



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
1201 NE Lloyd Boulevard, Suite 1100
Portland, Oregon 97232-1274

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Refer to NMFS No: WCRO-2022-03002

May 12, 2023

Ann Niesen
Malheur National Forest
Acting Forest Supervisor
U.S. Department of Agriculture
P.O. Box 909
John Day, OR 97845

Re: Endangered Species Act Section 7(a)(2) Biological Opinion for Administration of the Aldrich, Beech, Camp Creek, Dark Canyon, Deadhorse, Deer Creek, Dixie, Fawn Springs, Fields Peak, Fox, Hanscomb, Herberger, Hot Springs, John Day, Long Creek, McClellan, McCullough, Mount Vernon, Murderers Creek, Lower Middle Fork John Day, North Middle Fork John Day, South Middle Fork John Day, Rail, Reynolds Creek, Round Top, Seneca, Slide Creek, and York Grazing Allotments for 2023–2027 on the Malheur National Forest, North Fork John Day (HUC 17070202), Middle Fork John Day (HUC 17070203), South Fork John Day (HUC 17070201), and Upper John Day (HUC 17070201) Subbasins, Grant County, Oregon

Dear Ms. Niesen:

Thank you for your letter of November 16, 2022, requesting initiation of consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 et seq.) for the effects of administering grazing, as proposed, on the 28 above-referenced allotments during 2023–2027 on the Malheur National Forest under authority of the Federal statutes and regulations identified in the Forest Service Manual at 2201.1.

NMFS also reviewed the likely effects of the proposed action on essential fish habitat (EFH), pursuant to section 305(b) of the Magnuson–Stevens Fishery Conservation and Management Act (16 U.S.C. 1855(b)), and concluded that the action area does not contain EFH. Therefore, Magnuson–Stevens Fishery Conservation and Management Act consultation is not required.

In this document, NMFS concludes that the proposed action for the 28 above-named allotments is not likely to jeopardize the continued existence of Middle Columbia River (MCR) steelhead (*Oncorhynchus mykiss*) or result in the destruction or adverse modification of designated critical habitat.



Please contact Rebecca Viray, Columbia Basin Branch, (541) 786-5177, Rebecca.Viray@noaa.gov, if you have any questions concerning this consultation or require additional information.

Sincerely,

A handwritten signature in blue ink that reads "Nancy L. Munn". The signature is written in a cursive style with a large initial "N" and "M".

Nancy L. Munn, Ph.D.
Acting Assistant Regional Administrator
Interior Columbia Basin Office

cc: Brad Houslet, Inter-Governmental Planning Department Manager, Confederated Tribes of the Warm Springs Reservation (CTWSR)
Lyman Jim, Fisheries Department Manager, CTWSR
Marisa Meyer, U.S. Fish and Wildlife Service
Stephan Charrette, Oregon Department of Fish and Wildlife

Endangered Species Act Section 7(a)(2) Biological Opinion
for the

Administration of the Aldrich, Beech, Camp Creek, Dark Canyon, Deadhorse, Deer Creek, Dixie, Fawn Springs, Fields Peak, Fox, Hanscomb, Herberger, Hot Springs, John Day, Long Creek, McClellan, McCullough, Mount Vernon, Murderers Creek, Lower Middle Fork John Day, North Middle Fork John Day, South Middle Fork John Day, Rail, Reynolds Creek, Round Top, Seneca, Slide Creek, and York Grazing Allotments for 2023–2027 on the Malheur National Forest, North Fork John Day (HUC 17070202), Middle Fork John Day (HUC 17070203), South Fork John Day (HUC 17070201), and Upper John Day (HUC 17070201) Subbasins, Grant County, Oregon.


NMFS Consultation Number: WCRO-2022-03002

Action Agency: Malheur National Forest, U.S. Forest Service

Affected Species and NMFS’ Determinations:

ESA-Listed Species	Status	Is Action Likely to Adversely Affect Species	Is Action likely to Jeopardize the Species?	Is Action Likely to Adversely Affect Critical Habitat?	Is Action Likely to Destroy or Adversely Modify Critical Habitat?
Middle Columbia River (MCR) steelhead (<i>Oncorhynchus mykiss</i>)	Threatened	Yes	No	Yes	No

Consultation Conducted By: National Marine Fisheries Service, West Coast Region

Issued by: 
 Nancy L. Munn, Ph.D.
 Acting Assistant Regional Administrator
 Interior Columbia Basin Office

Date: May 12, 2023

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GLOSSARY OF TERMS

For purposes of this consultation:

Action means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by a Federal action agency in the United States or upon the high seas.

Action area means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.

Amendment 29: The MNF Land and Resource Management Plan (MNF 1990) was amended in 1994 (Amendment 29) in response to the Columbia River Basin Anadromous Fish Habitat Management Policy and Implementation Guide (USDA FS 1991). The Forest modified the 1990 Land and Resource Management Plan (LRMP) Standard 5 for Fish and Wildlife which stated “provide the necessary habitat to maintain or increase populations of management indicator species with special emphasis on steelhead” to include specific numeric desired future conditions (DFCs) to protect water quality, features of riparian vegetation, riparian dependent species, and components of fish habitat.

The amended Standard 5 included specific numerical DFCs for Management Area 3A (non-anadromous riparian areas) and Management Area 3B (anadromous riparian areas). The DFCs provided numeric values for the elements and subelements of: (1) sediment/substrate; (2) water quality; (3) stream channel morphology; and (4) riparian vegetation. Amendment 29 states, “These values are based upon the best information currently available and are considered to be consistent with management area desired future conditions. If new information becomes available in the future which indicates changes in the numeric values to achieve the stated desired condition, these values may be inserted as a clarification/correction to the individual standard.”

Animal unit months (AUM) is the amount of forage needed by an “animal unit” (AU) grazing for one month. The quantity of forage needed is based on the cow’s metabolic weight, and the animal unit is defined as one mature 1,000-pound cow and her suckling calf. It is assumed that such a cow nursing her calf will consume 26 pounds of dry matter (DM) of forage per day (20 pounds for the cow and 6 pounds for the calf).

Annual operating instructions (AOI) specify those annual actions that are needed to implement the management direction set forth in the project-level National Environmental Policy Act (NEPA)-based decision, existing permit, and appealable Line Officer Notification of Permit Action and/or existing adaptive management plan. The AOIs shall clearly and concisely identify the obligations of the permittee and the Forest Service, and clearly articulate annual grazing management requirements, standards, and monitoring necessary to document compliance. Annual operating instructions shall not specify any terms and conditions outside what is directed by the term grazing permit and may not be used for permit modification.

Applicant means any person, as defined in section 3(13) of the ESA, who requires formal approval, authorization, or funding from a Federal action agency as a prerequisite to conducting the action.

Bankfull discharge means the streamflow level when the water just begins to leave the channel and spread onto the floodplain; an event that returns approximately every 1.1 to 1.2 years in western Oregon, and every 2.6 years in eastern Oregon.

Bankfull elevation means the elevation at which a stream first reaches the top of its natural banks and overflows, and is indicated by the topographic break from a vertical bank to a flat floodplain or the topographic break from a steep slope to a gentle slope.

Bankfull width means the stream width measured perpendicular to stream flow between the bankfull elevations. Compare active channel width—because bankfull width is measured between bankfull elevations, it is typically wider than active channel width, which is measured between ordinary high water marks.

Channel-forming discharge means a theoretical streamflow which would result in channel morphology close to that of the existing channel.

Conserve, conserving, and conservation mean to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to the ESA are no longer necessary.

Conservation recommendation (CR) means a suggestion by NMFS regarding a discretionary measure to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information.

Critical habitat (CH) means any geographical area designated as critical habitat in CFR part 226.

Cumulative effects are those effects of future state or private activities, not involving Federal action, that are reasonably certain to occur within the action area of the Federal action subject to consultation.

Design life means the projected life (in years) of a new structure or structural component under normal loading and environmental conditions before replacement or major rehabilitation is expected.

Designated monitoring area (DMA) for the purposes of multiple indicator monitoring protocol, is a permanently marked segment of stream that has been selected for monitoring. It refers to the specific sampling location that extends at least 110 meters (m) along the stream. Longer segments may be needed for monitoring larger streams (over 5.5 m greenline-to-greenline width (GGW)). For such streams, the DMA should be at least 2 meander wavelengths or approximately 20 times the GGW (Gordon et al. 2004). For example, a DMA on a stream segment with an average GGW of 8.3 m would be 8.3 m x 20, or 166 m in length.

Designated non-Federal representative means a person designated by the Federal action agency as its representative to conduct informal consultation and/or to prepare any biological assessment.

Desired ecological condition is the state of physical, chemical, and biological characteristics and the processes and interactions that connect them to promote and sustain an expected degree of functionality. It is based on the interactions of ongoing processes involving the vegetation, soils, and hydrological components that determine the functionality of the system. Hence, an ecosystem or its components are considered functional if the processes observed are those that move the system to a higher state of dynamic equilibrium, as opposed to a state that is dysfunctional and demonstrates a trend towards system degradation.

Effectively isolated from the active stream means an area that is inaccessible to fish and that cannot allow a visible release of pollutants or sediment into the water.

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

End-of-grazing use (end-of-use) monitoring means completing an action, usually referring to multiple indicator monitoring (MIM), promptly, within 1 week of the date cattle are to be removed from the pasture or allotment. This ESA-consultation monitoring is required to address livestock use of critical habitat that has just concluded on a pasture with set dates of use. Besides the scheduled end date, end-of-grazing use monitoring can also be driven when mid-season move-trigger monitoring identifies a date to be out of a pasture, due to resource conditions, that occurs ahead of the “scheduled” off date.

Endangered species means any species which is in danger of extinction throughout all or a significant portion of its range.

Environmental baseline refers to the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency’s discretion to modify are part of the environmental baseline.

Fishery biologist means a person that has an ecological education, thorough knowledge of aquatic biology and fish management, and is professionally engaged in fish research or

management activities; a supervisory fishery biologist is professionally responsible for the supervision of biologists and technical staff engaged in fish research or management.

Functional floodplain means an area that is interconnected with the main channel through physical and biological processes such as periodic inundation, the erosion, transport and deposition of bed materials, nutrient cycling, groundwater recharge, hyporheic flows, the production and transport of large wood, aquatic food webs, and fish life history. These processes interact to create and maintain geomorphic features such as alcoves, backwaters, backwater deposits, braided channels, flooded wetlands, groundwater channels, overflow channels, oxbows or oxbow lakes, point bars, ponds, side channels, and sloughs. These features may be difficult to distinguish on smaller streams, where floodplain deposits are subject to rapid removal and alteration. These permanent or intermittent geomorphic features are extensions of the main stream channel and are critical to the survival and recovery of ESA-listed salmon and steelhead. The functional floodplain area is often assumed to be coincident with the flood prone area, if the entrenchment ratio is less than 2.2, or 2.2 times the active channel width if entrenchment ratio is greater than 2.2. This area may also be reduced by the presence of geomorphic features, flow regulation, or encroachment of built infrastructure.

Harm in the definition of “take” in the ESA means an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding or sheltering.

Hazardous material means any chemical or substance which, if released into an aquatic habitat, could harm fish, including, but not limited to, petroleum products, radioactive material, chemical agents, and pesticides.

Incidental take means takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal action agency or applicant.

Indirect effects are caused by the proposed action and are later in time, but still are reasonably certain to occur.

Interdisciplinary team (IDT) is comprised of Forest Service resource specialists that represent potentially affected areas of a proposed action and can analyze the risks and benefits to resources and uses on the Forest.

In-water work includes any part of an action that occurs below ordinary high water mark or within the wetted channel, e.g., excavation of streambed materials, fish capture and removal, flow diversion, streambank protection, and work area isolation.

Jeopardize the continued existence of means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.

Large wood means a tree, log, rootwad, or engineered logjam that is large enough to dissipate stream energy associated with high flows, capture bedload, stabilize streambanks, influence channel characteristics, and otherwise support aquatic habitat function, given the slope and bankfull channel width of the stream in or near which the wood occurs.

Level 1 Team is the interagency group comprised of members from the FS, BLM, USFWS, and NMFS established to facilitate a cooperative and expedited process for completing ESA consultation on proposed actions.

Listed species are any species of fish, wildlife, or plant which has been determined to be endangered or threatened under section 4 of the ESA.

Major spawning area (MaSA) is an accumulation of spawning branches within a population with enough weighted habitat to support 500 spawners. A spawning branch is defined as a stream reach with enough habitat to support 50 spawners. MaSAs are an important habitat unit for assessing ecological complexity within populations, and for the spatial structure/diversity viability assessment.

Matrix of Pathways and Indicators (MPI): A NMFS process paper titled “Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale” (NMFS 1996) is used to describe the environmental baseline for steelhead. It is commonly known as the NMFS Matrix of Pathways and Indicators, hereafter referenced as the “NMFS MPI.” The NMFS MPI identifies indicators to analyze for the following pathways: (1) Water quality; (2) Habitat access; (3) Habitat elements; (4) Channel condition and dynamics; (5) Flow/hydrology; and (6) Watershed condition. The condition of each indicator is described as either “Properly Functioning” (PF), “At Risk (AR),” or “Not Properly Functioning (NPF)” based upon specific numeric or qualitative criteria. The habitat indicators in the NMFS matrix also correspond to the physical or biological features (PBFs) of designated CH for MCR steelhead.

Mid-season move-trigger monitoring is the monitoring of the three short-term MIM indicators to establish riparian conditions, and determine when to begin moving cattle off of a pasture, if earlier than the proposed use date. Mid-season (move-trigger) monitoring begins around the mid-point of that pasture’s proposed use period, and continues as necessary to ensure no exceedances occur prior to removing cattle. Move triggers are more conservative than end-of-use values to ensure livestock are removed ahead of any exceedances end-of-use metrics.

