's obligations under the HCP and in the Permit Area are addressed in the Implementing Agreement contained in Appendix A.

2.4 Alternatives to the Taking

As identified in ESA Section 10(a)(2)(A), a No Take Alternative is a mandatory element of an HCP. A No Take Alternative is one that includes the actions necessary to completely avoid incidental take. As long as BNSF continues operations in the Permit Area, the potential for incidental take resulting from bear-train collisions will continue. Terminating operations in the Permit Area is not a feasible option, is not contemplated by the ESA, and is contrary to national security interests.⁹

3.0 COVERED SPECIES - THE GRIZZLY BEAR

3.1 Listing History

The Service listed the grizzly bear as a threatened species in the contiguous United States in 1975 (40 FR 31734-31736, July 28, 1975). The Service identified the following as factors establishing the need to list: (1) present or threatened destruction, modification, or curtailment of habitat or range; (2) overutilization for commercial, sporting, scientific, or educational purposes; and (3) other manmade factors affecting its continued existence.

The Service subsequently developed the Grizzly Bear Recovery Plan (Recovery Plan) in 1982, which was revised in 1993 (USFWS 1993). The 1993 revised Recovery Plan delineated grizzly bear recovery zones in 6 mountainous ecosystems in the U.S. The Recovery Plan details demographic recovery criteria and strategies for the grizzly bear recovery zones in the ecosystems where grizzly bear populations persist: NCDE, Greater Yellowstone ecosystem (GYE), Cabinet-Yaak ecosystem (CYE), and Selkirk ecosystem (SE). The Recovery Plan was supplemented in 1996 and 1997 with chapters for the Bitterroot (BE) and North Cascades (NCE) recovery zones, respectively, with recovery criteria and

⁹ *Strategic Rail Corridor Network (Stracnet) And Defense Connector Lines*, Military Surface Deployment and Distribution Command Transportation Engineering Agency (2018)
www.sddc.army.mil/sites/TEA/Functions/SpecialAssistant/RND%20Publications/STRACNET%202018_Reduced.pdf

strategies (USFWS 1996, 1997). There are currently no known populations within the BE or NCE, though grizzly bears are periodically observed in the BE. The Recovery Plan was supplemented in 2007 and 2018 with habitat-based recovery criteria for the GYE and the NCDE, respectively, and in 2017 with revised demographic recovery criteria for the GYE.

The Permit Area lies within the NCDE. Therefore, the remainder of this discussion is focused on the grizzly bear population in the NCDE/HCP Plan Area.

3.2 Species Description, Life History, and Population Dynamics

Species information for the grizzly bear is presented in detail in the NCDE Conservation Strategy (NCDE Subcommittee 2019), below is a summary of this information:

Grizzly bears are large and long-lived mammals. Male grizzly bears are usually larger than females (400-600 lbs. for males and 250-350 lbs. for females), and individuals in the wild typically live to be around 25 years old (LeFranc *et al.* 1987). Grizzly bears are omnivorous, opportunistic feeders that have large caloric requirements. This is particularly true in later summer and fall when bears need to build fat reserves to utilize during the denning period. Grizzly bears are generally solitary animals, except for the mating season when male and female grizzly bears tolerate one another, and a female with cubs. Grizzly bears do not defend territories, but instead have home ranges that overlap with other grizzly bears. Home range sizes for adult female grizzlies vary from 50 to 150 square miles; an adult male can have a home range size as large as 600 square miles (Servheen 1983).

Grizzly bears in the contiguous United States spend 4 to 6 months in their dens, typically beginning in October or November (Linnell *et al.* 2000; Haroldson *et al.* 2002). During this period, they do not eat, drink, urinate, or defecate. Over the course of the denning season, grizzly bears hibernate and may lose 30 percent of body weight. This weight is stored as fat, which they must acquire during the 2 to 4 months prior to entering dens. During the pre-denning period, bears increase their food intake dramatically and may gain as much as 3.64 pounds per day (Craighead and Mitchell 1982).

Mating occurs from May through July, and cubs are born inside the den in late January or early February. Cubs remain with their mother for 2 to 3 years (Schwartz *et al.* 2003). The age at which females produce their first litter varies from 3 to 8 years, with litter size varying from 1 to 4 cubs. Grizzly bears have one of the lowest reproductive rates among terrestrial mammals. Grizzly bear females cease breeding successfully some time in their mid to late 20s (*Ibid.*).

3.3 Habitat Requirements

Grizzly bears are opportunistic omnivores and will eat berries, grasses, leaves, insects, roots, carrion, small mammals, fish, fungi, nuts, and ungulates. Grizzly bears are selective in their seasonal use of various kinds of forage and, therefore, move across the landscape as they follow the growth and abundance of preferred forage items (Mace *et al.* 1996; McLellan *et al.* 1999; Kasworm *et al.* 2010).

Grizzly bears are habitat generalists. Basic habitat requirements include the availability of food and water, security (from humans and other bears), and den sites (Mace *et al.* 1996; Mace *et al.* 1999; Linnell *et al.* 2000) (Table 1). Given equal foraging opportunities, under cover and in the open, bears prefer to feed undercover.

As mentioned, grizzly bears will typically move across the landscape in search of their preferred forage items. As a result, the productivity of grizzly bear populations is likely more strongly influenced by the availability of high-quality food resources than by density-dependent regulating factors (IGBC 1987). It has also been observed that grizzly bears of all ages will congregate readily at concentrated food sources and form a social hierarchy unique to that grouping of bears (Hornocker 1962; USFWS 1993).

Habitat Requirement	Key Habitats
Spring foraging ¹	Low-elevation mesic vegetation
Summer, autumn foraging ¹	Moderate- to high-elevation mesic vegetation
Security cover and isolation from humans ^{2,3}	Cover provided by vegetation and topographic breaks; absence or low density of roads and trails
Denning habitat ⁴	Remote, high-elevation areas with slopes greater than 30 degrees; friable, deep soils; and snow accumulations

¹ Mace et al. (1996); Mace et al. (1999); McLellan and Hovey (2001); Nielsen et al. (2002); Waller and Mace (1997).

² Archibald et al. (1987); Kasworm and Manley (1990); Mace et al. (1996); Mace et al. (1999); Mattson et al. (1987); McLellan and Shackleton (1988, 1989); Wielgus et al. (2002).

³ Mace and Waller (1997); White et al. (1999); Graves et al. (2003).

⁴ Pearson (1975); Servheen (1981); Zager and Jonkel (1983); Podruzny et al. (2002).

In the NCDE, grizzly bears eat roots/corms/bulbs and other vegetation in the early summer months before berries become available (Aune and Kasworm 1989; McLellan and Hovey 1995). Grizzly bears on the eastern front of the Northern Rockies and in Glacier National Park also feed on concentrations of lady bird beetles and army cutworm moths (Mattson et al. 1991). Once berries become available, NCDE grizzly bears consume a wide variety of available species. McLellan and Hovey (1995) analyzed scat samples and determined that the amount and species of berries varies annually based on their availability. During late summer to fall, grizzly bears in the NCDE continue to eat berries but also consume more meat and roots/bulbs/corms (Aune and Kasworm 1989; McLellan and Hovey 1995).

In addition to foraging habitat, a degree of isolation from humans and human-associated activities and hiding cover are necessary habitat components for grizzly bears (Mattson et al. 1987; McLellan and Shackleton 1988, 1989; Mace et al. 1996, 1999). Human activities can result in direct mortality of bears, as well as indirect negative effects by displacing bears to less suitable habitats (McLellan et al. 1999; Wakkinen and Kasworm 2004). The most effective way to minimize the risk of adverse interactions between humans and bears is to provide spatial separation between areas of human activity and areas of bear activity. Managing public motorized access to grizzly bear habitat is one of the most common and effective ways to maintain a level of separation between grizzly bears and humans. In areas where such separation is not possible, providing large areas of secure habitat that include seasonal habitats may reduce the potential for contact and minimize risk of disturbance and illegal mortality (Mace and Waller 1998).

Security cover allows grizzly bears to avoid contact with humans. It also allows bears to avoid contact with other bears. Strict territoriality among grizzly bears is not known, and intraspecific defense behavior generally tends to be limited to defense of limited food concentrations, defense of young, and surprise encounters (USFWS 1993). Adult male bears are known to occasionally kill juveniles, and adults also occasionally kill other adults. Females with cubs require spatial separation from aggressive

males. This is particularly true in spring, when cubs are most prone to attack. Data are insufficient to fully assess the effects of predation on younger bears by adult bears (USFWS 1993), particularly when considering potential indirect effects of various human activities that may displace a subadult bear into the home range of an aggressive adult bear. Females with cubs often select rugged and isolated habitats for this reason (Mace and Waller 1997; Russell et al. 1979). Shrub and tree cover, as well as topographic landscape features, are commonly used as security from humans or other bears (McLellan and Hovey 2001; Wielgus et al. 2002), and dispersing subadult bears may be forced to choose poor home ranges that may be equally dangerous to their survival (USFWS 1993).

Another key habitat requirement for grizzly bears is the presence of suitable denning habitat. Den site characteristics are variable, but several researchers have described dens located at high elevations in remote areas with slopes greater than 30 degrees, soils that are deep, and aspects where snow accumulates (Craighead and Craighead 1972; Linnel et al. 2000; Mace and Waller 1997; Podruzny et al. 2002). Sloped sites are often selected because they facilitate easier digging and are generally stabilized by trees, boulders, or root systems of herbaceous vegetation. In addition to excavating dens, grizzly bears den in natural caves and hollows under the roots of trees. While individual den sites are rarely reported to be used for more than one winter, numerous researchers have observed that dens rarely occur singly, but are concentrated in areas that apparently possess appropriate environmental conditions (Craighead and Craighead 1972).

3.4 Status of Grizzly Bears in the NCDE/HCP Plan Area

3.4.1 Federal Status

The NCDE grizzly bear population has achieved biological recovery objectives (Kendall et al. 2009, Mace et al. 2012, USFWS 2018). In 2013, the Service announced the availability of the draft NCDE Grizzly Bear Conservation Strategy for public review and comment (USFWS 2013). Five federal agencies (the Service, USFS, NPS, U.S. Bureau of Land Management, and U.S. Geological Survey), two Montana State agencies (MFWP and DNRC), and two tribal entities (the Blackfoot Nation and the Confederated Salish and Kootenai Tribes) participated in development of the NCDE Conservation Strategy. Its purpose is to provide management guidelines for federal, tribal and state managers to maintain a recovered, genetically diverse population in the NCDE post-delisting. In 2017, the NCDE Subcommittee re-assembled the Grizzly Bear Conservation Strategy team to respond to the public comments and to update and revise the NCDE Conservation Strategy in response to those comments and new information, as appropriate. Although some editing occurred to reduce redundancy and improve clarity, the Grizzly Bear Conservation Strategy team maintained as much of the 2013 NCDE Conservation Strategy as possible.

The final NCDE Conservation Strategy plan was published in 2019 (NCDE Subcommittee 2019). Its goal is to maintain a recovered, genetically diverse grizzly bear population throughout the Demographic Monitoring Area (DMA: the Primary Conservation Area [PCA] and Zone 1), while maintaining demographic and genetic connections with Canadian populations and providing the opportunity for connectivity with other ecosystems (CYE, BE, GYE).