Minor spawning area (MiSA): A system of one or more branches that contains sufficient spawning and rearing habitat to support 50–500 spawners (defined using intrinsic potential analysis).

Most sensitive riparian areas (MSRA) incorporates those areas where stream channel and habitat conditions are particularly well suited for MCR steelhead spawning.

Multiple indicator monitoring (MIM) is a system of measurement protocols designed to integrate annual grazing use indicators with long-term stream channel trend indicators to evaluate the effects of livestock grazing management on stream channel recovery.

Observed redd trampling is the visual inspection of a constructed redd and determining that impacts have occurred to the extent that evidence of physical disturbance is noted and reported. It is not intended to require the actual observation of the incident while occurring.

Ordinary high water mark (OHWM) means the elevation to which the high water ordinarily rises annually in season, excluding exceptionally high water levels caused by large flood events. The ordinary high water elevation is typically below the bankfull elevation. The ordinary high water elevation is considered equivalent to the bankfull elevation if the ordinary high water lines are indeterminate.

PacFish/InFish Biological Opinion Effectiveness Monitoring Program (PIBO) is a monitoring program to determine whether the aquatic conservation strategies within PacFish and InFish, or revised land management plans, are effective in maintaining or restoring the structure and function of riparian and aquatic systems. The current PIBO monitoring program includes data collection every 5 years at effectiveness monitoring sites; three data sets have been collected to date, and will continue, however, potentially at a reduced number of locations over time.

Physical and biological features (PBFs) are the biological and physical features of critical habitat that are essential to the conservation of listed species.

Reasonable and prudent measures (RPMs) are actions that NMFS believes necessary or appropriate to minimize the impacts, i.e., amount or extent, of incidental take.

Recovery means an improvement in the status of listed species to the point at which listing is no longer appropriate under the criteria set out in section 4(a)(1) of the ESA.

Riparian management objectives (RMOs) describe good habitat metrics for anadromous fish and were developed from stream inventory data for pool frequency, large woody debris, bank stability, lower bank angle, and width-to-depth ratio.

Scope of the action means the range of actions and impacts to be considered in the analysis of effects.

Stream–floodplain corridor means the main stream channel and its functional floodplain.

Stream–floodplain system, see stream–floodplain corridor.

Streambank toe means the part of the streambank below ordinary high water.

Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

Threatened species are species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Working adequately means erosion controls that do not allow ambient stream turbidity to increase by more than 10 percent above background 100 feet (ft.) below the discharge, when measured relative to a control point immediately upstream of the turbidity-causing activity.

LIST OF ACRONYMS AND ABBREVIATIONS

AML	Appropriate Management Level
AOI	Annual Operating Instructions
AOP	Aquatic Organism Passage
AR	(functioning) At Risk
ARBO	Aquatic Restoration Biological Opinion
ATV	All-terrain Vehicle
AUM	Animal Unit Month
BA	Biological Assessment
BLM	Bureau of Land Management
BMP	Best Management Practice
BMRD	Blue Mountain Ranger District
°C	Degrees Centigrade or Celsius
c/c	Cow-calf Pair
CFR	Code of Federal Regulations
CH	Critical Habitat
CHART	Critical Habitat Analytical Review Team
CTWSR	Confederated Tribes of the Warm Springs Reservation
DMA	Designated Monitoring Area
DPS	Distinct Population Segment
DQA	Data Quality Act
EFH	Essential Fish Habitat
EM	Effectiveness Monitoring
EOY	End of Year
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
°F	Degrees Fahrenheit
FLPMA	Federal Land Policy and Management Act
FR	Federal Register
FSH	Forest Service Handbook
FSR	Forest System Road
GGW	Greenline-to-Greenline (Measurement)
GIS	Geographic Information System
GL	Greenline
HUC	Hydrologic Unit Code
IC	Interior Columbia
ICTRT	Interior Columbia Technical Review Team
IDT	Interdisciplinary Team
IM	Implementation Monitoring
ISAB	Independent Scientific Advisory Board

ITS	Incidental Take Statement
JDR	John Day River
LAA	Likely to Adversely Affect
LB	Left-bank
LJD	Lower John Day
LJDR	Lower John Day River
LRMP	Land and Resource Management Plan
LWD	Large Woody Debris
m-ac	million-acres
MCR	Middle Columbia River
MF	Middle Fork
MFJDR	Middle Fork John Day River
MIM	Multiple Indicator Monitoring
mm	Millimeter
MNF	Malheur National Forest
MPG	Major Population Group
MPI	Matrix of Pathways and Indicators
MSA	Magnuson–Stevens Act
MSRA	Most Sensitive Riparian Area
MWMT	Maximum Weekly Maximum Temperatures
NA or N/A	Not Applicable
NEPA	National Environmental Policy Act
NF	North Fork
NFJDR	North Fork John Day River
NFS	National Forest System
NLAA	Not Likely to Adversely Affect
NM	Not Monitored
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NONC	Notice of Non-compliance
NP	Not Present
NPCC	Northwest Power and Conservation Council
NPF	Not Properly Functioning
ODEQ	Oregon Department of Environmental Quality
ODFW	Oregon Department of Fish and Wildlife
OHV	Off-highway Vehicle
OHWM	Ordinary High Water Mark
opinion	Biological Opinion
PBF	Physical and Biological Feature
PCE	Primary Constituent Element

PCRD	Prairie City Ranger District
PDC	Project Design Criteria
PF	Properly Functioning
PIBO	PacFish/InFish Biological Opinion
PIBO-I	PIBO Integer Monitoring Location
PIBO-K	PIBO Designated Monitoring Area Location
RB	Right-bank
RHCA	Riparian Habitat Conservation Area
RM	River Mile
RMO	Riparian Management Objective
RPM	Reasonable and Prudent Measure
RTT	Regional Technical Team
SA	Streambank Alteration
SF	South Fork
SFJD	South Fork John Day
SFJDR	South Fork John Day River
SH	Stubble Height
TMDL	Total Maximum Daily Load
TRT	Technical Review Team
U.S.	United States
U.S.C.	United States Code
UA	Unavailable
UJD	Upper John Day
UJDR	Upper John Day River
USDA	U.S. Department of Agriculture
USDC	U.S. District Court
USDOC	U.S. Department of Commerce
USDI	U.S. Department of Interior
USFWS	U.S. Fish and Wildlife Service
VSP	Viable Salmonid Population
W:D	Width-to-Depth Ratio
WB	Woody Browse
WHJMA	Wild horse joint management area
WWNF	Wallowa–Whitman National Forest

1. INTRODUCTION

This Introduction section provides information relevant to the other sections of this document and is incorporated by reference into Sections 2 and 3 below.

1.1. Background

The National Marine Fisheries Service (NMFS) prepared the biological opinion (opinion) and incidental take statement (ITS) in accordance with section 7(b) of the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531, et seq.), as amended, and implementing regulations at 50 CFR 402.

We also reviewed the likely effects of the proposed action on essential fish habitat (EFH), in accordance with section 305(b)(2) of the Magnuson–Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1801 et seq.) and implementing regulations at 50 CFR part 600. We concluded that the action area does not contain EFH; therefore, an EFH consultation is not required and will not be further discussed in this document.

We completed pre-dissemination review of this document using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (DQA) (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The document will be available within 2 weeks at the NOAA Library Institutional Repository (<https://repository.library.noaa.gov/welcome>). A complete record of this consultation is on file at the Interior Columbia Basin Office, Ellensburg, Washington.

1.2. Consultation History

On November 16, 2022, NMFS received an electronic submittal email containing a letter and digital files from the Malheur National Forest (MNF) requesting consultation on the effects of authorizing proposed grazing activities on 28 allotments for 2023–2027 on Middle Columbia River (MCR) steelhead (*Oncorhynchus mykiss*) and designated critical habitat (CH) for MCR steelhead in Grant County, Oregon. The MNF requested a concurrence letter for one allotment, Rail Creek, for their determination that the grazing authorization is not likely to adversely affect (NLAA) MCR steelhead or their designated CH. The MNF requested formal consultation for the additional 27 allotments, where effects are likely to adversely affect (LAA) MCR steelhead and their designated CH. Table 1 displays the subbasin name (containing the majority of the allotment), MNF Ranger District, name of allotment, and the MNF's ESA effects determination. The Rail Creek allotment is included with the analysis of all 28 grazing allotments' proposed action. The Rail Creek allotment is incorporated throughout this opinion and is included in the jeopardy/adverse modification analysis and conclusions within this document.

The MNF included the Blue Mountain allotment in the proposed action for the previous consultation (WCR-2018-09125) and that allotment was authorized for limited use in emergency use situations only. The MNF, however, did not include Blue Mountain allotment in the proposed action for this consultation, nor has it requested ESA consultation for that allotment.

We did not analyze this allotment as part of the proposed action, nor are we providing any take coverage for this allotment. Any anticipated grazing use and management activities on this allotment will be addressed in a separate consultation.

The MNF consultation package of electronic files included 15 biological assessments (BAs) with appendices and supplemental information for the 28 allotments on the Prairie City Ranger District (PCRD) and Blue Mountain Ranger District (BMRD). NMFS will refer to these documents collectively as the BAs or the 2022 Final BA. These BAs describe the proposed livestock grazing activities for 2023–2027, the environmental baseline, and the potential effects of those activities on MCR steelhead and designated CH.

During the winter and spring of 2022 (May–September), the interagency MNF Level 1 Streamlining Team (Level 1 Team) (MNF, U.S. Fish and Wildlife Service (USFWS), and NMFS) discussed the renewal of the MNF grazing program for 2023–2027, including the description of the proposed action, potential revisions to the proposed actions, information requirements in BAs, updates to the BA, timeline expectations for the consultation, reviews of the proposed action, and reviews of the draft BA. During this time period there also was a joint Level 1 and 2 Team meeting to discuss the past consultations, next steps for the current consultation, and the grazing indicator guidelines. There also was a Level 2 Team meeting (NMFS Columbia Basin Branch Chief and MNF Forest Supervisor) to discuss the consultation. Additional calls between NMFS and MNF Level 1 staff occurred during September to discuss BA updates.

In October and November of 2022, the MNF provided NMFS with 15 BAs for initial review. NMFS staff completed an initial review and provided comments for all 15 draft BAs. The MNF and NMFS worked closely together as the MNF updated BAs and addressed NMFS comments. In early November 2022, NMFS provided a second review of the BAs and confirmed that the formal consultation timelines would apply to the consultation. On November 16, 2022, the MNF submitted an electronic letter and consultation initiation package requesting formal ESA consultation to NMFS. The submission included the final BAs with supporting appendices, and a letter informing the MNF’s intent to grant applicant status to 12 permittees.

On December 13, 2022, the MNF sent NMFS additional supplemental information regarding a summary of 2018–2022 non-compliance history. NMFS sent the MNF an email and letter dated December 13, 2022, stating that the BAs were considered complete and that formal consultation was initiated on December 13, 2022.

The MNF and NMFS continued to coordinate between January and April 2023 on questions and clarifications regarding discrepancies in the BAs, including some inconsistencies in the descriptions and tables in the final BAs. The MNF also provided additional information about allotment and pasture acres, miles of critical habitat, and most sensitive riparian areas (MSRA) within the action area. MNF staff provided corrected and updated final BAs to NMFS on April 7, 2023. We anticipate minor differences in miles and acres provided in this document, given the large action area and multiple information sources. These minor differences, however, do not change or alter the implementation of the proposed action.

Table 1. The Malheur National Forest’s Endangered Species Act (ESA) Effect Determinations for the Prairie City and Blue Mountain Ranger Districts for the Proposed Livestock Management on 28 Allotments.

Watershed	Ranger District	Allotment	Effects Determination for MCR Steelhead and CH
Upper John Day River (UJDR) (17070201)*	BMRD ¹	Beech	LAA
	PCRD ²	Dark Canyon	LAA
	BMRD	Deadhorse	LAA
	BMRD	Dixie	LAA
	BMRD	Fawn Springs	LAA
	BMRD	Hanscomb	LAA
	BMRD	Herberger	LAA
	PCRD	Hot Springs	LAA
	BMRD	John Day	LAA
	BMRD	McClellan	LAA
	BMRD	McCullough	LAA
	BMRD	Mt. Vernon	LAA
	PCRD	Rail Creek	NLAA
	BMRD	Reynolds	LAA
	BMRD	Roundtop	LAA
BMRD	Seneca	LAA	
Middle Fork John Day River (MFJDR) (17070203)*	BMRD	Camp Creek	LAA
	BMRD	Long Creek	LAA
	BMRD	Lower Middle Fork	LAA
	BMRD	North Middle Fork	LAA
	BMRD	South Middle Fork	LAA
	BMRD	Slide Creek	LAA
	BMRD	York	LAA
South Fork John Day River (SFJDR within the UJDR subbasin)	BMRD	Aldrich	LAA
	BMRD	Fields Peak	LAA
	BMRD	Murderers Creek	LAA
North Fork John Day River (NFJDR) (17070202)*	BMRD	Deer Creek	LAA
	BMRD	Fox	LAA

* 4th-field (8-digit) hydrologic unit codes (HUC).

¹ BMRD = Blue Mountain Ranger District

² PCRD = Prairie City Ranger District

The allotments analyzed herein have been addressed in one or more of the below-referenced consultation documents. Eight opinions have been completed to date addressing grazing allotments on the MNF (refer to NMFS Nos.: 2018/09125, 2011/05259, 2007/01290, 2006/01337, 2005/05693, 2004/00610, 2003/00610, and 2002/00510). Letters of concurrence were completed for the 2000, 2001, 2003, 2004, 2005, 2006, 2007, and 2011 grazing season for those allotments that were not likely to adversely affect MCR steelhead or their designated critical habitat. Prior to 2006, NMFS often provided concurrence with NLAA determinations within biological opinions for grazing allotments determined to be NLAA for MCR steelhead and designated critical habitat. In recent years, separate letters of concurrence were issued to the

MNF for grazing on groups of allotments determined to be NLAA for MCR steelhead and designated critical habitat (refer to NMFS 2016/04098, 2011/05362, and 2007/01239).

During the past 10 years, NMFS has worked closely with the MNF to identify methodologies that help implement a grazing program and minimize adverse effects of livestock grazing activities on MCR steelhead and their habitat. Numerous meetings were held each year by the MNF Interagency Level 1 Team, with MNF range staff, fisheries and aquatic biologists, hydrologists, and grazing permittees to conduct field reviews, review implementation monitoring results, and troubleshoot issues that led to pasture endpoint exceedances or redd trampling.

In addition, the MNF has refined the monitoring and adaptive management strategy designed to support grazing management decisions. For the 2012–2016 period, in addition to pre-turnout spawning surveys on 20 percent of the MCR steelhead critical habitat in each allotment, the monitoring strategy added a spawning survey requirement when livestock were turned out before July 1 at all stream sections designated MSRA. Designation of MSRA incorporates those areas where stream channel and habitat conditions are particularly well suited for MCR steelhead spawning. When surveys locate spawning adult steelhead or redds, permittees were required to take specific measures to protect spawning adults and redds. Move triggers and implementation monitoring endpoints were set at more restrictive levels in pastures containing streams with MSRA to provide increased protection to rearing juveniles and riparian habitat. The MNF added the requirement for pre-turnout bank alteration monitoring in the Murderers Creek allotment pastures to measure bank alteration from wild ungulates and horses and determine if streambanks had the capacity for additional bank alteration from livestock.

The adaptive management strategy evolved for the 2018–2022 proposed action to provide permittees with the specific interim administrative responses for each level of streambank alteration exceedance and has provisions to adjust grazing strategies as effectiveness monitoring data reveal riparian recovery trends. Between 2018 and 2022, the MNF has implemented actions to provide additional measures to reduce and prevent natural resource damage from livestock grazing and reduce potential of redd trampling. These actions include issuance of multiple letters of warnings, issuing letters of non-compliance, resting pastures and reduction in authorized livestock.

The BAs for the 2023–2027 provide more information regarding the subject allotments than older BAs. Existing riparian and stream channel conditions were described in detail. Updated stream survey and temperature monitoring site data, annual end-of-year (EOY) monitoring data (USDA FS 2018; USDA FS 2019; USDA FS 2021) and more relevant and improved maps were provided as appendices. Implementation monitoring data and the cause of endpoint exceedances were summarized and discussed in the BAs. Effectiveness monitoring data and some preliminary analysis by effectiveness monitoring (EM) researchers were also provided in the BAs. Conservation measures for specific allotments and pastures were provided, when appropriate, including the many changes made since 2012, and detailed rationale for the effect's determination was provided. The MNF continues to adapt and improve their grazing communication and management strategies with permittees to ensure clear understanding of expectations for grazing and expectations of proper compliance.

Each of the 28 allotments addressed herein has one or more permittees managing livestock grazing under authorization of the MNF. All affected permittees were offered applicant status by the MNF for this consultation. For the 2023 ESA consultation, MNF has granted 12 permittees applicant status.

On May 1, 2023, NMFS provided a draft of the terms and conditions and Incidental Take Statement (ITS) to the MNF for review and comment. The MNF provided a response letter to NMFS on May 10, 2023. The MNF informed NMFS that they reviewed the draft terms and conditions and ITS, and did not have comments for NMFS. In addition, the MNF further provided NMFS with several comment letters from permittees on the draft terms and conditions and ITS. A common comment from the permittees was the lack of sufficient time provided to review the document prior to the initial proposed turn out date. NMFS reviewed the comments, and made some minor changes to this final opinion for clarification.

Secretarial Order 3206: Consultation and Coordination with Indian Tribal Governments (November 2000), President Obama’s Tribal Consultation Memorandum (November 2009) and our Tribal Consultation and Coordination Policy (May 2013) seeks to ensure that Federal agencies will notify affected tribes when an action subject to ESA consultation may affect traditional lands, tribal trust resources, or the exercise of sovereign tribal rights. Consistent with this Secretarial Order, we provided a tribal notification letter to the Confederated Tribes of the Warm Springs Reservation (CTWSR) on December 13, 2022, for the 2023–2027 program of livestock grazing management on 28 allotments of the MNF. NMFS sent a follow-up email on April 11, 2023, to the CTWSR and did not receive comments or a response.

On July 5, 2022, the U.S. District Court for the Northern District of California issued an order vacating the 2019 regulations that were revised or added to 50 CFR part 402 in 2019 (“2019 Regulations,” see 84 FR 44976, August 27, 2019) without making a finding on the merits. On September 21, 2022, the U.S. Court of Appeals for the Ninth Circuit granted a temporary stay of the district court’s July 5 order. On November 14, 2022, the Northern District of California issued an order granting the government’s request for voluntary remand without vacating the 2019 regulations. The District Court issued a slightly amended order 2 days later on November 16, 2022. As a result, the 2019 regulations remain in effect, and we are applying the 2019 regulations here. For purposes of this consultation and in an abundance of caution, we considered whether the substantive analysis and conclusions articulated in the biological opinion and incidental take statement would be any different under the pre-2019 regulations. We have determined that our analysis and conclusions would not be any different.

1.3. Proposed Federal Action

Under the ESA, “action” means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies (see 50 CFR 402.02). The MNF proposes to authorize grazing on 28 allotments for the 2023–2027 grazing seasons pursuant to the Taylor Grazing Act of 1934 and Section 402 of the Federal Land Policy and Management Act (FLPMA) of 1976 (Table 2).

Table 2. Permitted number of livestock and grazing dates, stratified by Middle Columbia River steelhead population for 28 grazing allotments proposed for authorization on the Malheur National Forest, 2023–2027.

MCR Steelhead Population	Allotment Name	Permit Number	Permitted Number of Livestock c/c Pair/AUM/HM*	On Date	Off Date	Grazing System
UJDR	Dark Canyon	0604010031	194/1162/880	15-Jun	30-Oct	Deferred rotation
	Fawn Springs	0604010041	107/636/482	01-Jun	15-Oct	Deferred rotation
	Hanscomb	0604010017	68/404/306	01-Jun	15-Oct	Deferred rotation
		0604010034	52/309/234	01-Jun	15-Oct	Deferred rotation
	Deadhorse	0604010034	19/114/86	01-Jun	15-Oct	Deferred rotation
		0604010017	155/921/698	01-Jun	15-Oct	Deferred rotation
	Herberger	0604010010	8/26/20	01-Aug	15-Oct	Deferred rotation
	Hot Springs	01906	24/44/33	20-May	30-Jun	On/OFF permit
		01906	53 yearlings/149/213	05-Jun	04-Oct	On/OFF permit
	McClellan	0604010018	65/129/96	1-Sep	15-Oct	Deferred rotation
	McCullough	0604010010	33/95/72	1-Jun	5-Aug	Deferred rotation
	Rail	01906	150/397/300	01-Aug	30-Sep	Deferred rotation
Reynolds	01898	166/792/600	01-Jun	18-Sep	Deferred rotation	
Seneca	0604010034	170/1018/771	15-Jun	30-Oct	Deferred rotation	
UJDR SFJDR	Fields Peak	0604010016	197/0/797	15-Jun	15-Oct	Deferred rotation
		0604010057	40/2*/214/162/12/9 *includes 2 horses	01-Jun	15-Oct	Deferred rotation
	Aldrich	0604010039	100/182/138	20-July	30-Aug	Deferred rotation
		0604010016	250/1671/1266	15-May	15-Oct	Deferred rotation
UJDR MFJDR	Dixie	0604010021	173/1029/779	1-Jun	15-Oct	Rest rotation
	John Day	0604010010	177/1052/797	11-June	25-Oct	Deferred rotation
	Roundtop	0604010067	200/1059/802	01-Jun	30-Sep	Deferred rotation
UJDR NFJDR	Beech	0604010010	35/304/230	15-May	30-Nov	On/Off Season-long
	Mt. Vernon	0604010010	319/1618/1227	11-June	05-Oct	Deferred rotation & Season-long
UJDR MFJDR NFJDR	Fox	0604010068	95/462/350	11-Jun	30-Sep	Deferred rotation & Season-long
		0604010042	125/661/501	1-Jun	30-Sep	Deferred rotation & Season-long

MCR Steelhead Population	Allotment Name	Permit Number	Permitted Number of Livestock c/c Pair/AUM/HM*	On Date	Off Date	Grazing System
		0604010061	73/355/269	11-Jun	30-Sep	Deferred rotation & Season-long
MFJDR	South Middle Fork	0604010055	278/1845/1398	1-Jun	31-Oct	Deferred rotation
	Lower Middle Fork	0604010053	190/1262/956	1-Jun	31-Oct	Season-long
	North Middle Fork	0604010036	577/3831/2902	1-Jun	31-Oct	Deferred rotation
		0604010036	50/297/225	1-Jun	15-Oct	Deferred rotation
		0604010036	100/195/148	1-Jun	15-July	Deferred rotation
	Camp Creek	0604010009	50/330/250	1-Jun	30-Oct	Deferred rotation
	Slide Creek	0604010008	546/3246/2459	1-Jun	15-Oct	Deferred rotation
		0604010033	61/363/275	1-Jun	15-Oct	Deferred rotation
		0604010051	170/1011/766	1-Jun	15-Oct	Deferred rotation
	York	0604010028	12/79/60	1-Jun	30 Oct	On/Off
MFJDR NFJDR	Long Creek	0604010063	219/1302/986	1-Jun	15-Oct	Deferred rotation
		0604010008	567/3371/2554	1-Jun	15-Oct	Deferred rotation
		0604010056	100/1594/450	1-Jun	15-Oct	Deferred rotation
		0604010024	81/482/365	1-Jun	15-Oct	Deferred rotation
SFJDR	Murderers Creek	0604010064	175/1162/886	15-May	15-Oct	Deferred rotation
		0604010050	200/260/197	1-Jun	30-Jun	Deferred rotation
		0604010050	300/929/1055	1-Jul	15-Oct	Deferred rotation
		0604010064	400/1857/1407	15-May	15-Oct	Deferred rotation
		0604010064	4/26/22	15-May	30-Oct	Deferred rotation
NFJDR	Deer Creek	0604010060	88/371/281	11-Jun	15-Sep	Rest Rotation (rested even years)
<p>* c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments.</p>						

The BAs provided to NMFS for this consultation contain a significant amount of detail and discussion of the proposed action, most of which is contained in the “Common to All” section of the BAs, and is incorporated by reference here. Many components of the proposed action were

negotiated between the MNF, NMFS, and U.S. Fish and Wildlife Service for the 2018–2022 consultation, and are still fundamental to the implementation of the 2023–2027 proposed action. This level of detail is necessary to address past performance issues in the management of the MNF livestock grazing program, clarify vague language, and emphasize significant parts of the proposed action considered essential for proper and consistent implementation of the proposed grazing action. The “Common to All” package includes all the implementation requirements and activities carried out under the MNF grazing program by staff, managers, and permittees that are considered important for successful program implementation. For several allotments, the Level 1 team reviewed site specific information and details related to an individual pasture or DMA site and agreed to modify the requirements in the “Common to All” section as they apply to an individual pasture or DMA site. For example, the Level 1 team could agree that only photo-point monitoring or woody browse utilization was appropriate as the required monitoring for a pasture or DMA site. These modifications are clearly described in the BA, as reviewed and approved by the Level 1 team.

The BAs provide clear, common expectations and requirements for implementation of the proposed action, including an outline of required communication protocols with the permittees, NMFS, and USFSW (collectively, the Services). The BAs contain a series of MNF commitments as a part of the proposed action. This section presents information and requirements provided in each BA as a part of implementing the proposed action.

Section 6.1 of each BA includes a set of requirements applicable to all 28 allotments as part of the proposed action. These requirements include: the designated grazing strategy for each allotment/permit; designation and special management direction for MSRAs; spawning/redd survey requirements and redd protection protocols; required mid-season and end-of-grazing use monitoring with pasture move triggers; photo documentation protocol; document preparation and reporting; assigned maintenance responsibilities (e.g., fences, water developments, exclosures); project design criteria (PDC); scheduled pre- and post-grazing season communication requirements with permittees; adaptive management direction; and permittee accountability procedures. Section 6.1 of the BAs also states: “The numbers permitted, the period of use, or both can be modified by the line officer for resource conditions or emergency action. When the numbers or period of use are reduced for resource conditions, the permittee shall get as much notice as possible, but not less than six months. Any modifications to increase numbers, lengthen season of use, or change class of livestock will require meeting the ESA, and could trigger reinitiation of consultation for that allotment. Reports or other pertinent records on range conditions will be made available for review by the permittees, so they are fully informed prior to making any adjustments or having a permit modified.”

The key requirements that apply to all 28 allotment proposed actions are discussed below in Section 1.3.1 and include the following: (1) allotment grazing systems, permit types, and type and timing of grazing seasons; (2) range readiness; (3) permittee meetings; (4) designated monitoring areas (DMAs); (5) monitoring; (6) spawning surveys; (7) adaptive management; (8) fence maintenance; (9) compliance strategy for streambank alteration endpoint indicator; (10) compliance strategy for stubble height endpoint indicator; (11) excess use; (12) key communication between the MNF and permittees; (13) key communication between the MNF and NMFS; and (14) PDC.