The NCDE Conservation Strategy applies differential protections in areas depending on their relative importance to grizzly bears (NCDE Subcommittee 2019). The following management zones and areas are designated:

- Primary Conservation Area (PCA): The PCA is the same area as the NCDE Recovery Zone and is managed as a source area where the objective is continual occupancy by grizzly bears. Habitat conditions in the PCA are maintained in a manner that is compatible with a stable to increasing grizzly bear population.
- Management Zone 1 (zone 1): The objective in zone 1 is continual occupancy by grizzly bears but at lower densities than inside the PCA. Protections in zone 1 focuses on managing motorized routes and implementing food/attractant storage orders.
- Demographic Connectivity Areas (DCA): Within zone 1, there are two DCAs: Salish and Ninemile. These areas were established to allow the NCDE to serve as a “source” population to other ecosystems (i.e., CYE and BE). Protections in the DCAs support female occupancy and dispersal by limiting miles of open roads, managing current roadless areas, and implementing food/attractant storage orders.
- Management Zone 2 (zone 2): National Forest System (NFS) lands in zone 2 are managed to provide the opportunity for grizzly bear dispersal, particularly males, to other ecosystems. The protections in zone 2 center on conflict prevention and response. As with the PCA, zone 1 and the DCAs, a food/attractant storage order is implemented on NFS lands within zone 2.
- Management Zone 3 (zone 3): Zone 3 does not provide habitat linking to other grizzly bear ecosystems. Management in zone 3 focuses on conflict response.

In addition, on July 7, 2016 and January 3, 2018, the Service conducted public workshops to develop and refine habitat-based recovery criteria for the NCDE grizzly bear population. After consideration of public comments, on May 16, 2018, the Service published habitat-based recovery criteria for the NCDE population, as a supplement to the 1993 Recovery Plan (USFWS 2018).

The NCDE population has recovered to the point that the population can sustain limited management removal of select bears to augment the Cabinet-Yaak grizzly bear population. From 2005 through 2018, MFWP in cooperation with the Service has removed approximately 16 grizzly bears from the NCDE and relocated them to the Cabinet-Yaak Grizzly Bear Recovery Zone (Kasworm et al. 2019).

3.4.2 State of Montana Policy on Grizzly Bears

In 2011, during the 62nd session of the Montana Legislature, Montana revised the state’s grizzly bear management policy. The policy (87-5-301 M.C.A.) states the following.

(1) The legislature finds that:

- (a) grizzly bears are a recovered population and thrive under responsive cooperative management;
- (b) grizzly bear conservation is best served under state management and the local, state, tribal, and federal partnerships that fostered recovery; and,
- (c) successful conflict mitigation is key to maintaining public support for conservation of the grizzly bear.

(2) It is the policy of the state to:

- (a) manage the grizzly bear to avoid conflicts with humans and livestock; and
- (b) use proactive management to control grizzly bear distribution and prevent conflicts, including trapping and lethal measures.

On December 21, 2018, the Montana Fish and Wildlife Commission adopted Montana Administrative Rule 12.9.1403 Grizzly Bear Demographic Objectives for the Northern Continental Divide Ecosystem, which codifies the population objectives detailed in the NCDE Conservation Strategy for grizzly bears. The Rule directs the State to enter a memorandum of understanding (MOU) and to manage the NCDE population of grizzly bears consistent with the NCDE Conservation Strategy (NCDE Subcommittee 2019), upon delisting from the ESA.

3.5 Factors Affecting the Status of NCDE Grizzly Bears

The primary factors affecting the status of the NCDE population of grizzly bears are access management, human-grizzly bear conflicts, and connectivity. These factors are all addressed in the NCDE Conservation Strategy management zones as described above (NCDE Subcommittee 2019). The signatories to the NCDE Conservation Strategy are those agencies with both the largest land holdings in grizzly bear habitat and the authority to manage for grizzly bear recovery and will manage for these factors on their lands. The potential for climate change to affect grizzly bears is also discussed.

3.5.1 Access Management

Secure habitat is important to the survival and reproductive success of grizzly bears, especially adult females (Mattson et al. 1987, IGBC 1994). Grizzly bear habitat security is primarily achieved by managing motorized land management and public access within forested habitats, which results in four favorable outcomes for grizzly bears:

- 1) minimizes human interaction and reduces potential grizzly bear mortality risk;
- 2) minimizes displacement from important habitats;
- 3) minimizes habituation to humans; and
- 4) provides habitat where energetic requirements can be met with limited disturbance from humans.

Provisions for secure habitat and access management in grizzly bear habitat are specifically dictated for the PCA, zone 1, and zone 2 under the NCDE Conservation Strategy. All National Forests in the NCDE prescribe access management in the individual Forest Plans and the *Amendments to Incorporate Habitat Management Direction for the Northern Continental Divide Ecosystem Grizzly Bear Population* (USDA Forest Service 2018a, b). Because Montana DNRC manages forested grizzly bear habitats, it too implements a conservation strategy for access management in grizzly bear habitat under its HCP (DNRC 2010, 2018). Access management is not prescribed for any other landowners in the NCDE.

3.5.2 Conflicts with Humans

Conflicts with humans remain a key issue in grizzly bear recovery within the NCDE. Attractant related grizzly bear deaths (*i.e.*, management removals) are among the leading causes of grizzly bear mortality in the NCDE. Management removals represent 26 percent of all human-caused grizzly bear mortality from 1975 to 2019 (Table 2).

Table 2. History of Human-Caused Grizzly Bear Mortality in the NCDE. (Orphaned cubs were assigned the same cause of mortality as the female).

Year	Management	Augmentation	Self-defense	Hunting	Illegal ^a	Train	Vehicle	Other Accidental ^b	Unknown	Total
1975	0	0	0	15	6	1	0	0	0	22
1976	5	0	1	11	4	2	0	0	0	23
1977	7	0	0	5	4	0	0	1	0	17
1978	1	0	0	7	4	0	0	1	0	13
1979	2	0	0	11	6	0	0	1	0	20
1980	11	0	1	11	3	0	0	0	0	26
1981	4	0	0	11	4	0	0	0	0	19
1982	0	0	0	17	7	0	0	0	0	24
1983	2	0	1	8	5	0	1	0	0	17
1984	1	0	2	12	4	1	0	1	1	22
1985	1	0	2	6	3	1	1	2	0	16
1986	1	0	0	5	5	1	0	3	0	15
1987	5	0	0	3	2	0	0	2	0	12
1988	1	0	0	4	3	0	0	1	0	9
1989	0	0	5	0	5	2	0	0	0	12
1990	4	0	1	1	3	5	0	2	0	16
1991	2	0	0	3	1	0	0	0	0	6
1992	10	0	1	0	1	1	1	1	0	15
1993	3	0	1	0	1	0	0	0	0	5
1994	0	0	1	0	5	0	0	0	0	6
1995	6	0	1	0	5	2	0	0	0	14
1996	1	0	1	0	7	2	0	1	0	12
1997	4	0	2	0	2	3	0	1	1	13
1998	8	0	2	0	7	1	1	1	0	20
1999	4	0	1	0	5	5	0	2	1	18
2000	5	0	3	0	8	0	1	0	0	17
2001	9	0	2	0	4	4	1	1	0	21
2002	5	0	3	0	2	2	3	0	0	15
2003	5	0	1	0	4	3	1	0	0	14
2004	13	0	1	0	7	4	3	0	0	28
2005	6	1	2	0	7	0	0	4	0	20
2006	3	1	0	0	4	3	0	2	0	13

Table 2. History of Human-Caused Grizzly Bear Mortality in the NCDE. (Orphaned cubs were assigned the same cause of mortality as the female).

Year	Management	Augmentation	Self-defense	Hunting	Illegal ^a	Train	Vehicle	Other Accidental ^b	Unknown	Total
2007	2	0	4	0	4	5	7	0	0	22
2008	2	2	1	0	4	3	1	1	0	14
2009	2	0	7	0	6	2	0	1	0	18
2010	11	0	0	0	3	0	5	0	0	19
2011	13	2	8	0	5	3	1	1	0	33
2012	4	1	4	0	7	0	4	0	0	20
2013	10	1	2	0	10	2	4	0	0	29
2014	1	2	5	0	8	1	2	1	0	20
2015	5	1	1	0	6	0	6	1	0	20
2016	9	1	1	0	5	1	2	1	0	20
2017	8	0	8	0	8	1	3	1	0	29
2018	9	1	6	0	10	2	17	2	0	47
2019	22	2	2	0	2	8	7	1	0	44
	26%	2%	10%	15%	25%	8%	8%	4%	1%	

a. Illegal mortalities include mistaken identities (*i.e.*, grizzly bears killed by black bear hunters), defense of property, and malicious/poaching.

b. Other accidental mortalities include capture related mortalities, poisoning, and drowning.

Cities and towns are common in low elevations and major valley bottoms within and adjacent to the NCDE DMA. Human-generated food sources such as bird feeders, garbage, pet and livestock foods, human foods, gardens, chicken coops, beehives, and orchards present attractants for grizzly bears. Grizzly bears attracted to these human-generated food sources may become food conditioned. These individuals often become a threat to human safety and property and are removed through agency-grizzly bear control actions.

Because of its primary role in human-caused mortality of grizzly bears, management of attractants is dictated in all management zones of the NCDE conservation strategy. Attractant storage requirements for contractors or permitted activities occur on 91 percent of lands inside the NCDE PCA (NCDE Subcommittee 2019). A food storage order is in effect on all NFS lands and in Glacier National Park. These agencies have been successful in managing attractants on federal lands under the current NCDE food storage order. The Montana DNRC implements a food storage order and conflict management conservation strategy for its staff and contractors working in grizzly bear habitat under its HCP. BNSF has managed attractants in the railroad right-of-way since 1991 and will continue those efforts through this HCP.

In addition, MFWP grizzly bear management program will continue to work with the public to reduce risks to grizzly bears on private and public lands. In cooperation with other agencies, this program has made notable strides toward creating an informed public and reducing the availability of attractants to grizzly bears on private and public lands. To reduce mistaken identity kills of grizzly bears MFWP implemented mandatory black bear and grizzly bear identification training for all black bear hunters. While human-caused grizzly bear mortalities related to attractants and other sources cannot be eliminated, both total and female human-caused mortality are currently below the sustainable mortality levels as set in the Recovery Plan. Mortality data shows that human-caused grizzly mortality is on the rise (Table 2) even while the mortality rate remains sustainable. As the grizzly bear population continues to grow and expand its range, it is likely that human-caused mortality will continue to be an important factor in grizzly bear management. To that end, the BNSF Grizzly Bear HCP mitigation program provides funding to address ongoing human-caused mortality issues in the NCDE that are not associated with railway operations.

3.5.3 Habitat Fragmentation

Large expanses of unfragmented habitat are important for grizzly bear feeding, breeding, sheltering, traveling, and other essential behaviors. Historically, as human settlements and developments in valley bottoms and along roads increased in grizzly bear habitat, grizzly bear populations have become more fragmented.

Linkage zones, or zones of habitat connectivity within or between populations of animals, foster the genetic and demographic health of the species (Servheen and Sandstrom 1993); many efforts to identify and conserve linkage areas for a wide range of species are underway. The NCDE encompasses multiple National Forests, Glacier National Park, and is contiguous with grizzly bear habitat in Canada, including Banff National Park (see [Figure 2](#)). Therefore, the NCDE provides large blocks of continuous wilderness or secure habitat, providing high levels of connectivity. However, high volume transportation corridors, low vegetative cover, presence of human settlements, and other associated human activity in valley bottoms do represent risks for grizzly bears attempting to move through these areas. While these areas present a high risk of human-grizzly bear conflict for some individual grizzly bears, grizzly bears are moving through these areas to habitats beyond the NCDE PCA.

Under the NCDE Conservation Strategy, connectivity is addressed in the PCA and management zones 1 and 2. In these areas, road densities, human activities, and attractants are managed to reduce their potential effects on grizzly bear movement and dispersal.

3.5.4 Climate Change

Many factors affect biodiversity including climatic conditions; influences of competitors, predators, parasites, and diseases; disturbances such as fire; and other physical factors. Climate trends will be important to NCDE grizzly bears with respect to how these trends affect denning behavior, foraging habitat availability, and fire-regimes. Earlier snowpack melt-off may shorten the denning season and make food available later in the fall and earlier in the spring. Spring and fall encounters between grizzly bears and people may therefore increase, escalating the mortality risk to bears during these times. An additional effect of climate change could be changes in the availability of and distribution of foraging areas due to increasing temperatures and seasonal changes in precipitation. The extent and rate at which

plant species and communities would be affected is difficult to predict. Changes in vegetative distributions may also influence other mammal distributions, including prey species like ungulates.