The BAs also include requirements specific to individual allotments. Significant elements of allotment-specific direction include: the allotment grazing system; pre-determined livestock pasture rotations; identified livestock numbers, kind (e.g., sheep vs. livestock) and class of livestock (e.g., c/c, cows, or yearlings); period of use with specified on/off dates; and maximum AUM utilization for each permit. The proposed action in each BA includes a description of how and when each pasture is to be used within an allotment, as well as pre-turnout range readiness and prompt monitoring post livestock removal from pastures containing MCR steelhead CH.

The NMFS opinion references by citation sections of the proposed action in the 2022 BAs.

We considered, under the ESA, whether or not the proposed action would cause any other activities and determined additional actions associated with the proposed action of livestock grazing on 28 allotments of the MNF include trucking of livestock on the established open road network to the pasture release site and again from the pick-up site at the end of the season.

1.3.1. Information Common to All Allotments

1.3.1.1. Allotment Grazing Systems and Permit Types

The MNF uses several types of grazing systems: deferred rotation, season-long, rotation, and rest rotation. Most grazing schemes or methods fall under deferred rotation or rotation (Table 2).

- 1) Deferred rotation grazing: Any grazing system which provides for a systematic rotation of the deferment among pastures, in which grazing is delayed or discontinued to provide for plant reproduction, establishment, or restoration of existing plants. This practice provides grazing for each pasture at some time during each year. As with rotation grazing (below), move times can be seasonally adjusted if prescribed move dates and/or end-of-grazing use move triggers have been reached.
- 2) Season-long grazing: Grazing occurs continuously for the period allowed on the permit, such as mid-June to end of October. In this grazing system, grazing occurs throughout the vegetative growing season without any rest periods, usually every year.
- 3) Rotation grazing: As used on the MNF, this is a grazing system where livestock are moved from one grazing unit (pasture) to another, usually in the same sequence each year. As with deferred rotation grazing, move times can be seasonally adjusted if prescribed move dates and/or end-of-grazing use move triggers have been reached.
- 4) Rest rotation: A grazing management scheme in which rest periods for individual pastures, paddocks, or grazing units, generally for the full vegetative growing season, are incorporated into a grazing rotation. This type combines a period (usually a full grazing season) of rest in the rotation sequence defined above.

In some instances, the MNF grazes a pasture twice in the same growing season (i.e., the pasture is grazed both first and last during a single grazing season). This method is most often used for livestock holding, trailing, and/or gathering pastures, where the pasture holds livestock for a short duration at the start of the season, and also holds livestock in that same pasture for a short duration at the end of the season.

Most allotments subject to this consultation are permitted by 10-year “Term Grazing” permits issued to livestock owners. The exceptions are Long Creek and Slide Creek allotments, which are managed under a grazing agreement system according to the laws of the State of Oregon. Some permits are “Term Permits” with “On/Off” provisions, such as York and Beech Creek allotments. An On/Off permit occurs when a smaller portion of the carrying capacity, usually less than one-third of a logical grazing area, is composed of National Forest System (NFS) lands. The intent with On/Off pastures is to promote efficient use of intermingled ownership, while at the same time achieving desired range conditions on NFS lands. Within On/Off allotments, livestock graze small portions of both public and private lands. However, the management of the livestock when on the private lands is under the MNF’s management.

Type and Timing of Grazing Seasons

Early season, or spring season, generally encompasses the period from the end of supplemental feeding for livestock to seed ripe and includes the time during which soil moisture levels are at their highest due to snow melt and spring rain. Timeframe: early May to early/mid-July.

Mid-season includes the hotter part of the summer during which upland forage has dried, seed ripening has occurred, and soil moisture content in the riparian areas have declined. Timeframe: early/mid-July to mid/late September.

Late season grazing is defined as grazing that generally begins after sugar storage in woody vegetation is complete, leaf fall has started, upland plant seeds have shattered, and mean air temperatures begin to cool. Timeframe: mid/late September to November.

The exact dates which these periods encompass depend on geography, topography, weather and range conditions. Plant phenology and soil moisture are the dominant criteria.

1.3.1.2. Range Readiness

Proper pasture and allotment management begins in the spring. Range readiness is the methodology of assessing springtime vegetative conditions before livestock turnout. If grazing is started too early, range plant vigor is reduced, total forage production is lowered, ecological conditions are potentially degraded, and riparian habitat conservation areas (RHCA) could be excessively damaged from livestock activity during wet spring conditions. Range readiness is primarily based on the developmental stage of the most common or key plant species in that pasture, and moisture content of the soils in RHCAs and associated floodplains. The MNF will determine range readiness annually prior to turnout to ensure pasture soil and vegetation conditions are sufficient for grazing. A range readiness form (R6-2210-2) is provided as Appendix H of the BAs (USDA FS 2022), and the MNF will complete it if it does not determine readiness with visual inspections. If visual pre-turnout inspection is used, the MNF will document it on an Allotment Inspection Report form include in the permit file. The MNF will also place range readiness forms in the allotment permit files. The completed forms are not required on every allotment, but MNF will use them to determine that resource conditions are adequate for authorizing grazing on all pastures with authorized livestock use prior to June 1, or

where range conditions may not be ready for grazing such as after fires, floods, severe drought, or heavy and overuse by wild horses/ungulates.

1.3.1.3. Permittee Meetings

Winter Meetings

Where the MNF documents non-compliance with the terms of the grazing permit and determines follow-up is necessary, the MNF will meet with the permittee between November and January each year. The MNF and permittees will discuss potential changes in livestock grazing and the MNF will document the outcomes of those meetings. The MNF will reiterate these changes at the spring meetings and include them in the permittee's Annual Operating Instructions (AOIs). The MNF will notify NMFS and the USFWS of any changes of management activities for purposes of addressing non-compliance and/or resource protection concerns. The MNF will convey this information as part of the Level 1 Team discussions and correspondence (USDA FS et al. 1999).

Spring Meetings with Annual Checklist

After the completion of the Final End of Year report to the Services, due on April 15 following the grazing season, the MNF will conduct meetings with permittees between the end of February and the end of April to review the previous grazing year and to establish the annual grazing management strategies and documents in the AOIs. The MNF will use the meeting checklist included in the BAs during the 2023–2027 grazing season and will include the checklist annually in the range administration file to ensure the review includes the following:

- Confirmation of actual use in the previous year (to be reported to and documented by the Range Specialist by November 15 prior to spring meetings for all pastures in allotments with ESA-listed fish);
- An evaluation of the effectiveness and results of the previous year's pasture use timing and rotation;
- A discussion and identification of proposed rotation, by date and livestock numbers by pasture;
- An assessment of the previous year's water development conditions and implemented maintenance;
- A review and identification of water developments proposed for maintenance in the upcoming year;
- An evaluation and documentation of other maintenance needed, to include fences, and results of annual fence inspections and maintenance completed the previous year(s);
- An assessment of livestock enclosure fencing (exclosures) within or adjoining the allotment and identifies who is responsible for them (MNF or permittee);
- A review and documentation of new project proposals from the permittee;
- A review of any proposed MNF land management activities such as prescribed fire, stream restoration, or vegetation treatments proposed in pastures containing CH, in order to minimize conflicts between project elements and grazing activities;
 - Concentrated cattle use in restoration areas is to be avoided for 1 to 3 years after implementation of the restoration project. Evaluation of the cattle use will be

- documented with photos for at least two site specific visits in the same year as the project, and up to two succeeding years.
- If the project area includes a Designated Monitoring Area (DMA), then mid-season and end-of-grazing use monitoring will be implemented and documented. If any impacts to riparian habitat are identified, the cause of the impact (e.g., heavy equipment, fire, livestock, or elk) will be identified. Cattle use must be adjusted where additional impacts from grazing would retard attainment of the riparian management objectives (RMOs);
 - A review and evaluation of compliance monitoring results from the past grazing season, including success and problem areas/issues in riparian and sensitive wetland areas or enclosures;
 - Documentation of any grazing management adjustments to the prior year agreed to for upcoming implementation; and
 - If drought conditions exist or are likely, a review of the grazing plans by MNF with the permittee and a discussion of the potential for modifications to the current year's grazing plan.

1.3.1.4. Designated Monitoring Areas

Livestock are moved throughout the allotments and pastures based on monitoring of forage use in both uplands and riparian areas. To promote conservation of ESA-listed species, the MNF incorporates riparian move-trigger monitoring to determine when to move livestock out of pastures to avoid exceeding grazing standards. Similar monitoring also occurs at the end-of-grazing use within riparian areas. Both move-trigger and end-of-grazing use monitoring occur at DMA sites.

Designated monitoring areas are located in the most sensitive area of each pasture grazed that contains CH and is accessible by livestock (not fenced). The MNF established DMA sites with consistent, formal documentation. Documentation includes spatial data with GPS identifiers, photo points, and permanent on-site monuments or markers. Move-trigger and end-of-grazing use monitoring measure stubble height, woody browse, and bank alteration using the Multiple Indicator Monitoring (MIM) protocol (USDI BLM 2011), for ESA compliance. In documented cases, and when agreed to by the Level 1 Team, fewer than three indicators may be monitored at a DMA given the existing stream or riparian habitat conditions (e.g., lacking herbaceous plants along the stream's greenline, or hardened banks not allowing a measurement of bank alteration by livestock). DMAs will not be temporarily or seasonally fenced, as monitoring at the DMA represents livestock use in riparian areas and CH of the entire pasture. If an established DMA is fenced to prevent access by livestock, a new, unfenced DMA must be established.

From 2012–2022 (NMFS 2012, MNF 2017, NMFS 2018), the MNF required measurements of the three MIM indicators used for move triggers on any pasture where it appeared that riparian conditions were approaching one or more of the move triggers. Prior to 2012, the MNF often conducted visual move-trigger assessments without quantitative data collected. During 2018–2022, the MNF recorded range conditions and if/when move triggers were reached, and measurements of the three MIM indicators. In addition, MNF took at least four photos at each DMA. They electronically filed the MIM data sheets with photos to the MNF Range Program

file, and provided them to the Ranger District Aquatics (hydrology and fisheries) departments. For the period 2023–2027, the MNF will continue to annually conduct move-trigger assessments and photo monitoring as described, and electronically file MIM data sheets and photos.

The MNF measures end-of-grazing use indicators within each DMA to assure: (1) potential adverse effects to listed fish species and their CH are avoided or minimized; and (2) riparian habitat conservation areas (RHCAs) are recovering at a near natural rate to meet MNF Land and Resource Management Plan (LRMP) Standards and Guidelines, which currently include PacFish/InFish amendments; as well as consistency with MCR steelhead recovery objectives. In cases where end-of-grazing use indicators are not met, the MNF line officer will implement adaptive management strategies or actions for the following year to promote the protection and recovery of MCR steelhead and their CH. Adaptive management actions are necessary to ensure riparian conditions meet Forest Plan Standards and any amendments (PacFish/InFish [USDA FS and USDI BLM 1995; USDA FS 1995a]; include direction to not retard the attainment of RMOs), or plan renewals.

Establishment and Use of DMA Sites

The MNF established DMAs in most pastures containing MCR steelhead CH (see Appendix K of the consultation package for a list of established DMA sites). The MNF will establish a MIM DMA prior to turnout of livestock for any pasture with CH that currently is without a DMA site. The FS IDT or Forest monitoring team will monitor the DMA and the MNF will train all personnel specifically in MIM techniques and protocols, and all personnel will be familiar with the requirements for ESA compliance data collection and reporting. DMA sites represent the impacts of livestock grazing, are intended to be accessible by cattle, and are not intended to be fenced out. If they are fenced out, a replacement DMA must be established in an actively grazed, sensitive site with CH that will be monitored with the spatial location documented along with photo points. Where riparian fencing excludes livestock access to all CH in the pasture, the Level 1 team may determine a DMA is not required.

Photo points are also located at DMA sites. The MNF will take photo documentation of the DMA and identifying landscape features (e.g., local hill slope profile, major identifiable trees, boulders, or other permanent landform features) with an upstream and downstream view be taken each year during the move-trigger and endpoint monitoring visits. The MNF will follow the monitoring guidelines and general procedures from the MIM Technical Reference when conducting MIM monitoring. Exceptions will occur, for example: *“If the site does not have the potential for woody species with appropriate management, do not include the woody species age class and use data as part of the monitoring of the site”* (USDI BLM 2011). Notes will be incorporated into the DMA designation write-up describing and justifying any variances to the MIM monitoring protocol.

The DMA sites are required in each pasture where cattle access CH, including those pastures where the MNF suggests that topography or vegetation preclude cattle use of the riparian area. The Level 1 Team may agree to removal of CH from the need for monitoring if there is evidence of no cattle use, such as sufficient game camera monitoring. The Level 1 Team will agree to any change in monitoring, before it is enacted by the MNF.

Monitoring at DMA sites is the primary tool used to determine annual effects of grazing on ESA listed species and CH. The MNF will complete implementation monitoring of the three ESA move triggers and endpoint indicators, described below, each grazing season in each pasture with accessible CH. The MNF will monitor the endpoint indicators within 1 to 2 weeks following end of livestock use. Conducting monitoring during this timeframe links the cause-and-effect relationships between livestock grazing and stream–riparian conditions observed, and whether livestock grazing management changes may be necessary for the coming season.

Stubble height. Stubble height is a measure of the residual height of key herbaceous vegetation species remaining after grazing. Key herbaceous vegetation will be measured at the “greenline” along the water’s edge of a stream channel to identify seral stage and to provide a measure of bank stability given the different root structures and plant longevity (e.g., “...noxious weeds and shallow-rooted perennial species that tend to be tolerant of grazing and other uses are classified as early seral.”)

Streambank alteration. Streambank alteration is an annual short-term indicator used to assess grazing intensity and to determine if grazing is excessive.

Woody browse use. Woody browse use is a short-term indicator of shrubs and trees that is important for determining the success of a grazing management prescription and may help establish the relative use between the established level of cattle grazing and browsing use by other large herbivores.

The move triggers and endpoint indicators (Table 4) are the threshold and exceedance metrics for the 2023–2027 livestock grazing program. Pastures containing MSRA have a more conservative streambank alteration move-trigger and end-of-grazing use indicator, to be more protective for ESA-listed species and sensitive habitats.

Table 3. Move triggers and endpoint indicators for each Malheur National Forest pasture with a designated monitoring area.

Grazing Use Period (Defined Below)	Browse Move Trigger (%)*	Browse Endpoint (%)	Greenline Stubble Height Move Trigger (inches)	Greenline Stubble Height Endpoint (inches)	Streambank Alteration Move Trigger (%) MSRA	Streambank Alteration Endpoint (%) MSRA	Streambank Alteration Trigger (%) NO MSRA	Streambank Alteration Endpoint (%) NO MSRA
Early Season	40	50	7	6	10	15	15	20
Mid-to-late Season	30	40	7	6	10	15	15	20

*A 21–40 percent (%) use, with a 30% midpoint, is classed as “light” use. A 41–60%use, with a midpoint of 50%, is classed as “moderate” use.

1.3.1.5. Monitoring

The MNF will use habitat monitoring at the grazing allotment or more localized scale to establish baseline ecological conditions, identify how the proposed action affects change from the current conditions, and know to what extent the proposed action is achieving conservation and protection of ESA-listed MCR steelhead and their CH. The MNF will conduct

implementation monitoring (e.g., are the actions described in the permittee’s AOIs, the ESA consultation [proposed action and any terms and conditions], and the authorizing permit being implemented as prescribed) and effectiveness monitoring (e.g., are management actions effective at achieving the desired outcomes). The overall monitoring program and the objectives of each monitoring type are described in the table below (Table 3). All three components of monitoring (move trigger, end of use, and effectiveness/trend) contribute to the evaluation of livestock grazing management.

As part of the 2023–2027 proposed action, the MNF commits to improving implementation monitoring and to begin collecting data to assess the effectiveness of grazing management of allotments subject to ESA consultation. The MNF’s intent is to move forward with quantification of current and potential ecological condition of riparian areas during this consultation.

Table 4. Proposed grazing monitoring on the Malheur National Forest at each designated monitoring area in pastures with Middle Columbia River steelhead critical habitat, 2023–2027.

Time of Year	Monitoring Type	Time of Monitoring	Objective	Alternative A Outcome	Alternative B Outcome
Pre-Season (in pastures with sensitive riparian areas that are grazed in May or early June) OR for allotments with wild horses.	Range readiness documented on Forest Service (FS) form as an inspection for the file. Evaluation of endpoint indicators for pastures that overlap the Wild Horse Joint Management Area (JMA) prior to livestock turnout.	Prior to turnout of livestock.	To determine plant developmental stage and soil condition for grazing use. To determine horse and/or wildlife use in the Wild Horse JMA pastures with unfenced critical habitat.	A pasture or allotment is not ready for use and livestock turnout will be delayed. If horse or wildlife use has exceeded endpoint indicators, cattle will not turn out.	Livestock can turn out
Mid-Season	Photo documentation and MIM ¹ for the three indicators where one or more triggers appear close.	Middle of period for livestock grazing for that pasture or when triggers appear close.	To initiate livestock movement or pasture rotation if needed to avoid exceeding End of Use standards.	If move triggers are close or met start move to next pasture in rotation.	Remain in pasture or more time is allowed based on permit and AOI ² and riparian/range condition
End of Use	MIM – Endpoint indicators and photo documentation (with possible expansion of indicators).	1–2 weeks after livestock leave the pasture. Within 1 week is optimal.	To ensure meeting Forest Plan standards, guidelines, and ESA Terms and Conditions to minimize take on listed species.	If indicators are exceeded see the Compliance Strategy section and the FS Range Handbook.	Indicators are met and documented, along with actual use. Actual use reporting due November 15.

Time of Year	Monitoring Type	Time of Monitoring	Objective	Alternative A Outcome	Alternative B Outcome
Trend Monitoring	MIM – 10 indicators and/or PIBO ³ (where available) and photo documentation.	Every 3–5 years following an MNF schedule.	To establish a trend in riparian and aquatic habitat conditions. The first reading provides a baseline to compare to desired conditions.	Downward (or static in some cases) trend due to grazing results in livestock management adjustments.	Upward trend meets Forest Plan standards and objectives and is compatible with grazing.
Spawning	Redd surveys for summer steelhead (April into June) and bull trout (September into October). Increased attention to variable time of monitoring based on previous years' numbers and current year hydrograph.	Prior to grazing a pasture during spawning season or in coordination with the Oregon Department of Fish and Wildlife or tribes to gain additional knowledge on importance of a stream for spawning.	To document the presence of redds and potential for livestock interaction (which could result in take) and avoid exceedance of take or the need to reinitiate consultation.	Redds are documented, permittees are notified and provided a location map. Redd protection measures are required and implemented.	No redds are documented. A decision is made if grazing will be delayed or occur.

¹ Multiple Indicator Monitoring

² Annual Operating Instructions

³ PacFish/InFish Biological Opinion (PacFish/InFish [USDA FS and USDI BLM 1995; USDA FS 1995a])

1.3.1.5.1. Implementation Monitoring

The MNF proposes to conduct implementation monitoring to assess the effectiveness of selected grazing management on allotments with MCR steelhead critical habitat. Long-term trend indicators of ecological conditions are lacking on the MNF. Due to the lack of baseline ecological status, the MNF will focus the implementation monitoring on three short-term annual ESA endpoint indicators (percent browse, stubble height, and percent streambank alteration). The MNF will use the three indicators as both move triggers during the grazing period, and as end-of-grazing use indicators. The MNF will collect this data at DMA sites assigned to each pasture with CH, and since 2012, the MNF has used this data as the core of implementation monitoring for ESA consultation compliance.

Move Triggers and Endpoint (End-of-grazing Use) Indicators

The MNF will use move triggers and corresponding endpoint indicators to assess allotment and pasture conditions and bases them on season of use and/or site-specific condition of the resource. Livestock will be moved as soon as any one of the move triggers (Table 4) is reached or if

condition of the indicator (even if not yet at the move trigger) indicates a trajectory of conditions that may exceed the endpoint standards based on specific experience and local knowledge of the permittee or the MNF rangeland management specialist.

The MNF will monitor the pastures containing MCR steelhead CH and measure the move triggers, at a minimum, near the mid-point of the grazing use period in that pasture, as a move trigger is approached, or if there is an appearance of an exceedance. As part of the overall grazing administration, MNF staff may also visually inspect riparian areas for livestock use upstream of CH where there is the potential for downstream effects to CH. Move triggers are designed to ensure that endpoint indicators are not exceeded. Endpoint indicators are intended to either maintain desired aquatic habitat conditions or to stimulate an upward trend toward the desired conditions. The trend in riparian and aquatic habitat conditions will be determined by the photo point documentation and data collected through effectiveness monitoring (described below). Where the habitat conditions are currently not at the desired/potential ecological condition, an upward trend in condition is presumed to promote a “near natural” rate of recovery.

Permittees will move all livestock out of a pasture by the end of the proposed use period and prior to exceedance of endpoint indicators. Permittees will ensure that endpoint indicators are not exceeded. MNF staff and permittees will monitor move triggers. The MNF will visually inspect riparian livestock use in each pasture with steelhead CH near the mid-point of the grazing rotation for that pasture. The MNF will collect data for the three metrics at DMA sites on any pasture if it appears that riparian conditions are approaching one or more move triggers or endpoint indicators. Permittees are invited to conduct, as well as participate in, inspections and other monitoring efforts.

Under this monitoring strategy, MNF staff will complete two implementation monitoring components on each pasture with CH to evaluate annual livestock grazing management: (1) move trigger, and (2) end-of-grazing use endpoint indicators. The MNF will monitor both of these implementation monitoring components at DMA sites. These monitoring components, along with effectiveness monitoring at PIBO (described below) and MIM DMA sites, allow for the evaluation of livestock grazing management. The MNF ID team will be conduct the monitoring, or a separate dedicated monitoring team when available. The PIBO sites on the MNF are monitored by the national PIBO team on a 5-year rotation schedule.

1.3.1.5.2. Effectiveness Monitoring

Effectiveness monitoring specific to the MNF’s grazing of riparian communities is limited. The MNF has a total of 204 PIBO monitoring sites, of which 72 are “Integrator” sites (located lower in a watershed to reflect all upstream land management activities), 67 are “DMA” sites (occur within livestock grazed watersheds), and 65 are “Contract” sites (requested specifically by the MNF and monitored for grazing management, wild and scenic river management, and compliance with water quality standards). While the PIBO program has helped provide status and trend data for broad-scale analysis areas (e.g., at the Upper John Day or Middle Fork John Day (MFJD) 8-digit Hydrologic Unit Code (HUC) “subbasin” level), it must be complemented with a program capable of assessing conditions at smaller scales, such as individual allotments, to be useful for effectiveness monitoring. Allotments are often comprised of one to seven smaller

12-digit HUC “subwatersheds.” The PIBO program sites are monitored once every 3 to 5 years, unless they are coincident with a grazing DMA site established for ESA monitoring, which then occurs every year. However, many MNF subwatersheds are not monitored under the PIBO program. Thus, condition and trend data may not be sufficient to inform management regimes that are intended to adapt to changing ecological conditions for some subwatersheds. The MNF’s collection of longer-term data and trends along with its adaptive management strategy and the associated effort of identifying current and potential ecological condition will help identify and address any concerns in these areas.

The MNF will conduct effectiveness monitoring to identify longer term trends in condition at selected PIBO and MIM DMA sites. The schedule for the effectiveness monitoring is based on a 3- to 5-year rotation of visiting individual sites established to assess PacFish/InFish implementation over the long term. The national PIBO monitoring team will monitor the 204 PIBO sites on the MNF. Effectiveness monitoring consists of the full MIM protocol which includes 10 indicators; seven of those specific to identifying long-term trends in condition (greenline composition, woody species height class, streambank stability and cover, woody species age class, greenline-to-greenline width, substrate, and residual pool depth and frequency), and the three short-term “implementation” indicators (browse use, stubble height, streambank alteration). These additional seven indicators are also useful for monitoring stream condition changes that occur as a result of management activities in addition to livestock grazing. The full MIM will be completed at 3- to 5-year intervals prior to livestock turnout in the spring or early summer, to identify trends of individual sites established to assess PacFish/InFish implementation over the long term.

Ecological Condition (Seral Stage) of Riparian Areas

In addition to effectiveness monitoring during the 2023–2027 grazing period, the MNF will also conduct monitoring to determine current and potential ecological condition of riparian areas. Monitoring will continue to include additional variables from the “full MIM” monitoring, at the agreement of the Level 1 and Level 2 team members. These additional variables are important for assessing how departed the designated CH riparian condition may be from ecological potential or desired condition. These additional metrics will also help explain the existing vegetative conditions captured via photo monitoring.

During the 2018–2022 consultation, MNF was to conduct the ten indicator MIM effectiveness monitoring at locations not represented by PIBO, beginning in the spring of 2018. Three to six full MIMs were to be conducted each year, with one site revisited in the fourth year. The intent was to have 18 to 36 MIM trend sites monitored across the forest between 2018–2022. The MNF chose sites and the Level 1 Team agreed to them as a high priority. Only 14 full MIMs were conducted 2018–2021, with some issues over data collection methods in 2020. The collected data have not been evaluated, but a full analysis of the data is expected to be completed prior to any changes to proposed actions in future consultations.

The MNF will conduct the ten-indicator MIM monitoring, on a 3- to 5-year rotation at additional locations not represented by PIBO, and are of high priority to supplement the analysis of grazing’s impacts on aquatic and riparian systems. This monitoring includes seven indicators for

long-term monitoring and three indicators for short-term monitoring. The seven indicators for long-term monitoring are:

- **Woody species age-class** data provide decision makers with information concerning the recruitment of woody species along streams. For systems with the potential to produce woody vegetation, the information provides an understanding of whether the woody species are increasing, decreasing, or maintaining numbers, species, and age classes (MIM Tech. Ref.1737-23, pp. 51–54 (USDI BLM 2011)).
- **Greenline composition** is the composition of vegetation, embedded rock and/or wood along the greenline which directly effects the condition of streambanks and the overall stream condition. Streambanks dominated by deep, strong-rooted vegetation result in stable soils on streambanks, with narrow channel widths, over-hanging banks, plants providing riparian shading, habitat diversity, and terrestrial insect production (USDI BLM 2011).
- **Greenline-to-greenline width** is a measurement of the non-vegetated distance between greenlines on each side of the stream. Many stream channels become over widened as a result of vegetative changes and physical disturbance to streambanks from improper livestock grazing (i.e., streambank trampling and shearing) or other physical disturbances to the streambanks. As streams recover they become deeper and narrower.
- **Streambank stability cover** (Kershner et al. 2004; DOI 2011, pp. 47–51).
- **Woody species height class** (Kershner et al. 2004). Woody species regeneration occurs within a 6-foot-wide belt adjacent to the greenline on both streambanks (DOI 2011, pp. 44–47).
- **Substrate** (Bunte and Abt 2001). Sampling of bed material is used to determine the effects of channel disturbance (DOI 2011, pp. 58–63).
- **Residual pool depth and pool frequency** (Lisle 1987). Residual depth is the average of all differences between riffle crest depth and the pool max depth in the survey. Pool frequency is a count of all pools encountered divided by the thalweg (max) length of the DMA (DOI 2011, pp. 64–47).