Over the last 50 years, the grizzly population in the NCDE has grown and is continuing to grow. Grizzly bears are habitat generalists and opportunistic omnivores, able to find resources in a wide variety of habitat conditions. Many scientists believe that due to these characteristics, climate change will not threaten grizzly bear populations due to ecological threats or constraints (Servheen and Cross 2010). Scientists are concerned that seeking alternative food sources could drive grizzly bears into lower elevations where the risk of human interactions is greater. This coupled with a shorter denning period in response to increased temperatures and availability of food could further increase the risk of human-grizzly bear conflicts and associated mortality (Servheen and Cross 2010). It is difficult to predict how this large, wide-ranging species will respond to future environmental changes associated with climate change. The scope and scale of such changes are unknown, and the effects (positive or negative) on grizzly bears would likely be variable across the landscape.

3.5.5 Grizzly Bear Occurrence in the Permit Area

The Permit Area runs east-west through three of the NCDE conservation strategy management zones (see Figure 1). Between Conkelly and East Glacier Park, the Permit Area runs through the PCA, or the Recovery Zone, which represents core grizzly bear habitat containing the highest density of grizzly bears. The PCA/Recovery Zone is managed as the population source and is considered continually occupied by grizzly bears.

The Permit Area runs through zone 1 on the west and east sides of the PCA. Zone 1 has lower bear density but is also considered continuously occupied. The management goal of zone 1, along with the PCA, is to maintain a diverse grizzly bear population while maintaining demographic and genetic connections with Canadian populations and other ecosystems (CYE, BE, GYE) (NCDE Subcommittee 2019). The most western portion of the Permit Area borders the Salish DCA in zone 1, which is specifically managed to support female occupancy for eventual dispersal to the CYE and BE (NCDE Subcommittee 2019).

The east portion of the Permit Area is in zone 3, between Browning and Shelby, Montana. Grizzly bear occupancy in zone 3 is spotty and there are no habitat linkages to other grizzly bear ecosystems. According to the NCDE Subcommittee, zone 3 "...does not provide habitat linking to other grizzly bear ecosystems. Grizzly bears currently occupy Zone 3 (adjacent to Zone 1), and their numbers are expected to increase, but this may be incompatible with human presence because these areas often lack forest cover, land ownership is mostly private, and agricultural uses predominate. In Zone 3, grizzly bear occupancy will not be actively discouraged and will be managed primarily through conflict response." (NCDE Subcommittee 2019, p.15).

4.0 POTENTIAL BIOLOGICAL IMPACTS AND TAKE ASSESSMENT

BNSF (or its predecessors) has operated in the Permit Area since the last half of the 19th century. For much of its length the Permit Area traverses habitat with the highest density grizzly bears in the NCDE. The potential biological impacts BNSF Operations in the Permit Area include disturbance and displacement of grizzly bears; impediment to some individual grizzly bear movements and dispersal; and direct mortality from train strikes. Other than direct mortality from train strikes, none of the biological impacts of the railway on bears results in adverse effects culminating in incidental take of grizzly bears. The biological impacts of the railway and the assessment of take under this HCP is discussed below.

4.1 Effects of BNSF Operations That Do Not Rise to the Level of Incidental Take

During development of the HCP, BNSF and the Service considered whether BNSF Operations in the Permit Area may cause the disturbance and/or displacement of grizzly bears or may act as an impediment to their movements and dispersal.

4.1.1 Disturbance and Displacement

Individual bear reactions to the long-term operations of trains in the Permit Area are variable. Some bears are likely permanently displaced from surrounding habitat and others successfully incorporate the Permit Area within their home ranges. Grizzly bears are living in and around the right-of-way and females are raising young in this area; observations are documented each year (USFWS 2017). Waller (2005) observed that at least some resident bears become habituated to noise and other activity associated with the railroad. This is supported by the occupation of all grizzly bear subunits overlapping the Permit Area (USFWS 2017). Short-term maintenance actions (such as vegetation trimming, fencing repair or installation, tie repair or replacement, or signal repair) may result in temporary disturbance of grizzly bears whose home ranges include the railway right-of-way. Grizzly bear responses may range from a simple awareness of the workers in the right-of-way (i.e., raising the head but otherwise continuing uninhibited) to short-term disturbance or flight response (resulting in physiological changes such as increased stress and energetic demands) to temporary displacement from an area.

The effects of disturbance and displacement from operation of the railroad on grizzly bears are expected to be minor because (1) the railway has been in continuous use since 1893 and grizzly bears with home ranges that overlap the railway are likely adapted to its presence and the activities that occur therein; and (2) construction and maintenance activities creating a disturbance occur within small geographic areas such that a grizzly bear may temporarily avoid the area and still access adequate foraging opportunities in other portions of its home range.

4.1.2 Grizzly Bear Movement and Connectivity

Evidence shows connectivity for grizzly bears across the Permit Area and adjacent US-2 highway corridor (Kendall et al. 2009; Proctor et al. 2012; Mickle et al. 2016). Hence, operations in the Permit Area do not impair movement to the degree that it impedes the breeding, feeding or sheltering, or reproductive needs of grizzly bears.

4.2 Biological Impacts of Railway Operations That Cause Incidental Take

The primary cause of incidental take due to BNSF Operations in the Permit Area is railway operations where a train may strike and kill a grizzly bear.

Factors that affect the potential for grizzly bear take incidental to BNSF Operations include bear population density in the Permit Area, presence of bear attractants in the right-of-way, and human-made and natural features that inhibit the ability of bears to escape on-coming trains. Even if all controllable factors could be addressed, there is still the possibility of a grizzly bear being struck in the right-of-way.

4.2.1 *Attractants in the Corridor That May Lead to Mortality*

Factors that attract bears to the right-of-way include grain spills resulting from derailments, grain spills resulting from leaking cars, livestock and wildlife carrion on or immediately adjacent to the railway roadbed, disposal of garbage and human waste, and the presence of succulent vegetation or fruiting shrubs growing on or near the railway roadbed.

Major Grain Spills from Derailments

In the past, train derailments in the HCP Corridor that have resulted in grain spills onto or adjacent to the railway have attracted grizzly bears. A few grizzly bears became food-conditioned to the grain and several were killed by trains near grain spills.

Minor Grain Spills

Minor grain spills in the HCP Corridor occur when grain cars “leak” as they travel along the track. Accumulations of grain can occur when a train with a leaking car is stopped for a long period on a siding. Grizzly bears may look for spilled grain in the railroad right-of-way. Additionally, as with larger grain spills, other wildlife may be attracted to the grain along the right-of-way. Wildlife killed by trains may further attract grizzly bears to the right-of-way to feed on the carrion.

Succulent Vegetation

Succulent vegetation that sprouts within or near the railbed or fruiting shrubs are a potential food source for grizzly bears, especially during the spring. Additionally, other wildlife may be attracted by vegetation occurring in or near the railbed, resulting in carrion that may further attract grizzly bears to the tracks.

Livestock and Wildlife Carrion in the Right-of-Way

Cattle and other livestock have been hit and killed by trains near Nyack Flats (RR Milepost 1185 to 1188) and on the Blackfoot Indian Reservation. Additionally, wildlife (*e.g.*, moose, elk, and deer) have been hit and killed by trains in the HCP Corridor. This carrion may attract grizzly bears to the right-of-way. Trains may collide with wildlife at any time, but such incidents tend to be most prevalent during the winter months when wildlife move along the plowed railbed. Carrion that accumulates during the winter can be an attractive food source for grizzly bears feeding in the spring.

Refuse Disposal

Grizzly bears may be attracted to the tracks by refuse dumped in the right-of-way. In the past, refuse from passenger trains has been reported in the right-of-way in the HCP Corridor, creating a potential bear attractant. BNSF crews regularly work on a variety of projects to maintain the right-of-way in the Permit Area and may be a potential source of refuse that could attract bears.

4.2.2 Physically Constrained Areas that Create a Risk of Strikes

On some portions of the right-of-way bears may attempt to avoid oncoming trains by running down the track rather than running off to one side. This typically happens in places where the track is elevated relative to the adjacent landscape or in steep cuts.¹⁰ As a result, grizzly bears may become trapped in the presence of an oncoming train and be struck and killed.

4.3 Type and Amount of Incidental Take from BNSF Operations

As described in Section 1.1, since 1991, BNSF, in cooperation with GNESEA and the Service, has voluntarily implemented and tested numerous avoidance and minimization measures within the HCP Corridor to eliminate attractants and deter bears from physical areas where they may be trapped by oncoming trains.

Despite these measures, incidental take continues to occur in the Permit Area. BNSF believes that the current level of take due to train collisions is unavoidable. Incidental take levels can be expressed in an HCP and associated Permit in one of two ways: (1) in terms of the number of animals to be "killed, harmed, or harassed" if those numbers are known or can be determined; or (2) incidental take can be expressed by using a surrogate(s) such as habitat acres or other appropriate habitat units to be affected generally or because of a specified activity. In the case of large mammals like the grizzly bear, incidental take occurs as discrete events in the Permit Area and is well documented when it does occur. Therefore, BNSF has elected to express incidental take in terms of the numbers of grizzly bears to be killed, harmed, or harassed during the term of the HCP.

4.3.1 Critical Assumptions in the Take Analysis

BNSF consulted with the Service and the HCP technical committee to conduct the analysis of anticipated incidental take of grizzly bears for the Permit term. The analysis is based on the following important assumptions:

1. Those portions of the HCP Plan Area that have *not* been seriously affected by human development are among the most productive habitats within the NCDE.
2. Measures in the HCP, which already have been implemented through GNESEA, have avoided and minimized grizzly bear take incidental to BNSF Operations to the maximum extent practicable.
3. Railroad traffic through the Permit Area will continue and is assumed to increase over time; however, traffic may vary seasonally and is dependent on market conditions. Assuming all

¹⁰ Steps have been taken to reduce these mortalities and there have been no bears struck on trestles or in steep cuts in some time.

avoidance and minimization measures are implemented properly, factors outside the control of BNSF influence the potential for grizzly bear take incidental to BNSF Operations.

4. Grizzly bear take incidental to BNSF Operations in the Permit Area will continue to occur. It is not possible to predict with certainty the frequency of future take. Absent a better indicator, this analysis is based on historic data on take attributed to train strikes in the Permit Area.
5. The adaptive management framework provides a mechanism for addressing new data and/or technologies as they arise.
6. The grizzly bear population in the NCDE is stable or increasing.

4.3.2 *Methods Used to Assess Incidental Take*

The Service and the HCP technical committee recommended that the analysis of incidental take should follow the Grizzly Bear Recovery Plan model for developing recovery objectives for the NCDE grizzly bear population. Thus, the assessment of incidental take:

- is based on an analysis of rolling six-year averages, which is useful in time-series data to smooth out “noise” (*i.e.*, randomness or short-term fluctuations) to focus on longer-term trends;
- includes a secondary assessment of incidental take of independent female grizzly bears; and
- evaluates grizzly bear take incidental to BNSF Operations as a percentage of all human-caused grizzly bear mortality in the NCDE.

For purposes of this HCP, the historic data used to arrive at the incidental take limits extends from 1992 to the current year for which data is available (2019). The year 1992 was selected because (1) it is the first year in which legal hunting was no longer a source of human-caused bear mortality; (2) at this point in time grizzly bear mortality data became more reliable; and (3) BNSF had initiated its voluntary avoidance and minimization measures in the HCP Corridor the previous year.

4.3.3 *Analysis of Incidental Take in the Permit Area*

A six-year rolling average is calculated for any given year by totaling the mortalities of the current year, plus the previous five years, and dividing by six. For example, the six-year rolling average for 1997 is determined by totaling mortalities from 1997, 1996, 1995, 1994, 1993, and 1992, and dividing by six. For 1998, the totals from 1998-1993 are divided by six; and so on. The six-year rolling average human- and train-caused mortality in and near the NCDE is summarized in Table 3.