The three indicators for short-term monitoring are:

- **Browse use** is important for determining the success of a grazing management prescription and may help establish the relationship between the level of grazing use by cattle, elk, and other large herbivores (DOI 2011, pp. 34–39).
- **Stubble height** is a measure of the residual height of key herbaceous vegetation species remaining after grazing (DOI 2011, pp. 23–27).

- **Streambank alteration** helps determine if grazing intensity is excessive (DOI 2011, pp. 27–34).

1.3.1.6. Spawning Surveys

MCR steelhead spawning surveys will occur within all pastures containing CH where livestock turnout will occur prior to July 1, and where the stream is not permanently fenced off from livestock use. If a redd is observed, the MNF staff and permittees will implement management tools and options to protect redds from trampling. These management tools include, but are not limited to: alternative rotation pattern, rest of the pasture/allotment, permanent exclusion fence, temporary electric fences, and additional riding. The most effects measures are avoidance in both time and location of the spawning area by livestock, as well as livestock exclusion fencing. Additional riding/herding and temporary electric fencing are often less than 100 percent effective.

Within 24 hours of a steelhead redd identified and documented, MNF staff will communicate the location of the redd(s) to the permittee. The MNF will provide a location map within 72 hours and, if the pasture will be grazed prior to July 1 (the date until which embryos are likely to occupy a redd), the MNF will direct the permittee to eliminate interaction between livestock use and redds in that pasture. The MNF will document its communication with the permittee. The MNF can decide redd protection measures upon thorough discussion and communication with the permittees, but those discussions and communication must involve the Ranger District Fisheries Biologist, the Forest Fish Biologist, or the Forest Consultation Biologist. The MNF will review the implementation of the agreed-upon redd protection measures in the field and communicate them to the Services within 24 hours after notifying the permittee that a redd/redds has been located in a pasture with grazing. Because the effectiveness of redd protection measures varies, the MNF will annually review the measures taken for the purposes of eliminating those that are not effective and preventing trampling (on a pasture basis). Failure in one year will trigger adaptive management the following year in that specific pasture to avoid interaction with redds.

Permanent exclusion fencing that is part of the 2023–2027 proposed action to protect stream reaches with a high probability of redds is described in detail in the allotment and pasture descriptions in the sections below, where appropriate.

1.3.1.7. Adaptive Management

As noted above in Section 1.3.1.5, monitoring is fundamental to implementing adaptive management. The MNF will conduct move-trigger monitoring in addition to end-of-grazing use monitoring. End-of-grazing use endpoint monitoring occurs promptly following livestock pasture off dates (either permitted off dates, or off date driven by move-trigger evaluation) to determine if the current grazing management is meeting standards or if any of the identified adaptive management strategies need to be implemented. Monitoring is the responsibility of the MNF, with participation from the permittees encouraged.

An adaptive management strategy is an important feature and appropriate for implementing a livestock grazing program. The MNF designed adaptive management to make annual livestock grazing management adjustment decisions based on new information, changing ground conditions, or the result of monitoring data collected and discussed above. Adaptive management is intended to ensure: (1) Forest Plan standards and guidelines are being met; (2) sites not at desired ecological conditions are trending upward toward attainment of RMOs; and (3) ESA consultation requirements from the Services are met.

When the MNF collects mid-season trigger data and/or annual end-of-grazing use data that dictates a need for change in livestock management, the MNF will implement management adjustments (e.g., livestock numbers, timing and/or duration of grazing, and/or rest) for the following year(s). Making adjustments to ensure that end-of-grazing use indicators are not exceeded should result in positive effects to riparian condition and habitat indicators, and therefore, to CH in the long term. Such adjustments should also have beneficial effects to the ESA-listed species populations, as many adaptive management adjustments will reduce the time that livestock are in, or adjacent to, streams and RHCAs.

Under the proposed action, the MNF and permittees will jointly implement needed adaptive management options for managing livestock grazing on an allotment (Table 5). The goal of implementing the management strategy components will be to achieve and maintain sustainable grazing systems on the allotment, while allowing riparian conditions to move in the direction of meeting desired ecological conditions and RMOs at a near natural rate of recovery. The objective is to have grazing management more proactive, thereby generating long-term solutions to recurring problems, rather than reactive responses to immediate or foreseeable crises. Success will be gauged in the short term as meeting annual use indicators, and in the long term, by documenting that ecological conditions are trending toward RMOs and meet requirements for aquatic resources directed by the MNF LRMP, as amended by PacFish.

Table 5. Adaptive Management Options.

Possible Grazing Management Actions	
A	Implement a different grazing system within grazing permit dates, and/or change number of pastures. As example, options include deferred rotation in 2, 3, 4, or more pastures, rest-rotation, or short-duration spring grazing to meet resource objectives on the allotment (may include use of permittees private land in the rotation).
B*	Modify annual grazing use indicators or add other indicators as needed to facilitate achievement of objectives and desired conditions.
C*	Construct new permanent water development to influence livestock distribution (wells and pipelines, and use of solar pumps).
D	Remove existing water development to influence livestock distribution.
E	Construct fence to exclude livestock from areas of concern (springs, seeps, riparian, ESA critical habitat, Region 6 sensitive species sites, species of local concern, hardwoods, heritage site, or other).
F	Implement specific dates of use or non-use to protect areas of concern.
G*	Construct permanent fence to influence livestock distribution.
H	Use temporary electric fence for short term control of livestock distribution.
I*	Remove (permanent or temporary) fence to influence livestock distribution.
J	Use of range rider (herding) to control livestock movement (distribution).
K	Change class of livestock (i.e., cow/calf to yearling)—do not exceed permitted animal unit months or stocking rate.

Possible Grazing Management Actions	
L	Rest from livestock grazing for one or more seasons.
M	Change the permitted livestock number, permitted animal unit months and/or season of use until monitoring or inventory data shows endpoint indicators can be met.
N	Do not allow livestock grazing in a pasture or allotment.
O*	Change allotment or pasture boundaries.
P	Use salt or other supplements to draw livestock toward or away from specific areas.
Q	Move existing water developments, if feasible, away from streams and springs.
R*	Fell and jackstraw trees to reduce livestock impacts to areas of concern.
S	Harden water gaps or stream crossings, and/or stock pond berms.
T	Restrict access and/or use until after June 30 avoid MCR Steelhead spawning or after August 15 to avoid bull trout spawning and to reduce impacts to Critical Habitat.
U	Expand monitoring for spawning and rearing to better document use of stream reaches, whether designated critical habitat or not.

*If these are used, may require new National Environmental Policy Act decision or reinitiation of section 7 consultation.

If adaptive management changes are necessary, the MNF must document them in the AOIs for that permit, share them with the Level 1 team, and report them in the Annual End of Year report. Changes may involve any of the items listed above in Table 5. Changes that are outside of permit terms and conditions may require a documented agreement or permit modification and concurrence by the MNF line officer. The MNF may identify the need for other structural or non-structural range improvements or for site rehabilitation efforts, and these items will require an IDT review and District Ranger decision or may require additional NEPA review and/or ESA consultation.

1.3.1.8. Fence Maintenance

As part of the grazing permit and the 2023–2027 proposed action, the permittees are responsible for maintenance of perimeter allotment fences, interior pasture fences, and for all enclosure fences that are primarily intended to protect CH, springs, and riparian areas from grazing, and are related to livestock grazing management. The MNF will be responsible for maintenance of enclosure fences established for aspen, recreation, wildlife or other uses not related to livestock grazing management. All fences will be assessed, and repairs made where necessary before livestock turnout (including fences that are the responsibility of the Forest Service).

The grazing permit documents existing fences and maintenance responsibilities. As new livestock management fences are constructed, Term Grazing Permit modifications will assign maintenance responsibility to the permittee(s). Existing fences, if not already assigned maintenance responsibility, will be assigned to the appropriate permittee(s) within 2 years through Term Grazing Permit modifications. The MNF has not yet assigned fence maintenance responsibilities for two new fences built in 2018 and 2022, but will do so prior to turnout in 2023. The MNF will follow the Forest Service Handbook (FSH) direction for all Term Grazing Permit modifications, and it will track the modifications and update electronic files (e.g., the digital grazing map and corporate database), along with updating hard copies, as appropriate in the range file.

Permittees shall notify District range staff of completed pre-season and in-season fence inspections and maintenance. Notifications to District range staff will be made by documented phone calls, emails, texts, notes, or other forms of documentation. MNF range staff will document completed maintenance in allotment files along with any MNF inspection results. All fences must be maintained to established specification(s) prior to turnout in a pasture/allotment and for each subsequent pasture used throughout the grazing season. In the event that a neighboring allotment and/or pasture is grazed prior to turnout of a permittee, the permittee who has maintenance responsibilities of the boundary fences is required to make necessary repairs prior to the neighbor's turnout.

Where maintenance issues occur during the grazing season and are outside the control of the permittees (for example wildlife damage or wildfire), the permittees shall notify the District range staff. A cooperative plan of action to remedy the maintenance issue will be mutually agreed upon by the Permittee, District range staff, and other staff as needed (e.g., fisheries, wildlife or recreation), approved by the District Ranger, and shall then be remedied as soon as possible. The MNF will document the remedy action in the range file. If there is minor wildlife damage the fence, the MNF range staff or permittee will repair the fence as soon as identified and not require a plan. If the maintenance issue is caused by wildfire, then it may not be remedied until the next year or a later year prior to grazing resuming on the allotment or pasture.

The MNF and permittees will discuss fences near the end of their useful life at spring permittee meetings and develop a schedule for re-construction. MNF staff will document new construction and re-construction in the corporate database for range activities (currently INFRA) in the same year as completed and document the activities in the AOIs. The MNF will provide the Level 1 Team with maps showing newly constructed fences.

Failure to comply with the above conditions shall constitute Fence Maintenance Non-Compliance. The MNF will prepare and send a Fence Maintenance Non-Compliance letter to the permittee and to the Services at the time of issue, as well as copied in the End of Year Report. The permittee will complete corrective action to remedy the Fence Maintenance Non-Compliance as soon as possible, but in no more than 7 days (unless a longer time period has been agreed upon and documented between the permittee, the rangeland management specialist, and the line officer). Shorter critical sections of fence protecting an actively grazed pasture must be fixed within 72 hours or less.

If the permittee does not remedy the Fence Maintenance Non-Compliance within the timeframes specified above, they must remove livestock from the pasture, or no livestock grazing will be authorized to start grazing in the pasture where non-compliance exists. If the fence maintenance is for a substantial portion of fence that requires more than 7 days to comply or if livestock are already in the pasture/allotment where the Fence Maintenance Non-Compliance exists; the permittee will promptly gather the livestock and rotate them to the next pasture with properly maintained fences in the grazing rotation. If the pasture/allotment where the Fence Maintenance Non-Compliance exists is the last pasture in the grazing rotation, the permittee will promptly remove the livestock from the allotment. Failure to remedy Fence Maintenance Non-Compliance within the required 7-day timeline (unless a longer time period has been agreed upon and documented between the permittee, the rangeland management specialist, and the line officer)

may have additional impacts to other Terms and Conditions for grazing use within the allotment or may result in other potential non-compliance issues.

If Fence Maintenance Non-Compliance occurs in any two grazing seasons (does not have to be consecutive years) during the 5-year consultation period, the pasture/allotment where the non-compliance occurred may be rested, management actions taken, and reinitiation of consultation with the Services may be required and completed prior to authorizing grazing. The Services, permittees, MNF District Ranger and MNF range/aquatics staff will discuss how the non-compliance shall be remedied. The MNF will follow the guidance in the Grazing Permit Administration Handbook (FSH 2209.13) for all permit violations and non-compliance issues.

1.3.1.9. Compliance Strategy for the Streambank Alteration Endpoint Indicator 2023–2027

As stated above in Sections 1.3.1.4 and 1.3.1.5, the District ID team will establish an ESA monitoring (MIM) DMA prior to the 2023 grazing season in any pastures containing MCR steelhead CH that currently do not have a DMA established. The team will use the MIM Technical Reference 1737-23 (USDI BLM 2011) for how to establish a DMA. Allotments covered under this consultation must have DMAs established on CH where grazing is proposed. The MNF will take photographs of the DMA and identifying landscape features, (e.g., local hill slope profile, major identifiable trees, or boulders) with an upstream and downstream view, each year from a consistent GPS point, or a fixed monument. The following detailed information describes the MNF methodology incorporated into the proposed action that the MNF will follow to help ensure implementation accountability within the livestock grazing program within the range of ESA-listed MCR steelhead.

The MNF established bank alteration move triggers to indicate the need to remove livestock to avoid exceedances of the indicator. The permittee will begin moving the livestock to the next pasture (or off the allotment when they are in the last pasture in the rotation) when the move trigger for bank alteration or stubble height is reached. For each pasture where the level of streambank alteration exceeds the standards, as stated below, the MNF line officer and ID teams will identify, incorporate, and document changes to grazing management strategies for the following season's grazing season, which may include: adjustments to livestock numbers, timing of grazing, duration of grazing, or complete rest. The compliance strategy for streambank alteration is described below:

1. Measured bank alteration up to 6 percent over the endpoint indicator (at end-of-grazing use) of 15 percent for CH with MSRA, 20 percent for CH without MSRA (16–21 percent for CH/MSRA and 21–26 percent for CH/no MSRA): The MNF will contact the permittee within 24 hours or sooner to notify them of the monitoring results. The MNF will send a letter of non-compliance to the permittee requiring a remedy of the situation within the following year. The letter will include the corrective action required to demonstrate compliance (e.g., to what standard), the timeframe of corrective action, and consequences for failure to comply (FSH 2209.13). The MNF will send a copy of the non-compliance letter to the Services and include it in the annual EOY report.
 - a. If the above occurs a second time during the 5-year life of the proposed action (does not have to be consecutive years), the MNF District Ranger may initiate

suspension or cancellation of part of the permit, including a reduction in the days of use for the allotment the next year, or reduction in the number of livestock permitted, and/or complete rest of the specific pasture for one year, or a combination of these actions. The previous letter of non-compliance shall be the basis of actions taken for repeated incidences of non-compliance. The MNF will document the suspension or cancellation remedy in a letter that will be sent to the Services, and included in the annual EOY report.

2. When streambank alteration is measured in excess of 6 percent over the endpoint indicator (at end-of-grazing use) of 15 percent for CH with MSRA, 20 percent for CH without MSRA (21 percent for CH/MSRA and 26 percent for CH/no MSRA): The MNF will contact the permittee within 24 hours to notify them of the monitoring results. The MNF will send a letter of non-compliance to the permittee and will include the corrective action required to demonstrate compliance (e.g., to what standard), the timeframe of remedial action, and consequences for failure to comply (FSH 2209.13). The MNF will send a copy of the non-compliance letter to the Services and include it in the annual EOY report. Corrective action may include one or more of the following: (1) a reduction in the days of use for the allotment the next year; (2) reduction of the number of livestock permitted; or (3) complete rest of the specific pasture for at least one year. The AUM will be reduced from the total numbers authorized in the year the exceedance occurred, and implemented the following grazing year for the allotment.
 - a. If exceedance (non-compliance) from number 2 occurs more than 2 years in the 5-year consultation period (does not have to be consecutive) on any pasture within an allotment, or if the exceedance occurs in multiple pastures in one year on an allotment, the MNF District Ranger may initiate suspension or cancellation that includes a 3-year reduction in the days of use for the allotment, or reduction in the number of livestock permitted, and/or complete rest of the specific pasture(s), or a combination of these options. The 3-year time frame will be applied regardless of what year in the 5-year proposed action these non-compliances occur. If non-use occurs towards the end of the current 2023–2027 proposed action period, the pasture rest and allotment AUM reduction will continue into the new proposed action and resulting ESA consultation. The original letter of non-compliance regarding alteration in excess of 6 percent over the endpoint indicator shall be the basis of corrective action for repeated incidences of similar non-compliance. The MNF will document the suspension or cancellation remedy in a letter that will be sent to the permittee as well as to the Services and included as an appendix in the annual EOY report.
3. If there are multiple exceedances in an allotment in any given year, depending if the exceedance severity is between 1 to 6 percent or over 6 percent, see either number 1 or 2 above for procedures to be followed. If violations persist, partial to total cancellation is appropriate (FSH 2209.13).

1.3.1.10. Compliance Strategy for the Stubble Height Endpoint Indicator 2023–2027

The MNF established stubble-height move triggers to indicate the need to move livestock to avoid exceedances of the indicator. The permittee will begin moving the livestock to the next pasture (or off the allotment when they are in the last pasture in the rotation) when the move trigger for stubble height or bank alteration is reached. For each level of stubble height exceedance in the 2023–2027 proposed action, the MNF line officer and ID teams will identify, incorporate, and document changes to management strategies for the following season’s grazing strategy, which may include: adjustments to livestock numbers, timing of grazing, or duration of grazing, or total rest. The compliance for stubble height is described below:

1. Measured stubble height less than the endpoint indicator (end-of-grazing use) of 6 inches at one or more monitoring locations on an allotment in one year: The MNF will promptly contact the permittee via phone or in person to notify them of the monitoring results. The MNF will send a letter of non-compliance to the permittee providing them one year to remedy the situation and will include the corrective action to demonstrate compliance to 6 inches, the timeframe of remedial action, and consequences for failure to comply (FSH 2209.13). The MNF will send a copy of the non-compliance letter to the Services and include it as an appendix in the annual EOY report.
 - a. If the above occurs a second time in a location previously exceeded in an allotment during the 5-year proposed action (does not have to be consecutive years), the MNF District Ranger may initiate suspension or cancellation of part of the permit, including a reduction in the days of use for the allotment the next year, or the number of livestock permitted and/or complete rest of the specific pasture for one year, or a combination of those options. At a minimum the corrective action will include a reduction of livestock numbers and a reduction in days of use for the allotment. The AUM/HM will be reduced from the total numbers authorized in the year the exceedance occurred. The previous letter of non-compliance will be the basis of action remedies to repeated incidences of non-compliance. The MNF will document the suspension or cancellation corrective action in a letter that will be sent to the Services at the same time as the permittee and included as an appendix in the annual EOY report.
2. If exceedance (non-compliance) from number 1 above occurs more than 2 years in the 5-year consultation period (does not have to be consecutive) on an allotment, the MNF District Ranger may initiate suspension or cancellation, in whole or in part, of the permit, including a reduction in the days of use for the allotment the next 3 years regardless of what year in the opinion this occurs. The corrective action will include a reduction in the number of livestock permitted and/or complete rest of specific pastures for 3 years, or a combination of those options. At a minimum the corrective action will include reduction in livestock numbers and a reduction in days of use for the allotment. The AUM/HM will be reduced from the total numbers authorized in the most recent year the exceedance(s) occurred. If, non-use occurs towards the end of the current 5-year proposed action, the pasture rest and allotment AUM reduction will continue into the new proposed action and resulting ESA consultation.

If a combination of stubble height, bank alteration indicator exceedances, or lack of fence maintenance occurs in an allotment, the permit violations are not considered minor. The MNF will issue a letter of non-compliance with the specific actions required to remedy the non-compliance, the timeframe for the action, and the consequences of the failure to comply. Recurring non-compliance of more than one indicator in time (more than one in 5 years) or space (multiple pastures in one allotment or permit) or continued documented lack of fence maintenance will lead to suspension or cancellation in part or whole of the grazing permit. The MNF will carry out permit actions involving the suspension or cancellation of grazing permits per direction outlined in FSH 2209.13 and 36 CFR 222.4.

1.3.1.11. Excess Use

The Forest Service defines excess use as any livestock owned by the holder of an NFS grazing permit, grazing on NFS lands in greater numbers, at times, or in places other than permitted in the grazing permit, or authorized on the annual bill of collection, including any modifications made by the Forest Service authorized officer. Failure to remove livestock at the end of the authorized grazing season, or when instructed by the Forest Service authorized officer, is also defined as excess use.

If excess grazing use occurs within any enclosure, pasture, or allotment containing CH, the MNF will promptly notify the permittee and give them 72 hours to remedy the situation, as per the FSH guideline for the Notice of Non-Compliance and Opportunity to remedy excess use (FSH 2209.13, Chapter 10 Section 16.2e). A second occurrence of excess use may result in a 25 percent or more suspension of permitted numbers or season of use for a period of at least two years.

For any case of excess use, the MNF District Ranger or their representative will be notified. The MNF District range and fishery staff will then conduct a field inspection to document the excess grazing use through visual observations, photographs, and, if warranted, collection of MIM endpoint indicator metrics. The excess grazing use will be resolved if field inspections show no exceedances of any ESA required MIM indicators (stubble height, woody browse, streambank alteration), and the permittee remedies the situation within 72 hours. MNF staff will place documentation of the excess grazing use and the inspection report in the MNF Range Allotment File and include the information in the EOY report.

If field inspections show the potential for exceedance of any one of the three ESA-required indicators (stubble height, woody browse, and streambank alteration), the MNF will measure the three indicators according to the MIM Technical Reference. The MNF may collect additional MIM indicators (e.g., woody species age class). The MNF will send the results of the indicator monitoring, photographs, and documented permittee communication to the Services within 72 hours. The MNF will provide the inspection reports to the permittee in a timely manner (FSH 2009.13, Section 19.4) and include documentation in the EOY report.

If the excess grazing use is not resolved by the permittee within 72 hours, or if the issue is a repeated or cumulative offense, the MNF will take formal administrative action following FSH direction. Formal action includes providing the permittee with clear, documented explanation in

a Notice of Non-Compliance (NONC) letter. The NONC letter will specify the action required to remedy the non-compliance, the timeframe to comply, and the consequences for failure to comply. The permittee will have an opportunity to correct the situation and bring their permit back into compliance in the same year. If the original non-compliance occurs a second time, or if the non-compliance has not been remedied as specified, the MNF will send the permittee a notice of permit action for non-compliance. Formal action could include suspension of a portion of permitted numbers or a reduction in the grazing season for a minimum of one year. The MNF will document when compliance has been achieved (see FSH 2209.13). The MNF will put documentation into the Range Allotment File and include it in the EOY report.

Severe cases may result in the MNF following the guidelines in the FSH Section 16.2d, which expressly states that an exception to written notice of non-compliance and opportunity for remedy may be reasonable based on violations of permit terms and conditions that adversely impact species listed under the ESA or their CH.

1.3.1.12. Key Communication between the MNF and the Permittees

The FSH 2209.13 Chapter 10, Section 19, directs general administration of grazing permits. The MNF will document allotment inspections and monitoring, electronically using the format in the Forest Service corporate database. The MNF will notify permittees in person or by telephone of any items needing immediate attention. The MNF will file the inspection notes in the official permit folder and allotment analysis folder with copies sent to the permittees. The documentation serves as a basis for discussions with permittees regarding corrective actions to ensure compliance, completion of annual reporting, development of AOIs for the next grazing season, and documenting permittees contributions to management success.

Forest Service direction states that Forest Plan standards, including those pertaining to livestock grazing and fisheries or riparian habitat, will be the basis of monitoring and administering the grazing permit. Permittees are responsible for meeting the terms and conditions of the grazing permit and moving livestock to ensure compliance with management guidelines. The MNF is responsible for ensuring permittees comply with grazing permit terms and conditions, and performing monitoring to determine if objectives are being met. The MNF will document compliance determinations electronically and in hard copy on appropriate inspections forms and in letters to the permittee. Where Forest Plan standards are not met, the MNF will identify corrective actions that will result in improved management in the next grazing season. The MNF will not make a compliance determination if an allotment did not receive a physical inspection by a technically qualified Forest Service agency employee during or after the grazing season.

The 2023–2027 proposed action emphasizes prompt and clear lines of communication between the MNF and permittees that includes: documenting the context for actions related to grazing management as appropriate; for example, when did the action occur (dates), where did it occur (Ranger District, allotment, pasture, and stream), why did it occur, what will be done (changes) as a result of the action (remedy, corrective action, or path forward), and how and where is the occurrence and remedy documented. The explicit concern is for pastures with CH, or the documented presence (seasonal or otherwise) by listed fishes, including:

- **Cows in pastures past off dates** (see Excess Use section above)

- **Infrastructure maintenance and updates (GPS, maps, additions)**– the annual list produced at the spring grazing meetings with the permittees will serve as the documentation of annual infrastructure maintenance and updates. The MNF’s Range Specialist is responsible for keeping records of the location of range improvements in the permittees file, and is responsible for updating information into the INFRA (mapping) database as it pertains to infrastructure updates, such as fences. When poorly maintained infrastructure is documented by non-range personnel, the information will be documented in an email provided to the range specialist and added to the files.
- **Unauthorized grazing** are those activities/animals not authorized by a permit (e.g., private land livestock that occur on NFS land and their owner is not a permittee). If cows are not promptly identified and removed by the owner, unauthorized grazing is most commonly addressed by the MNF as a law enforcement issue.
- **Move triggers monitored**–the MNF will document monitoring results within 5 working days and be made available in MNF internally shared electronic file folders. Where move-trigger or mid-season monitoring indicates that move triggers are hit or are being exceeded, the MNF will notify the permittee in person or by phone within 24 hours. The MNF will follow up documentation of the communication is on an Allotment Inspection form that is scanned or electronically completed and filed in the allotment file and shared with the permittee.
- **Overgrazing and exceedances outside of CH/MSRA/or PIBO/MIM DMA**– exceedances in either uplands or outside of CH which are severe could be considered as failure to follow management instructions and would follow the 72 hours to notify the permittee of non-compliance. The MNF range staff will document exceedances, although MNF non-range staff may document exceedances by initial field notes, photographs, or locations in an email to the range staff and files. It is the responsibility of the MNF range staff to determine if Forest Plan standards are not being implemented and to work with permittees either informally or formally, depending on the violation and necessary corrective actions identified.
- **Concentrated use resulting in adverse impacts to riparian restoration projects, including cattle use where riparian regrowth or hardwood re-establishment is occurring**–The MNF will have annual meetings with the permittees and will review any restoration implementation that will occur within an allotment in the upcoming year, including: prescribed fire, stream or floodplain restoration, riparian plantings, or riparian thinning to establish hardwoods. The MNF will document the discussion and identify the remedy to avoid impacts to restoration investments in the meeting notes and the permittees’ annual AOI letter. Remedies may include temporary (1 to 3 years) exclusion by fencing, rest of a pasture for a season, modification of timing of grazing, or other solutions proposed by the permittee or the MNF Ranger District ID team.
- **Vandalism on pasture infrastructure (gates open, fences removed, salt blocks moved, hunters’ salting areas)**–Reoccurring problems or unauthorized actions which result in resource impacts will be documented by either the permittee, the Forest’s range staff, or other MNF personnel (who will report the problem to the range staff). MNF personnel must document the issue to the file and to the range staff or District Ranger with a photograph (where possible) and a description of the location within 48 hours of finding a problem. The Forest Service range staff will document the project or action and the remedy, notify the permittee and include the information in the EOY report.