6-Year Rolling Average Period	Human-Caused Mortality of all Grizzly Bears per Year	Train-Caused Mortality of all Grizzly Bears per Year¹	Train-Caused Mortality as % of All Human-Caused Mortality of Grizzly Bears	Human-Caused Mortality of all Female Grizzly Bears per Year	Train-Caused Mortality of all Female Grizzly Bears per Year²	Train-Caused Mortality as a % of Human-Caused Mortality (Female Grizzly Bears)
1992 – 97	10.8	1.3	12.0	5.0	1.5	30.0
1993 – 98	11.7	1.3	11.2	4.7	1.3	27.7
1994 – 99	13.8	2.2	15.9	5.2	1.3	25.0
1995 – 00	15.7	2.2	14.0	6.3	1.3	20.6
1996 – 01	16.8	2.5	14.9	6.5	1.8	27.7
1997 – 02	17.3	2.5	14.5	6.7	1.8	26.9
1998 – 03	17.5	2.5	14.3	6.7	1.8	26.9
1999 – 04	18.8	3.0	16.0	8.2	2.0	24.4
2000 – 05	19.2	2.2	11.5	8.8	2.3	26.1
2001 – 06	18.5	2.7	14.6	7.7	2.0	26.0
2002 – 07	18.7	2.8	15.0	7.5	1.5	20.0
2003 – 08	18.5	3.0	10.5	7.8	1.4	17.9
2004 – 09	19.2	2.8	14.6	8.0	1.3	16.3
2005 – 10	17.7	2.2	12.4	6.0	1.0	16.7
2006 – 11	19.8	2.7	13.6	3.8	1.0	26.3
2007 – 12	21.0	2.2	10.5	7.0	1.0	14.3
2008 – 13	22.2	1.7	7.7	8.2	1.5	18.3
2009 – 14	23.2	1.3	5.6	9.0	1.5	16.7
2010 – 15	23.5	1.0	4.3	9.2	1.5	16.3
2011 – 16	23.7	1.2	5.1	10.5	1.5	14.3
2012 – 17	23.0	0.8	3.5	9.2	1.3	14.1
2013 – 18	27.5	1.2	4.4	10.8	1.3	12.0
2014 – 19	30.0	2.2	7.2	11.5	2.3	20.0
Average of All Intervals	19.5	2.1	11.0	7.6	1.5	21.1

1. The 6-year average annual number of grizzly bear mortalities attributed to trains.
2. Of the 6-year average annual number of female grizzly bear mortalities caused by humans, this number is the amount of female mortalities attributed to trains.

From the interval of 1992-97 through the interval of 2014-19, the six-year rolling average of human-caused grizzly bear mortalities ranged between 10.8 and 30 grizzly bears (Table 3, column 1). The six-year rolling average of train-caused grizzly bear mortalities for the same period ranged from less than 1.0 to 3.0 grizzly bears per year (Table 3, column 2). The six-year rolling average of train-caused

mortalities as a percent of all human-caused mortalities ranged between 3.5 percent and 16.0 percent per interval (Table 3, column 3).

From the interval of 1992-97 through the interval of 2014-19, the six-year rolling average of human-caused female grizzly bear mortalities ranged between 3.8 and 11.5 female grizzly bears. Of the human-caused female mortality for the same period, the six-year rolling average of train-caused female mortalities ranged between 1.0 to 2.3 grizzly bears per year (Table 3, column 2). So, for example, during the period 2011-16, there were, on average, 10.5 human-caused female grizzly bear mortalities in the NCDE per year. Of those 10.5 human-caused female grizzly mortalities, on average, 1.5 were caused by trains operating in the NCDE. The six-year rolling average of train-caused female mortalities as a percent of all human-caused female mortalities ranged between 12.0 and 30 percent per interval (Table 3, column 3). The average of all 23 intervals (covering 27 years) was 21.1 percent.

Based on the foregoing, and on the fact that the grizzly bear population is growing, and its range is expanding, BNSF estimates incidental take of 18 bears for the Permit Term. This is based on an annual, 6-year rolling average of 2.5 bears for each year of the Permit Term (7 years) rounded for a total of 18 grizzly bears.

BNSF also anticipates that annual mortality of grizzly bears attributed to trains may be higher than 2.5 individual bears in a given year of the Permit Term. Therefore, BNSF would track the following additional parameters to ensure the anticipated effects of take as analyzed in this HCP are not exceeded for the Permit term.

- Train-caused grizzly bear mortality is expected to be no more than 12 percent of the averaged six-year rolling interval for all human-caused grizzly bear mortalities
- For all human-caused female grizzly bear mortalities, train-caused female grizzly bear mortalities are expected to be no more than 22 percent of the averaged six-year rolling interval.

If these parameters are exceeded for two consecutive years, the distribution of the funds from the reserve account for new projects or programs would be authorized (see Section 6.4).

A DNA study estimated the 2004 population in the NCDE at 765 grizzly bears, an estimate that was more than double previous estimates (Kendall et al. 2009). Estimated growth rates since 2004 of 2 to 3 percent annual growth provide a more recent population estimate of 1,044 bears (95% CI = 892–1,218 in 2018) (Costello et al. 2016, C. M. Costello 2019, *in litt.*). Thus, it appears that the grizzly population in the NCDE has been growing despite an increase in human-caused mortality, including mortalities incidental to BNSF Operations in the Permit Area. Thus, the population can sustain the estimated level of incidental take. As field studies provide on-going population estimates, the latest information will be evaluated under the adaptive management framework to validate the incidental take analysis.

4.4 Incidental Take and How the HCP Mitigation Program Will Offset Incidental Take

4.4.1 Effect of the Incidental Take

The effect of incidental take is a loss of individual grizzly bears from the NCDE grizzly bear population. If incidental take involves loss of a female grizzly bear, the effect is a long-term reduction in recruitment

to the NCDE. The loss of a female grizzly bear and her future recruitment to the population is the primary concern.

4.4.2 How the HCP Mitigation Program Will Offset Incidental Take

The most meaningful way to offset the loss of female grizzly bears and reduced recruitment in the NCDE is to reduce human-caused total and female grizzly bear mortality elsewhere in and around the NCDE. The detailed description of the mitigation program is provided in Section 5.4.

The HCP will reduce human-caused grizzly bear mortality in the NCDE through the funding of conflict mitigation actions including:

- funding for MOLF/GNESA administration and conflict mitigation actions in the NCDE such as bear fairs that include public education, information on attractants, and opportunities to practice the use of bear spray,
- funding for salaries of up to two MFWP grizzly bear technicians and one Blackfeet Nation grizzly bear technician,
- funding for operational costs for the technicians including their participation in grizzly bear fairs, public outreach, conflict responses, and attractant reduction programs,
- funding for maintenance of the grizzly bear management database to maintain grizzly bear histories to inform decisions about management actions and relocations,
- funding for the purchase of additional radio collars to track bear locations for conflict management,
- funding for the purchase of remote cameras to monitor potential attractants or conflict areas to determine when deterrent actions are warranted (bear dogs, rubber bullets, or bean bags),
- funding for additional hunter education on black bear and grizzly bear identification and use of bear spray to reduce mortality attributed to mistaken identities and defense of life,
- funding for waste management programs to prevent residential garbage pick-up from food-conditioning bears leading to human-grizzly bear conflict mortalities, and
- funding for electric fencing programs to secure attractants to prevent food-conditioning, and defense of life mortalities.

The grizzly bear management program implemented by MFWP and the Blackfeet Nation fosters public awareness and support of grizzly bear conservation. The program resolves human-grizzly bear conflicts and reduces the potential for conflicts through education and information regarding attractant storage. Prompt and efficient management of bears involved in conflict, coupled with outreach and education, may positively influence human attitudes about grizzly bears and help to reduce illegal killings (Servheen et al. 2004 as cited in NCDE Subcommittee 2019). The results of bear manager programs are summarized biannually at IGBC Subcommittee meetings and in MFWP bear manager annual reports available at <http://fwp.mt.gov/regions/r1/> and <http://igbconline.org/n-continental-divide-subcommitte/>

Securing human food and garbage from grizzly bears can dramatically reduce the number of grizzly bears removed through management actions (Gunther 1994). The number of grizzly bear conflicts also drops after construction of electric fencing around attractant sites (see Agency Summaries in Schwartz and Haroldson 2001). Monitoring the SE and CYE, including Canada, has shown that human-grizzly bear conflict mitigation programs have resulted in a significant reduction in human-caused mortality rates, increased inter-population connectivity, and improved habitat effectiveness (Proctor et al. 2018).

Mitigation funding through this HCP will enhance the ability of the agencies charged with grizzly bear management to abate conflicts before they occur and to respond with non-lethal measures when conflict does occur.¹¹ Placing more grizzly bear managers in the field and providing them with more resources to educate, secure attractants and track bear movements, will reduce the likelihood of “problem” bears and will identify and address “problem” bears before they become habituated and must be removed from the population.

Based on the evidence from the CYE and the ongoing grizzly bear management program implemented in the NCDE where the populations is stable or increasing, the mitigation program for this HCP is anticipated to more than offset the take associated with the covered activities.

5.0 CONSERVATION MEASURES

5.1 BNSF Business and Conservation Goals and Objectives

The HCP process recognizes the Applicant’s need to balance opportunities for conservation and business realities. To that end, the development of an HCP allows the Applicant to consider its own business objectives when designing conservation measures.

BNSF operations are integral to interstate commerce and international trade. BNSF operates a rail line that transports people, agricultural products, raw materials, and manufactured goods from around the U.S. and the world. Any regulatory or other action that disrupts BNSF operations can have a significant ripple effect throughout the economy.

Further, the Permit Area is an integral part of the BNSF network. Approximately 100 million gross tons of freight (and approximately 715 passenger trains) traveled through the Permit Area in 2018. Freight included grain from the Midwest and manufactured and consumer goods from various ports along the Pacific coast. Any regulatory or other action that increases the cost of BNSF operations in the Permit Area will affect prices paid by shippers, growers, manufacturers, and, ultimately, consumers.

In addition, the right-of-way that runs through the Permit Area is vital to national security. Section 2.3, *supra*.

The BNSF business goals and objectives identified below reflect these facts and were an integral part of identifying appropriate grizzly bear conservation measures.

¹¹ The types of funding (*e.g.*, for personnel, equipment, fencing) and the amounts (*see* Table 6, *infra*) were identified and suggested by the HCP Technical Committee. The funding supplements amounts budgeted for grizzly bear management by federal, tribal and state agencies.

BNSF Goal 1: Create regulatory predictability to protect BNSF ability to make reasonable, long-term business decisions (e.g., infrastructure and jobs).

Objectives:

- a. Manage BNSF Operations in a profitable manner over the long-term.
- b. Protect certainty and confidence for long-term business planning and investment.
- c. Ensure safe and timely delivery of people and goods.
- d. Preserve a vital transportation corridor and critical infrastructure for national security.

BNSF Goal 2: Implement cost-effective conservation so that finite resources can be allocated where they provide the most benefit.

Objectives:

- a. Implement measures that provide the greatest amount of conservation for the lowest cost.
- b. Ensure conservation benefits are commensurate with expenditures.

BNSF Goal 3: Apply conservation resources in areas showing the greatest scientific certainty of a conservation benefit and that are biologically relevant to the Permit Area.

Objectives:

- a. Base conservation actions and decisions on scientifically credible data.
- b. Apply conservation actions to the NCDE population of grizzly bears.

BNSF Goal 4: Promote the success of the HCP by developing a plan that is practical to implement while maintaining BNSF management flexibility and predictability.

Objectives:

- a. Develop commitments that can be clearly understood and easily implemented by BNSF managers, supervisors, and crews.
- b. Utilize adaptive management to modify conservation commitments based on new information over the Permit duration.

5.2 HCP Biological Goals and Objectives

The HCP **biological goals** are the broad, guiding principles for the conservation program (USFWS and NMFS 2016). The biological goals outline the minimization and mitigation strategy. The **biological objectives** are the measurable targets needed to achieve the biological goal. Individual **commitments** made by an HCP applicant are the specific actions the applicant will take to give effect to the biological objectives.