- **Redd locations and protection**—If there is no grazing in a pasture with CH and spawning activity, then redd surveys are not necessary. The critical applicable dates are avoiding grazing before July 1 for steelhead spawning and incubation. If grazing is planned for prior to July 1, then the MNF will conduct redd surveys in CH and document the presence of redds before grazing turnout occurs in that pasture. The MNF will notify permittees with a phone call or email within 24 hours of a steelhead redd identified, and a location map within 72 hours of documenting observed redds. The MNF Ranger District fisheries and rangeland management specialist staff will agree upon and document the protection strategy for redds and send documentation of that strategy to the permittee and MNF ESA Consultation Biologist or Forest Fisheries Biologist within a week of documenting the redds. The information will be included in the EOY report provided to the Services. If redd protection measures are observed to be ineffective, see Redd trampling, below.
- **Redd trampling**—The MNF will document redd trampling by photographs and a location description by GPS. The MNF will notify the permittee promptly, no more than 24 hours after locating a trampled redd(s). If MCR steelhead redds are trampled, the MNF will notify NMFS within 24 hours of the identified trampling. Cattle will be promptly (within 24 hours) removed from the pasture. The MNF will collect documentation including: where it occurred, the extent (number of redds), photographic evidence of livestock use in the immediate area, and when/what action was taken to remove the cattle. The MNF will provide the letter and attachments documenting the trampling and the resulting action(s) to NMFS and/or USFWS within 72 hours of the trampling being discovered. The MNF will also send copies of correspondence to the permittee and add the information to the range permit file.
- **Monitoring crew (schedule, reports, outcome that create letters to permittees)**—The MNF will share the monitoring schedules with permittees starting in June. Adjustments to the monitoring schedules are likely to occur as scheduled pasture use dates adjust during the season. The MNF is responsible for keeping an updated schedule and sharing schedule with permittees prior to monitoring. The MNF will share with permittees within 7 working days of collection any data that indicates whether they are meeting or exceeding any permit terms and conditions. If livestock are still in the pasture beyond the authorized use date, or exceedances exist, the MNF will notify for removal (no more than 24 hours). The MNF will make monitoring results and all information in the EOY report available upon request to permittees. PIBO data reports will also be available to permittees upon request and as the PIBO reports become updated or available.
- **Providing ranchers an opportunity for instruction or review of monitoring techniques and objectives**—The MNF must provide opportunities for clear understanding by permittees and Forest Service personnel of how it will monitor Forest Plan compliance, including specifics that are part of the proposed action and any additional requirements resulting from ESA consultation. The MNF will offer to permittees at least one structured, group field day per year, focused on monitoring with attendance by MNF interdisciplinary staff (fisheries biologists, hydrologists, technical fisheries or watershed personnel, range specialists, and botanists or ecologists). The MNF will also invite NMFS and USFWS Level 1 Team members. Permittees will continue to be notified of routine monitoring inspections to their allotments so they can participate as time permits.

1.3.1.13. Key Communication between the MNF and the Services

The MNF and the Services use the Interagency Level 1 Team and the associated consultation streamlining process for communication around issues concerning ESA-listed species and their CH. The Level 1 Team is an interagency group of field staff with a variety of expertise and agency responsibility. There are monthly Level 1 Team meetings with additional field visits in the summer and fall. The team meets on an ad hoc basis when needed for urgent or unforeseen high priority actions, in addition to reviewing action plans, upcoming proposed actions, and associated ESA-consultation documents. The goal of this process is to produce BAs that will facilitate issuance of an opinion or concurrence letter under the streamlined ESA consultation procedures (USDA FS et al. 1999). Due to the complex and complicated history of the MNF grazing program, the 1999 Interagency Streamlined Consultation Procedures expedited timeframes identified are not applicable for the 2023–2027 MNF grazing consultation. The formal consultations timelines for Interagency ESA consultation following 50 CFR 402 will be followed.

1.3.1.14. Most Sensitive Riparian Areas (MSRA) on Individual Allotments

The MNF established the concept of MSRA in 2012 and included this concept as a part of this proposed action. The MNF developed and mapped stream reaches as MSRA to pay particular focus to streams identified as CH with high potential of being adversely affected by livestock interaction within the more sensitive stream reaches.

The MNF designated portions of CH stream reaches in pastures as MSRA. This designation recognizes stream reaches that are most likely to be used as spawning, incubation, and early rearing habitat, are predictable, and warrant additional protection from effects of livestock grazing. The MNF described the protocol for selection of MSRA in the BA Appendix G. Briefly, the MNF identified streams in unconfined open meadow reaches in allotments with a gradient of less than 4 percent, that were Rosgen C and E channels (Rosgen and Silvey 1998), and had riparian zones particularly attractive to grazing livestock seeking palatable vegetation, water, and/or shade. Designation of these streams approximate the Intrinsic Potential (IP) Model (Sheer et al. 2008), whereby the results were used in the MCR steelhead recovery planning effort to identify potential and current spawning areas, and high-quality rearing areas by using topographic and climatic features to rank stream reaches. The MSRA model predictions were validated with the locations of Oregon Department of Fish and Wildlife (ODFW) spawning index reaches. The MSRA designation is confirmed through MNF spawning surveys, and may be changed if continued spawning surveys and further data collection do not confirm intrinsic potential or if MNF deems cattle do not have access. Current MSRA designation represents an initial identification. Where there is information or need to change MSRA, the MNF will present to the Interagency Level 1 Team for approval of any adjustments to the designation. Table 6 displays the allotment, pastures and streams that contain designated CH and MSRA, by MCR steelhead population.

Several allotments on the MNF overlap one or more populations of MCR steelhead. Below, we discuss allotments overlapping more than one MCR steelhead population in the section of the population that has the greatest overlap with the allotment footprint. Allotment spanning more

than one MCR population will also be briefly mentioned in the discussion of the other population(s) it overlaps.

Table 6. Middle Columbia River steelhead population affected by grazing in pastures with most sensitive riparian areas (MSRA) in the Malheur National Forest.

Allotment	Pasture	Stream	MCR steelhead Designated CH (miles) by Stream	MSRA
Aldrich	Cabin–Todd	Todd Creek	1.00	0
		Cabin Creek	1.21	0
	Smokey–Oliver	Flat Creek	0.40	0
		Smoky Creek	0.73	0
	Widows Creek Basin	Flat Creek	0.05	0
		Widows Creek	1.06	0
Allotment Total			4.45	
Beech Creek	Beef	East Fork Beech Creek	1.06	1.13
	Patterson	East Fork Beech Creek	0.40	0.22
Allotment Total			1.46	
Camp Creek	Camp Enclosure	Camp Creek	0.53	0.51
	Campground	Camp Creek	0.32	0.19
	Lower Camp	Middle Fork John Day River	1.00	1.17
	Middle Camp	Camp Creek	0.07	0.12
Middle Fork John Day River		0.28	0.51	
Allotment Total			2.20	
Dark Canyon	15 Road	Middle Fork Canyon Creek	0.14	0.13
		Canyon Creek	1.81	1.04
	Canyon Creek	Wall Creek	2.45	0.19
		Middle Fork Canyon Creek	5.46	1.08
		Crazy Creek	1.91	0
		Canyon Creek	3.47	1.50
Allotment Total			15.24	
Deadhorse	North–Riley	Riley Creek	1.43	0
		Ingle Creek	2.86	1.05
Allotment Total			4.29	
Deer Creek	Deer	West Fork Deer Creek	1.30	0
Allotment Total			1.30	
Dixie	Bear Creek	Dixie Creek	2.30	0.91
		Bear Creek	0.70	0
		Hall Creek	1.39	0.17
	Standard Creek	Standard Creek	1.77	0
Upper Dixie Camp	East Fork Camp Creek	0.38	0	
Allotment Total			6.54	
Fawn Springs	Lake	East Fork Canyon Creek	0.99	0.17
		Wall Creek	1.71	0.07
Allotment Total			2.70	
Fields Peak	Fields Creek	Fields Creek	5.11	0.23
		Buck Cabin Creek	2.30	0
		Wickiup Creek	0.90	0.11

Allotment	Pasture	Stream	MCR steelhead Designated CH (miles) by Stream	MSRA
	North Murderers Creek	Basin Creek	0.46	0
		Charlie Mack Creek	0.47	0
		Murderers Creek	0.09	0.20
		White Creek	0.66	0
	Miners Creek (riparian)	Miners Creek	0.83	0
		Sugar Creek	0.67	0
		Tex Creek	2.03	1.15
	Tex Creek Riparian	Tex Creek	2.19	1.63
	Lemon Pasture	Murderers Creek	0.48	0.07
	Lemon Creek Exclosure	Lemon Creek	0.85	0
Murderers Creek Guard Station	Murderers Creek	0.06	0.06	
Murderers Creek Riparian	Basin Creek	0.02	0	
	Charlie Mack Creek	0.04	0	
	Murderers Creek	4.44	4.17	
	White Creek	0.02	0	
Allotment Total			21.62	
Fox	South Fork	South Fork Long Creek	2.61	1.00
		Long Creek	0.14	0.16
	Upper Fox	Smith Creek	0.86	0
		Dunning Creek	0.98	0
	Lower Fox	Day Creek	1.66	0
		Fox Creek	4.04	3.47
		Mill Creek	0.53	0
		Mill Creek tributary	0.58	0
	Wiley	Mill Creek	0.35	0
		Murphy Creek	0.97	0
Cottonwood Creek		1.41	0	
Allotment Total			14.13	
Hanscomb	Laycock	Laycock Creek	1.50	0.26
		Hanscomb Creek	0.61	0
Allotment Total			2.11	
Herberger	Herberger	East Fork Beech Creek	0.50	0
Allotment Total			0.50	
Hot Springs	Gillette-Thompson	Thompson Gulch	1.32	0
	Hot Springs	Rail Creek	1.34	0.31
Allotment Total			2.66	
John Day	Lower Ennis	Clear Creek	2.85	0.41
		Ennis Creek	1.30	0
		Johnson Creek	0.34	0
		East Fork Beech Creek	0.65	0.67
		Beech Creek	0.07	0
	Hog Creek	0.43	0	
McClellan	McClellan Creek	3.55	1.52	
Allotment Total			9.19	
Long Creek	Hiyu	Jonas Creek	0.34	0
		Long Creek	1.10	0.29
	Flood Meadow	Long Creek	0.81	0.83
	Flat Camp	Cottonwood Creek	3.29	0
Jonas Creek		1.30	0	

Allotment	Pasture	Stream	MCR steelhead Designated CH (miles) by Stream	MSRA	
		Long Creek	1.00	0	
	b	Long Creek	0.95	0.95	
	Ladd	Long Creek	2.24	2.34	
	Flat Camp Cow Camp	Cottonwood Creek	0.31	0	
	Lick		Lick Creek	2.67	0.49
			West Fork Lick Creek	2.43	1.90
			Cougar Creek	2.53	0.77
			Trail Creek	0.39	0
			Charlie Creek	1.42	0
			Eagle Creek	0.66	0
			Camp Creek	1.26	0.82
	Lick Riparian	Lick Creek	2.29	2.37	
	Coxie Creek Exclosure	Coxie Creek	0.54	0	
	Camp Riparian–Camp		Camp Creek	0.55	0.55
			East Fork Camp Creek	0.05	0
	Camp Riparian–Eagle		Eagle Creek	0.05	0
			Coxie Creek	0.02	0
			Camp Creek	0.21	0.48
Camp Riparian–Charlie		Charlie Creek	0.08	0	
		Camp Creek	1.82	1.96	
Camp Riparian–Big Rock	Camp Creek	3.66	3.65		
Camp Riparian–Cougar		Camp Creek	2.43	3.11	
		Trail Creek	0.03	0	
		Cougar Creek	0.08	0	
		Cottonwood Creek	0.25	0	
		Whiskey Creek	0.09	0	
Coxie Creek	Camp Creek	0.33	0		

Allotment Total 35.18

Lower Middle Fork	Pizer	Big Creek (0.25 mi. exclosed–2022)	8.91	2.17
		Deadwood	2.33	1.14
		East Fork Big Creek	2.34	0
		Lost Creek	1.13	0
		Onion Gulch	0.29	0
		Pizer Creek	0.70	0
		Swamp Gulch	0.71	0.244

Allotment Total 16.41

Murderers Creek	Bark Cabin Exclosure	Bark Cabin Creek	0.11	0
	Blue Creek Exclosures	Blue Creek	0.73	0.61
	Blue Ridge	South Fork Murderers Creek	2.05	0
		Bark Cabin Creek	0.61	0
	Orange Creek Riparian	Orange Creek	0.55	0
	Dans Creek Riparian	Dans Creek	0.75	0.75
	Deer Creek	Deer Creek	2.47	2.47
		South Fork Deer Creek	1.75	1.25
		North Fork Deer Creek	2.22	0.72
		Corral Creek	2.51	2.47
Frenchy Butte	Blue Creek	0.33	0	
	Buck Creek	1.60	0.96	

Allotment	Pasture	Stream	MCR steelhead Designated CH (miles) by Stream	MSRA
		Deer Creek	6.61	6.56
		Vester Creek	1.45	0
	Horse Mountain Exclosure	South Fork Murderers Creek	1.82	1.82
	John Young Meadow	South Fork Murderers Creek	0.09	0.08
	Martin Corrals	Duncan Creek	1.33	0
		Thorn Creek	3.83	0
		Murderers Creek	2.08	2.07
	Murderers Creek Gather	Murderers Creek	0.76	0.78
		Dans Creek	0.06	0.05
	Oregon Mine	Murderers Creek	3.95	3.93
		Oregon Mine Creek	0.41	0
		Tennessee Creek	2.04	0
		Thorn Creek	3.13	0
		Duncan Creek	1.12	0
	Oregon Mine Campground	Murderers Creek	0.35	0.35
Red Rocks	Duncan Creek	3.47	0	
South Fork Exclosure	South Fork Murderers Creek	0.76	0.77	
	Crazy Creek	0.03	0	
South Fork M.C. Gather Riparian	South Fork Murderers