The HCP has two biological goals:

- 1) **HCP Biological Goal 1:** Promote safety for humans and bears in the Permit Area by reducing attractants in the right-of-way, thereby reducing grizzly bear mortality caused by BNSF trains to the maximum extent practicable.
- 2) **HCP Biological Goal 2:** Contribute to the recovery of the NCDE grizzly bear population by offsetting unavoidable incidental take through programs to reduce other sources of human-caused mortality within the Plan Area.

The first biological goal will minimize the potential for bear/train collisions by working to eliminate those things (*e.g.*, food sources) that draw grizzly bears into the right-of-way. The second biological goal will mitigate train-caused grizzly bear incidental take to the maximum extent practicable

Progress toward these biological goals will be measured by the seven biological objectives identified below. Specific commitments to attain the biological objectives and thereby achieve the biological goal are listed below in Section 5.3 and 5.4.

The guiding principle underlying the biological goals, biological objectives, and commitments comes from the Grizzly Bear Recovery Plan (USFWS 1993), which states that minimizing direct human-caused grizzly bear mortality is necessary for the conservation and recovery of the grizzly bear. The achievement of these goals and objectives will ensure that the Permit will not diminish the likelihood of the survival and recovery of grizzly bears in the wild.

Table 5 outlines the biological goals and objectives contained in the HCP and the environmental policy (EP), minimization and mitigation measures (MN and MT, respectively) committed to address them. The details of the commitments are described below.

Table 4. HCP Biological Goals, Objectives, and Commitments.

Biological Goal 1 - Promote safety for humans and bears in the Permit Area by reducing attractants thereby reducing grizzly bear mortality caused by BNSF trains to the maximum extent practicable.	
<u>Objective 1:</u> Determine the cause of bear-train strikes as soon as they occur.	EP-1 – Implement the BNSF Environmental Policy MN-1 – Bear Strike Notification Protocol MN-2 – General Notification Protocol MN-3 – HCP Technical Committee Review of Train-Caused Bear Mortality in the Permit Area
<u>Objective 2:</u> Minimize bear attractants in the right-of-way.	MN-4 – Apply the Rapid Response Protocol as needed MN-5 – Identify Leaking Grain Trains MN-6 – Conduct Track Inspections MN-7 – Implement Vegetation Management MN-8 – Revegetate Disturbed Areas with Approved Seed Mixes MN-9 – Implement Livestock Control Measures MN-10 – Implement Carrion Removal MN-11 – Conduct Spring Sweep for Carrion MN-12 – Implement Maintenance and Contractor Sanitation Briefings MN-13 – Address Waste Disposal When/If Observed
<u>Objective 3:</u> Reduce grizzly bear train strikes at high risk areas in the Permit Area.	MN-14 – Explore Additional Technologies
Biological Goal 2. Contribute to the recovery of the NCDE grizzly bear population by offsetting unavoidable incidental take in the Permit Area through programs to reduce other sources of human-caused mortality within the Plan Area.	
<u>Objective 4:</u> Implement conflict mitigation actions to reduce grizzly bear conflicts that contribute to human-caused mortality in the NCDE.	MT-1 – Provide funding to support the Montana’s Outdoor Legacy Foundation/GNESA administration of the HCP MT-2 – Provide funding for salaries and operational costs to support two MFWP grizzly bear technicians (Regions 1 and 4) and one Blackfoot Nation grizzly bear technician MT-3 – Provide funding for the NCDE grizzly bear management database MT-5 – Provide funding for the purchase of grizzly bear radio collars MT-6 – Provide funding for the purchase and installation of remote cameras at potential grizzly bear problem sites MT-7 – Provide funding for the purchase and implementation of bear-resistant garbage containers and dumpsters in chronic problems areas and communities where bears are expanding their range. MT-8 – Fencing to prevent livestock from accessing the right of way and to prevent bear habituation. MT-9 – Fund and conduct bear hunter education to prevent mortality from mistaken identity and defense of life

EP = Environmental Policy, MN = Minimization Measures, and MT= Mitigation Measures

5.3 HCP Commitments to Avoid and Minimize Take in the Permit Area

The first biological goal of the HCP is to promote safety for humans and bears in the Permit Area by reducing attractants in the right-of-way thereby reducing grizzly bear mortality caused by BNSF trains to the maximum extent practicable. Biological objectives 1, 2, and 3 and the associated HCP commitments fulfill this goal as described below.

5.3.1 Biological Objective 1: Implement a system to document grizzly bear train strikes in the Permit Area and identify factors contributing to the strike.

A prompt and uniform response to a train-caused grizzly bear mortality is critical to understanding the contributing factors that attract grizzly bears to the right-of-way. Establishing a policy of environmental stewardship and a notification and documentation protocol for train-caused grizzly bear mortality ensures the timely assessment and collection of data at the site of an incident. Maintaining detailed records of train strikes may facilitate a better understanding of contributing factors and grizzly bear behaviors that are causing grizzly bears to enter the railroad right-of-way (e.g., are the grizzly bears being attracted to the right-of-way or are they merely caught crossing the right-of-way as part of their natural movements).

EP-1: Implement the BNSF Environmental Policy

BNSF commits to operating in the Permit Area according to its Environmental Policy.

Rationale:

The BNSF Environmental Policy is a statement of BNSF environmental philosophy and approach. While this policy is not rigid and does not compel action by BNSF, it forms the philosophical foundation for minimizing the potential for grizzly bear take incidental to BNSF Operations and for moderating the consequences of any incidental take due to BNSF Operations.

BNSF Environmental Policy promotes Operations that are conducted in a manner that protects the environment. All elements of BNSF Operations are conducted in compliance with the Environmental Policy and its commitments to environmental protection. BNSF Environmental Policy supports the goals of minimizing grizzly bear take incidental to BNSF Operations, reducing other human-caused grizzly bear mortality in the NCDE, and protecting grizzly bear habitat.

MN-1: Bear Strike Notification Protocol

Upon witnessing or discovering a grizzly bear that has been struck by a train in the Permit Area, the train crew member will report the event to BNSF Dispatch as soon as practicable. The Service, State, and Tribal bear managers will be notified pursuant to the protocol established by the HCP technical committee. The crew member will provide the dispatcher with the following information: (1) the time of the event; (2) the location of the event; (3) the identification number of their train; (4) the species of bear struck, if known; and (5) the outcome of the collision (i.e., did the event result in either an injury or fatality, or is the outcome unknown). BNSF will fully cooperate in any investigation.

The witnessing crew member will also record same information in the *Train Activity Report/Safety Checklist* along with the time the information was reported to the dispatcher and the initials of the dispatcher receiving the information. A copy of this report is mailed to the appropriate BNSF manager by the crew member at the end of their tour of duty, as directed by BNSF in its current General Notice. A copy will also be mailed to an HCP technical committee representative to be determined by the committee.

Rationale:

Grizzly bear mortality in the Permit Area must be thoroughly investigated to determine the reasons for the bear's presence in the right-of-way. The train crew member that either witnesses a grizzly bear strike or observes an injured or dead grizzly bear is in the best position to promptly report the event. Information gleaned through these investigations will help BNSF, state, federal, and tribal agencies identify sources of attractants, establish measures to address new attractants, or modify existing commitments that are ineffective.

MN-2: General Notification Protocol

Upon witnessing or discovering any dead or injured bears in the right-of way, train crews will report the event to BNSF Dispatch as soon as practicable. The Service, State, and Tribal bear managers will be notified pursuant to the protocol established by the HCP technical committee. The crew member will provide the dispatcher with the following information: (1) the time of the event; (2) the location of the event; (3) the identification number of their train; (4) the species of bear struck, if known; and (5) the outcome of the collision (i.e., did the event result in either an injury or fatality, or is the outcome unknown). BNSF and Amtrak will fully cooperate in any investigation.

The witnessing train crew member will record the same information in the *Train Activity Report/Safety Checklist* along with the time the information was reported to the dispatcher and the initials of dispatcher receiving the information. A copy of this report is transmitted to a designated BNSF manager by the crew member at the end of their tour of duty. A copy will also be transmitted to an HCP technical committee representative to be determined by the committee.

Rationale:

For the reasons stated above, it is important to document and investigate any grizzly bear mortality within the NCDE.

MN-3: HCP Technical Committee Review of Train-Caused Grizzly Bear Mortality in the Permit Area

At its annual meeting, or on an as-needed basis, BNSF, the Service, and the HCP technical committee will review all reports of grizzly bear mortality incidental to BNSF Operations in the Permit Area. The HCP technical committee will review the reports and materials from on-site investigations conducted under the Train Strike and General Notification commitments, eyewitness statements, and any other relevant information. The purpose of the review is to evaluate and interpret the factors contributing to the mortality. The data may be used to identify new sources of attractants in the Permit Area, to identify patterns and sources of mortality over time, to evaluate the effectiveness of the existing commitments at eliminating attractants in the Permit Area, and to determine if new measures are needed to avoid future mortality. The information may be used to inform the effectiveness monitoring and adaptive management program.

Rationale:

The HCP technical committee is made up of representatives from BNSF and Amtrak, and the most knowledgeable and experienced grizzly bear managers from state, federal and tribal agencies in the

lower 48 states. Therefore, the HCP technical committee is in the best position to review and analyze data relating to train-caused grizzly bear mortality. The HCP technical committee has the requisite expertise to draw supportable conclusions from the information that can be used to adapt the HCP if needed and guide BNSF ongoing response to minimizing grizzly bear mortality attributable to BNSF Operations.

5.3.2 Biological Objective 2: Reduce attractants in the right-of-way that contribute to grizzly bear train strikes in the HCP Corridor

The primary attractants in the HCP Corridor are spilled grain, fruiting shrubs or succulent vegetation, and carrion.

Grain spills onto the right-of-way under two primary scenarios: a derailment causing a grain spill or incidental grain spilling from grain cars that are not fully sealed causing the grain to leak from the car as it travels along the track. Grain spill commitments include implementing a rapid response when a major spill occurs and promptly removing grain that has been spilled. By promptly removing spilled grain, bears will not become conditioned to seek grain in the right-of-way and will be less likely to walk the tracks in search of food.

Fruiting shrubs or succulent herbaceous plants may attract grizzly bears to forage in the right-of-way. Other wildlife may also be attracted to foraging opportunities in the right-of-way and be struck and killed creating carrion that attracts bears. Vegetation management commitments include managing all vegetation within 14 feet from track center on either side of the tracks. Additional vegetation management along the right-of-way may be evaluated and addressed as needed.

Wildlife and livestock may be struck by a train, creating carrion on or immediately adjacent to the railbed, which may attract bears. Fencing and removing grain and vegetation from the railbed will reduce the likelihood of wildlife and livestock foraging in the corridor and becoming carrion. Prompt removal of carrion will avoid and minimize this source or attractant to grizzly bears in the HCP Corridor.

The commitments to reduce attractants in the HCP Corridor are described below.

MN-4: Consult and implement, where appropriate, Rapid Response Protocol

BNSF will consult its Rapid Response Protocol following a derailment or large spill of grain or other food attractants in the HCP Corridor and implement as appropriate.

Rationale:

In the past, railcar derailments in the HCP Corridor have resulted in grain spills onto or adjacent to the railroad right-of-way that have attracted grizzly bears. A few grizzly bears became food-conditioned to the grain and several were killed by trains near the grain spill due to inadequate clean-up at the spill. Some of the food-conditioned bears were ultimately removed from the population because of continuing conflicts with humans.

Based on this experience with spills in the HCP Corridor, BNSF, in consultation with the Service and GNESEA, developed a Rapid Response Protocol to use when responding to large grain spills following a

derailment or other accident in the Permit Area. The Protocol includes guidelines and considerations for responding to major grain spills (Appendix B). The Rapid Response Protocol provides a consistent and predictable decision-making and response framework to major grain spills occurring in the HCP Corridor. Hence, using the Protocol, BNSF will respond to major grain spills in a uniform and effective manner. If needed, BNSF may update or amend the Protocol over the Permit term.

MN-5: Conduct Car Inspections

Loaded cars are subject to scrutiny when loaded, when received, and at various points along the way. A railcar identified as leaking product will be set out for repairs. Rail customers and BNSF benefit from minimizing lost product.

Rationale:

Grain accumulating in the rail bed from leaking railcars is one of the attractants that can draw grizzly bears onto the railroad right-of-way. Accumulations of grain may occur when a train with a leaking car is stopped for a long period on a siding. Grizzly bears have been known to look for spilled grain in the railroad right-of-way. Other wildlife attracted to the grain in the right-of-way may be killed by passing trains, and the resulting carrion may further attract grizzly bears to the right-of-way to feed.

The potential problems associated with grain accumulation are eliminated if the grain is prevented from spilling in the first place. The best way to prevent grain cars from leaking is to identify a leaking car before it enters the HCP Corridor.

MN-6: Conduct Track Inspections and Remove Grain as Appropriate

In accordance with federal regulation, BNSF track inspectors currently inspect portions of the tracks in the HCP Corridor for safety reasons. Track inspection frequency and content is regulated by the FRA. BNSF instructs its employees working in the corridor to watch for and report accumulations of grain within the railbed. If the grain accumulation is small, the track inspector will promptly remove the grain when safe and practicable. If the track inspector does not have the proper equipment or is not able to complete the prompt removal of the grain, a track maintenance crew will be scheduled to remove the grain as soon as possible.

Rationale:

Prompt removal of grain from the right-of-way will minimize the potential for grain to become an attractant to grizzly bears. Because of their familiarity with and frequent presence in the right-of-way track inspectors are uniquely situated to identify grain spillage and remove accumulations of grain promptly; however, all BNSF employees working in the corridor are encouraged and empowered to report spills or accumulations of grain.

MN-7: Implement Vegetation Management

BNSF implements vegetation management measures to reduce vegetation growing in the railway roadbed that may attract grizzly bears or other wildlife. Herbicides used in this process are regulated by the Federal Insecticide Fungicide and Rodenticide Act (FIFRA). Persons applying these herbicides must be licensed pesticide applicators or work under the direct supervision of a licensed applicator. BNSF

actively manages vegetation 14 feet from the center line on either side of track. BNSF Manager of Vegetation Management is also available to evaluate and, as needed, address concerns relating to an attractant growing within the right of way, but outside the area of active vegetation management.

Rationale:

Vegetation is undesirable within the railroad railbed for many reasons, not the least of which is to prevent wildlife from lingering along the tracks to feed. Food source vegetation growing in the railway roadbed may attract grizzly bears to the tracks where they have a higher chance of being struck by a passing train. Succulent vegetation sprouting within the railway roadbed is a potential food source for grizzly bears and other wildlife, especially during the spring. By managing vegetation growing within the railbed and removing attractants from the broader right-of-way, if warranted, BNSF will minimize the likelihood that grizzly bears will be attracted to the railroad tracks.

MN-8: Revegetate Disturbed Areas with Approved Seed Mixes

BNSF uses the same process for selecting seed mixtures as MDT when revegetating right-of-way lands that have been disturbed due to construction, derailments, or other land disturbances. The process includes working with contractors and interested parties to select seed mixtures that will stabilize soils without attracting animals (grazing animals and/or predators).

Rationale:

Prompt revegetation of disturbed areas is critical to prevent erosion and water quality problems. In the past, however, some seed mixes used to provide soil stability contained vegetation types that could attract grizzly bears (*e.g.* clover, dandelions, and orchard grass). BNSF references the MDT-process for selecting seed mixtures because just as MDT wants to avoid attracting animals to the margins or median of a highway, BNSF wants to avoid attracting animals to the right-of-way. Thus, the use of the MDT process for selecting seed mixes will minimize the likelihood that grizzly bears will be attracted to the railroad right-of-way, either by the plants themselves or by the animals who might eat the plants.

MN-9: Implement Livestock Control Measures

BNSF will monitor for livestock collisions occurring within the HCP Corridor. If a pattern of livestock collisions is identified in a segment of track, BNSF will work with adjacent ranchers and landowners to improve livestock control measures in the area. This may include improvements to existing fencing and/or additional fencing as practicable. If practicable, this work will be done prior to the next grazing season turn-out date to prevent livestock from entering the right-of-way unless other circumstances beyond BNSF control prevent this action. *See also* MT-8, *infra*.

Rationale:

Cattle have been hit and killed by trains near Nyack Flats (RR Milepost 1185 to 1188) and on the Blackfeet Indian Reservation. In 2019, cattle were struck in the Corridor and on US-2 resulting in train-caused mortality of 3 grizzly bears and vehicle-caused mortality of 4 grizzly bears. Livestock carrion may attract grizzly bears to the right-of-way to feed. BNSF has fenced a portion of the right-of-way between the East Glacier switch and Midvale to keep livestock out of the right-of-way. However,

further monitoring and correction may be warranted if it will effectively control livestock access to the right-of-way. This minimization measure will work in concert with mitigation measure 8 below.

MN-10: Implement Carrion Removal

In accordance with federal regulation, BNSF inspects portions of the tracks in the HCP Corridor for safety reasons. During these track inspections, the track inspector will look for carrion on or immediately adjacent to the rail bed. If carrion is spotted the track inspector will promptly remove the carrion if practicable. If the track inspector does not have the proper equipment or is not able to complete the prompt removal of the carrion, a track maintenance crew will be scheduled to remove the carrion. Other BNSF employees are frequently working in or travel throughout the Permit Area. Employees working in the Permit Area are briefed on identifying and reporting potential attractants that may be observed on or immediate adjacent to the railway roadbed.

Rationale:

Wildlife (e.g., moose, elk, and deer) have been killed by trains in the HCP Corridor, and grizzly bears have been known to feed on this carrion. Removal of carrion as soon as practicable will minimize the likelihood that it will become a grizzly bear attractant. Because of their familiarity with and frequent presence in the right-of-way track inspectors are uniquely situated to either remove livestock and wildlife carrion promptly or schedule the removal of carrion that may require the use of specialized maintenance equipment.

MN-11: Conduct a Spring Sweep for Carrion

Annually, during the month of March or April, depending on the weather, BNSF will conduct a comprehensive sweep of the railbed to remove carrion that may have accumulated during the winter.

Rationale:

Trains may collide with wildlife at any time, but these incidents occur most often during the winter months when wildlife moves along the plowed right-of-way. Carrion that accumulates during the winter can be an attractive food source for grizzly bears feeding in the spring after emergence from hibernation. By removing accumulated carrion before grizzly bears become active, it will not draw bears to linger at the tracks pursuing this food source, or otherwise become food conditioned to its availability.

MN-12: Maintenance and Contractor Briefings Regarding Sanitation

Currently, BNSF conducts safety briefings with all work crews and contractors working in the Permit Area. Within six-months of HCP implementation, BNSF will develop a formal briefing program or handout on the proper storage, handling, and removal of food and garbage for all work crews and contractors working in the Permit Area.

Rationale:

Grizzly bears may be attracted to refuse disposed of in the railroad right-of-way. BNSF crews or contractors conducting covered activities in the right-of-way are a potential source of refuse that could attract bears. BNSF can eliminate human food sources and prevent grizzly bears from becoming food

conditioned to work sites on the right-of-way through proper briefings and handouts to work crews and contractors on the appropriate handling and storage of foods and attractants in the Permit Area.

MN-13: Address Improper Refuse Disposal

During track inspections, BNSF will look for refuse improperly disposed of by third parties in the right-of-way. If such evidence is found, it will be reported to the Service. BNSF will work proactively with BNSF Resource Protection and law enforcement, as applicable, to address improper dumping of refuse. Amtrak's obligations with respect to MN-13 are addressed in Appendix A.

Rationale:

In addition to BNSF trains in the Permit Area, passenger trains operated by Amtrak also operate on BNSF rail lines in the Permit Area. Amtrak trains operating in the Permit Area are equipped with self-contained waste compartments and do not discharge human or other waste in the railroad right-of-way. Furthermore, it is against Amtrak policy to dispose of garbage in the railroad right-of-way. If, however, there is an accidental discharge of attractants, BNSF wants passenger train operators to be aware of the discharge so they can address the issue. Third parties may also access the right of way pursuant to a BNSF license, permit, or lease and it is possible that third parties may trespass on the right of way.

5.3.3 Biological Objective 3: Reduce grizzly bear train strikes at physically constrained sections of the HCP Corridor.

On some portions of the right-of-way, bears have been known to attempt to avoid oncoming trains by running down the track in front of the train rather than running off to one side. This typically happens in places where the track is elevated relative to the adjacent landscape or in steep cuts.

MN-14: Explore New Technologies

BNSF, in coordination with the Service and the HCP technical committee, will evaluate new technologies for dissuading grizzly bears or other wildlife from entering physically constrained areas of the corridor that could restrict the grizzly bear's or other wildlife's ability to escape an oncoming train. If the data (e.g., bear observations) suggests that new or existing technology should be deployed, the technical committee and BNSF will work together to determine how the technology can be used in a manner that is safe and effective for rail application.

Rationale:

There may be new/other technologies that can be used to dissuade grizzly bears from entering physically constrained areas of the corridor. Such devices and methods need to be evaluated to determine that they are effective, safe, and practicable. The HCP technical committee can help determine the implementation and use of various technologies as they become available. Through the approval of the committee, these technologies can be evaluated for effectiveness in a rail application.

5.4 HCP Commitments to Mitigate Unavoidable Take

The second biological goal of the HCP is to contribute to the recovery of the NCDE grizzly bear population by offsetting unavoidable incidental take in the Permit Area through programs that reduce

other sources of human-caused mortality within the Plan Area. Biological objectives 4 and 5 and the associated HCP commitments fulfill this goal as described below.

5.4.1 Biological Objective 4. Implement conflict mitigation actions to reduce grizzly bear conflicts that contribute to human-caused mortality in the NCDE.

The primary effect of incidental take attributed to BNSF operations is the loss of recruitment to the NCDE grizzly bear population. As previously stated, grizzly bear conflicts with humans are a key issue in grizzly bear recovery within the NCDE. Attractant related grizzly bear deaths (*i.e.*, management removals, defense of life) continue to be one of the leading causes of grizzly bear mortality in the NCDE (Table 2). Therefore, the HCP technical committee identified a suite of programs for the NCDE that will, in the opinion of the HCP technical committee and based on the best available scientific evidence, reduce human-bear conflicts that lead to human-caused mortality.

MT-1: Fund the administrative duties of Montana’s Outdoor Legacy Foundation/GNESA

BNSF will provide \$25,000 annually for the Permit term for the administrative duties of MOLF in administering the BNSF funds and HCP technical committee.

Rationale:

The HCP includes funds to compensate MOLF/GNESA to serve as the administrators of the HCP, collecting data, organizing meetings of the HCP technical committee, BNSF, and the Service, distributing the mitigation funds, and preparing annual reports. MOLF/GNESA also implements its own grizzly bear conflict mitigation programs in the NCDE including bear fairs. These programs are opportunities to educate the public on living with grizzly bears, on the use of bear spray, and on the use of deterrents such as electric fencing and bear-resistant garbage bins. Illegal mortalities were responsible for approximately 25 percent of the human-caused grizzly bear mortalities in the NCDE between 1975 and 2019. Illegal mortalities include mistaken identities, *i.e.*, grizzly bears killed by black bear hunters, as well as defense of property and malicious/poaching. Therefore, public education is an important component of addressing illegal mortalities.

MT-2: Fund the salaries and operational costs for two MFWP grizzly bear technicians.

BNSF will provide \$83,000 annually for the Permit term to fund the salary of and operational costs for one grizzly bear technician in MFWP Region 1 and one grizzly bear technician in MFWP Region 4 (*i.e.*, \$166,000 total per year).

Rationale:

MFWP, in cooperation and with support of the Service, is the agency that is principally responsible for managing grizzly bears in Montana; and Regions 1 and 4 of the Agency overlap the NCDE. MFWP has pioneered a non-lethal management program that is used as a model for grizzly bear management throughout the state (Proctor et al. 2018).

The responsibilities of the grizzly bear managers and technicians are to monitor and manage the grizzly bear population as well as conduct outreach and education of the public to ensure the public feels safe and secure enough to accept coexistence with large, occasionally dangerous, carnivores like grizzly

bears. Managers then focus on direct actions to reduce bear attractants that lead to human-caused mortality. Additional funding for the salary and operational costs of technicians will allow more conflict mitigation actions to occur in the communities where the resources are most needed, including public education, implementation of electric fencing programs and waste management programs, trainings on the use of bear spray, deployment of deterrents such as trained dogs, rubber bullets, or bean bags, responding to concerned citizens, and addressing attractants before they become a source of conflict.

MT-3: Fund the salary and operational costs for one Blackfoot Nation grizzly bear technician.

BNSF will provide \$83,000 annually for the Permit term to fund the salary of and operational costs for one Blackfoot Nation grizzly bear technician.

Rationale:

The Blackfoot Nation is a sovereign Native American nation responsible for managing grizzly bears on the Blackfoot Indian Reservation. The Blackfoot Nation grizzly bear manager and technician implement similar conflict mitigation programs on the Blackfoot Nation to those implemented by MFWP biologists and technicians throughout Montana. The NCDE population is growing and expanding its range beyond the eastern front of the Rockies. As the population expands, more communities, ranches, and residential areas on the Blackfoot Indian Reservation are reporting human-grizzly bear conflicts. Providing the Blackfoot Nation with the funds to hire additional staff will allow them to expand their conflict mitigation activities to reduce human-cause mortality on the Blackfoot Indian Reservation.

MT-4. Fund the NCDE grizzly bear management database

BNSF will provide \$15,000 annually for the Permit term to maintain the grizzly bear database.

Rationale:

MFWP manages a centralized database of grizzly bear mortality, locations of radio-collared bears, and the known histories of individual bears. These funds will be used to add the historic data from all the agencies with bear management responsibilities in the NCDE and enhancing the program so that other agencies can enter, access and use the data. The database is used by grizzly bear managers to make decisions about the appropriate response to a “problem” bear. Knowing the bear’s history (where it came from, how long it has been in the location, whether it is at risk of human habituation) allows the grizzly bear manager to provide an appropriate response, such as capturing the bear in a trap for 1-2 nights such that it associates human presence with a negative experience, or using bear dogs, bean bags, or rubber bullets to deter it from the area.

The centralized database also allows managers and researchers to identify patterns in grizzly bear habitat use, distribution, and movements. This information allows grizzly bear managers to target communities for educational programs and other conflict mitigation activities.

MT-5: Fund the purchase of radio collars.

BNSF will provide \$60,000 in year 1 of HCP implementation for the purchase of additional radio collars to be used in the NCDE.

Rationale:

Radio-collaring grizzly bears is instrumental to managing them. Collars can be programmed to record locations at intervals of 1 to 4 hours during the non-denning season and can be programmed to take more frequent readings when a grizzly bear comes into proximity of residential areas. This level of information is invaluable for determining the appropriate management response and eliminating the need for unnecessary capture of a grizzly bear. For example, a grizzly bear may enter densely populated areas to seek natural food sources and move on when the food is depleted. This bear does not need to be captured. A radio-collared grizzly bear spending a disproportionate amount of time in a location may also allow the identification of a previously unidentified attractant. This allows grizzly bear managers to work with local landowners to address attractants before a conflict occurs and to encourage the bear to move on to a different food source. These preventive actions contribute to a reduction in human-caused mortality.

MT-6: Fund the purchase of remote cameras

BNSF will provide \$20,000 in year 1 of HCP implementation for the purchase of remote cameras.

Rationale:

Bear managers deploy remote cameras to monitor potential conflict situations and to monitor bear capture sites. The purchase of additional remote cameras will allow their deployment to more locations to monitor potential conflict sites, evaluate the effectiveness of mitigation actions applied, ensure timely responses to conflicts, and reduce the need to capture and handle bears by preventing conflicts before they occur. Additionally, monitoring bear with a remote camera allows managers to give a grizzly bear time to move from the area on its own accord rather than pre-emptively capturing it.

MT-7: Fund a waste management program.

BNSF will provide \$30,000 in year 1 of HCP implementation for a waste management program and/or the purchase and distribution of waste management resources.

Rationale:

Bears are attracted to garbage at individual residences and community refuse disposal sites. Providing “bear-resistant” containers and disposal sites is a proven method to reduce the potential for bear conflicts (Breck et al. 2006). Adequately securing garbage and other attractants before they are picked up by collectors is a major challenge in rural neighborhoods.

Funding for waste management will enhance MOLF/GNESA and the grizzly bear managers’ ability to cost-share the purchase of bear-resistant containers with homeowners or loan out bear-resistant bins. Ideally, homeowners will become used to using the bins and purchase one such that the income from the sale can be recycled back to purchase more bins. Funding will also allow MOLF/GNESA and grizzly bear managers to work with communities to create bear-resistant disposal sites in the Plan Area, including communities in the Blackfoot Valley, Middle Fork, and Rocky Mountain Front, where grizzly bears are expanding their range.

MT-8: Fund the purchase/installation of fencing

BNSF will provide \$88,000 for the purchase, installation and maintenance of fencing. No less than \$60,000 of those funds will be used for conventional fencing to prevent livestock and/or wildlife from entering the right of way. The balance will be used for electric fencing that can be placed near attractants.

Rationale:

As noted above, livestock that is hit and killed in the right of way becomes carrion that attracts grizzly bears. Fencing will help prevent livestock from entering the right of way. The HCP technical committee will monitor data related to bear strikes to identify the places where fencing should be built.

Grizzly bears are also attracted to disposal sites, livestock calving areas, lambing pastures, orchards, individual fruit trees, commercial beehives, etc. Grizzly bear managers in Montana have effectively used electric fencing to deter bear visits to these and other temporary attractants (Proctor et al. 2018, see also grizzly bear management reports at <http://fwp.mt.gov/regions/r1/>). Region 1, MFWP has an electric fence loaner program and currently have 13 electric fence energizers and net fences on loan to landowners (MFWP 2018). Financing the electric fencing program will allow MOLF and grizzly bear managers to conduct electric fencing workshops, implement a cost-share electric fencing program, and/or deploy electric fencing to prevent conflicts that contribute to grizzly bear mortality.

MT-9: Fund and conduct bear hunter education

BNSF will provide \$11,000 annually for the Permit term to fund and conduct hunter education programs focused on black and grizzly bear identification.

Rationale:

From 1975 through 2019, illegal mortalities were responsible for approximately 25 percent of the human-caused grizzly bear mortalities in the NCDE. Illegal mortalities include mistaken identities, i.e., grizzly bears killed by black bear hunters, as well as defense of property and malicious/poaching.

Financial support for black bear hunter education will allow MOLF and MFWP to expand the existing program. The hunter education programs train hunters to avoid conflicts, avoid mistaken identity of bears, and use bear spray in a defense of life situation. By properly training more hunters, there will be fewer grizzly bear mortalities related to mistaken identity or defense of life.

5.5 Changed and Unforeseen Circumstances

Federal No Surprises Assurances (codified at 50 CFR 17.3, 17.22(b)(5), 17.32(b)(5); 50 CFR 222.307(g)) provides assurances to Section 10 permit holders that, as long as the permittee is properly implementing the HCP and the ITP, no additional commitment of land, water, or financial compensation will be required with respect to covered species, and no restrictions on the use of land, water, or other natural resources will be imposed beyond those specified in the HCP without the consent of the permittee. The No Surprises rule has two major components: changed circumstances and unforeseen circumstances.

5.5.1 Changed Circumstances

Changed circumstances are defined as changes in circumstances affecting a species or geographic area covered by a conservation plan that can reasonably be anticipated by plan developers and the Service and that can be planned for (e.g., the listing of a new species, or a fire, or other natural catastrophic event in areas prone to such an event) (50 CFR 17.3). If additional conservation and mitigation measures are deemed necessary to respond to changed circumstances, and such measures were provided for in the HCP, the permittee will be required to implement such measures (50 CFR 17.22(b)(5)(i), 17.32(b)(5)(i); 50 CFR 222.307(g)(1)). If additional conservation and mitigation measures are deemed necessary to respond to changed circumstances, and such measures were not provided for in the HCP, the Services will not require any additional measures beyond those provided for in the HCP, without the consent of the permittee, provided the HCP is being properly implemented (50 CFR 17.22(b)(5)(ii), 17.32(b)(5)(ii); 50 CFR 222.307(g)(2)).

For the purposes of this HCP, the Service and BNSF have identified the following potential changed circumstances.

Change in Status of Grizzly Bears

The listing status of the grizzly bear may change during the Permit term. If the NCDE population of grizzly bears is de-listed, the Service and BNSF will review the HCP to determine if any of the commitments could be relaxed, removed, or modified.

New Listing of a Non-HCP Species

If a non-HCP species that occurs in the Permit Area and is impacted by rail operations becomes a federally listed species, the Service would notify BNSF. Options that might be pursued include:

- Development of a plan to avoid take of the newly listed species,
- Addition of the species to this HCP and Permit through an amendment,
- Application for a separate permit for the newly listed species through the section 10 process.

Take of Grizzly Bears Outside the Permit Area

The NCDE grizzly bear population size is increasing (Kendall et al. 2009, Mace et al. 2012, Costello et al. 2016, C.M. Costello 2019, *in litt.*) and its range is expanding (NCDE Subcommittee 2019). Therefore, it is reasonable to assume that over the Permit term, a train strike could result in mortality of grizzly bears outside the Permit Area. In the event this occurs, BNSF and the Service would meet to discuss the conditions under which the strike occurred and determine an appropriate response consistent with the adaptive management provisions below.

Incidental Take of Grizzly Bears in Excess of Permit

As noted, the grizzly bear population is increasing, and its range is expanding. In some years, as the population has increased, the total number of human-caused grizzly bear mortalities has also increased. If the take levels specified in Section 4.3.3 are exceeded for two years in succession, BNSF and the Service would meet to discuss the circumstances under which strikes have occurred and determine an appropriate response consistent with the adaptive management provisions below.

5.5.2 Unforeseen Circumstances

Unforeseen circumstances are events affecting a species or geographical area covered by an HCP that cannot be reasonably anticipated and that result in a substantial and adverse change in the status of the covered species (50 CFR 17.3).

In deciding whether unforeseen circumstances exist, NMFS and the USFWS shall consider, but not be limited to, the following factors (50 CFR 17.22(b)(5)(iii)(C) and 17.32(b)(5)(iii)(C); 50 CFR 222.307(g)(3)(iii)): (1) the size of the current range of the affected species, (2) the percentage of the range adversely affected by the covered activities, (3) the percentage of the range that has been conserved by the HCP, (4) the ecological significance of that portion of the range affected by the HCP, (5) the level of knowledge about the affected species and the degree of specificity of the conservation program for that species under the HCP, and (6) whether failure to adopt additional conservation measures would appreciably reduce the likelihood of survival and recovery of the species in the wild.

In negotiating unforeseen circumstances, the Services will not require the commitment of additional land, water or financial compensation or additional restrictions on the use of land, water or other natural resources beyond the level otherwise agreed upon for the species covered by the HCP without the consent of the permittee (50 CFR 17.22(b)(5)(iii)(A); 50 CFR 222.307(g)(3)(i)). If additional conservation and mitigation measures are deemed necessary to respond to unforeseen circumstances, the Services may require additional measures of the permittee where the HCP is being properly implemented only if such measures are limited to modifications within conserved habitat areas, if any, or to the HCP operating conservation program for the affected species, and maintain the original terms of the plan to the maximum extent possible (50 CFR 17.22(b)(5)(iii)(B) and 17.32(b)(5)(iii)(B); 50 CFR 222.307(g)(3)(ii)). If unforeseen circumstances are found, the permittee is not required to come up with additional resources or funds to remedy unforeseen circumstances, but the Services and the permittee should work together to determine an appropriate response within the original resource commitments in the HCP.

Either BNSF or the Service may notify the other of a potential unforeseen circumstance. If the Service determines that additional conservation and mitigation measures are necessary to respond to an unforeseen circumstance where the HCP is being properly implemented, the additional measures required of BNSF must be as close as possible to the terms of the original HCP and must be limited to modifications within any conserved habitat area or to adjustments within lands or waters that are already set-aside in the HCP operating conservation program. Only with the consent of BNSF may additional conservation and mitigation measures involve the commitment of additional financial compensation or restrictions on the use of land or other natural resources otherwise available for development or use under the original terms of this HCP.

6.0 REPORTING REQUIREMENTS AND MONITORING MEASURES

Monitoring is a mandatory element of all HCPs (see 50 CFR 17.22, 17.32, and 222.307). The Service and the applicant must ensure that the monitoring program of an HCP provides information to: (1) evaluate compliance, (2) determine if biological goals and objectives are being met, and (3) provide feedback information for an adaptive management strategy, if one is used. HCP monitoring is divided into two types. Compliance Monitoring (referred to as Implementation Monitoring in this HCP) is

verifying that the permittee is carrying out the terms of the HCP, permit, and Implementing Agreement. Effectiveness Monitoring evaluates the effects of the permitted action and determines whether the HCP commitments are achieving the biological goals and objectives.

6.1 Reporting Requirements

At least once a year MOLFG/KNESA will convene the Service, BNSF, and the HCP technical committee for an annual meeting. The outcomes of the annual meeting will be summarized by MOLFG/KNESA into a report submitted to BNSF and the Service by March 31 of each year during the permit term. The meeting is an opportunity to review the conflict mitigation actions that have occurred through the funding provided by BNSF, report on overall NCDE mortality trends, identify new or variations in mortality patterns, review train strike incidents, and determine if any commitments required adaptation.

6.2 Implementation Monitoring

As part of its annual report prepared by MOLFG/KNESA, BNSF will include a certification to the Service that its avoidance and minimization measures (i.e., HCP Commitments EP1 and MN-1 through MN-14) are being implemented in the HCP Corridor, including a full description of implementation actions.

6.3 Effectiveness Monitoring

The HCP Handbook requires that an HCP specify the measures the applicant will take to “monitor” the impacts of the taking resulting from project actions [50 CFR 17.22(b)(1)(iii)(B) and 50 CFR 222.22(b)(5)(iii)]. Monitoring measures described in the HCP should be as specific as possible and be commensurate with the project’s scope and the severity of its effects.

Effective implementation of the HCP will (1) minimize, to the maximum extent practicable, grizzly bear take incidental to BNSF operations in the Permit Area, and (2) mitigate unavoidable take incidental to BNSF Operations so that the grizzly bear population in the NCDE continues to grow. BNSF will coordinate with the Service and HCP technical committee to annually review the circumstances associated with each instance of grizzly bear take incidental to BNSF Operations. The purpose of this review is to determine which, if any, of the incidents was avoidable; to consider additional measures which might further minimize the potential for train-bear collisions; and assess whether the number of train-related bear mortalities and specifically the percentage of female grizzly bears lost to train-related mortalities was within the anticipated level of incidental take.

It is not possible to quantitatively determine the number of human-caused bear mortalities that will be avoided through implementation of the HCP mitigation program. Members of the HCP technical committee will report their prevention, management, and bear monitoring activities funded by the HCP mitigation program. Through its monitoring and reporting, the HCP technical committee will determine the additional field work that was accomplished by the technicians; the additional bear monitoring that was enabled with the collars and cameras; lessons learned from that monitoring; the number of conflict sites that were abated through the BNSF-funded waste management materials and electric fencing program; and the number of additional hunter education classes offered. To the best of its ability, the HCP technical committee will qualitatively assess the number of human-grizzly bear conflicts averted by these actions.

6.4 Adaptive Management

“Adaptive management is a decision process that promotes flexible decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood. Careful monitoring of these outcomes both advances scientific understanding and helps adjust policies or operations as part of an iterative learning process. Adaptive management also recognizes the importance of natural variability in contributing to ecological resilience and productivity. It is not a ‘trial and error’ process, but rather emphasizes learning while doing. Adaptive management does not represent an end in itself, but rather a means to more effective decisions and enhanced benefits. Its true measure is in how well it helps meet environmental, social, and economic goals, increases scientific knowledge, and reduces tensions among stakeholders” (Williams et al. 2009). In short, adaptive management is a tool that project proponents and regulators can use as gaps in knowledge and/or information are filled over time.

In brief, the HCP objectives are to (1) document grizzly bear train strikes and the factors contributing to the strike, (2) reduce train strikes by eliminating attractants in the right-of-way, and (3) offset human-caused grizzly bear mortality in other areas of the NCDE. Members of the HCP technical committee agree that minimization measures described in this HCP and currently being implemented have minimized grizzly bear take incidental to BNSF Operations in the HCP Corridor. No other practicable measures to minimize take have been identified. Further, the HCP technical committee agrees that the mitigation program will effectively reduce grizzly bear mortality in other areas of the NCDE. Nevertheless, several factors may contribute to the need to adaptively modify the HCP conservation strategy during the Permit term. These factors include (1) identification of new technologies that were not previously known or considered, (2) reallocation of resources to better minimize and mitigate for grizzly bear incidental take, and (3) an increase in incidental take attributed to train strikes that occur beyond the current Permit Area due to the increasing and expanding population of grizzly bears.

As MOLFG/KNESA, MFWP, the Blackfoot Nation and BNSF work together, improve data management and tracking, and meet to review the HCP, new contributing factors to train strikes may be identified or new programs may be needed to offset grizzly bear mortality in the NCDE. If incidental take is exceeded or strikes occur outside the covered Permit Area, the HCP technical committee may also need to adapt the conservation strategy to employ measures in new areas. Further, as the grizzly bear population continues to increase and expand its range, new challenges and solutions may emerge. These factors will be adaptively managed in two ways. First, a mid-Permit term review will be employed and second, a monetary reserve account will be established.

6.4.1 Mid-Permit Term Review

In year three of the Permit term, the HCP technical committee will review grizzly bear mortality data, reports from the programs/projects supported through this HCP, and advances in relevant technologies to determine whether any of the resources committed through this HCP should be redeployed or new programs considered. This process may include terminating projects or programs that have not been effective, expanding programs or projects that are effective, or developing new programs or projects consistent with the Biological Goals of this HCP. Reallocation of resources would occur in the fourth year of the Permit.

This process does not include a mechanism for increasing the amount of resources provided by BNSF. Any increase in the resource commitment would come through the Reserve Program described below.

The mid-Permit term review gives the HCP technical committee the opportunity to assess the efficacy of the work being supported by the HCP and adjust that work, if necessary, to better minimize incidental take in the Permit Area and/or mitigate for grizzly bear incidental take authorized by the Permit.

6.4.2 Reserve Account

BNSF will establish a reserve account of \$1,000,000 to fund programs/projects designed by the HCP technical committee to respond to new data discoveries, the identification of new factors contributing to or patterns of train strikes, incidental take outside Permit Area, or the arrival of new challenges and solutions as grizzly bear populations expand. Funds from this account may be used to implement new minimization measures or mitigation projects or programs over the life of the Permit. The distribution of the funds from the reserve account for new projects or programs would be authorized if the following occurs:

1. The Service and HCP technical committee confirms that BNSF is in substantial compliance with the provisions of this HCP and the Implementing Agreement contained in Appendix A.
2. Despite BNSF's compliance, train-caused mortality has exceeded two of the three metrics described in Section 4.3.3, *supra*, for two (2) consecutive years.
3. The HCP technical committee determines that in its best judgment and supported by available scientific data, the new project or program will address increased incidental take either by further minimizing train-caused grizzly bear mortality to the maximum extent practicable or by mitigating for the train-caused mortality to the maximum extent practicable by reducing human-caused mortality of grizzly bears elsewhere in the Program Area.

Funds from the reserve account will then be disbursed by MOLF as directed by BNSF. Any funds left in the reserve account and any interest accrued thereto at the end of the Permit term will be returned to BNSF. The reserve fund reflects BNSF's commitment to the success of the HCP.

7.0 HCP FUNDING AND IMPLEMENTATION

The ESA and the implementing regulations [50 CFR 17 and 222] require that HCPs specify the measures the permittee will adopt to ensure adequate funding for the HCP. The Service should not approve an HCP that does not contain an adequate funding commitment from the applicant/permittee to support an acceptable monitoring program unless the HCP establishes alternative funding mechanisms. Therefore, it is necessary to determine the costs for HCP implementation and identify the funding sources that will support the HCP for its Permit term. This section identifies the costs of the HCP and identifies how the HCP will be funded.

The cost of the HCP is outlined in Table 6. Funding for the HCP will come from BNSF's operations budget. BNSF's financial statements filed with the security and exchange commission can be viewed at

<https://www.sec.gov/cgi-bin/browse-edgar?company=BNSF&owner=exclude&action=getcompany>.

Given BNSF's financial resources, the number of years it has been operating in the Permit Area, and its demonstrated commitment to grizzly bear conservation in the Plan Area, the Service can be confident that BNSF will provide funds to support the HCP minimization and mitigation goals and objectives and reserve account. Therefore, the Service has not required BNSF to undertake further assurances of its financial commitment to the HCP.

Table 5. HCP Costs							
	HCP Implementation Year						
HCP Conservation Strategy	1	2	3	4	5	6	7
Minimization							
Minimization Measures ¹	\$100,000	\$100,000	\$100,000	Minimization measures applied annually but may be adjusted in Year 4 under adaptive management provisions of HCP after consultation with the HCP Technical Committee.			
Subtotal	\$100,000	\$100,000	\$100,000	\$100,000 Annually			
Mitigation							
MFWP Bear Technician Region 4	\$83,000	\$83,000	\$83,000	Total funding of \$289,000 available annually but may be subject to reallocation in Year 4 under adaptive management provisions of HCP after consultation with the HCP Technical Committee.			
MFWP Bear Technician Region 1	\$83,000	\$83,000	\$83,000				
Blackfeet Nation Bear Technician	\$83,000	\$83,000	\$83,000				
Grizzly Bear database	\$15,000	\$15,000	\$15,000				
GNESEA Support	\$25,000	\$25,000	\$25,000				
Subtotal	\$289,000	\$289,000	\$289,000				
Projects²							
Remote collars	\$60,000						
Remote cameras	\$20,000						
Waste management	\$30,000						
Fencing	\$88,000						
Hunter education	\$11,000						
MOLF Bear Programming	\$25,000						
Subtotal	\$234,000						
Adaptive Management Funds³	\$1,000,000						
TOTAL	\$1,623,000	\$389,000	\$389,000	\$389,000 Annually			

¹ This figure is a conservative estimate of the value of the time, equipment, and costs associated with the implementation of the minimization measures described above. The actual costs of salaries, equipment and expenses to implement the minimization measures since 2005 has exceeded this amount. This amount also does not account for the extraordinary costs associated with minimization efforts following a major grain spill.

² Projects are funded with a one-time payment in Year 1 of the HCP. The funds are distributed by GNESEA/MOLF annually for the permit duration up to the total amount of \$234,000. the funds remaining in Year 4 may be reallocated to other projects not listed above but located in the Permit Area and HCP plan area.

³ The HCP's adaptive management program will include a reserve fund that will be used by the HCP technical committee to employ new technologies, apply additional resources to reduce or offset incidental take, and or respond to the increasing and expanding population of grizzly bears in the NDCE.

8.0 REFERENCES

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APPENDIX A – IMPLEMENTING AGREEMENT
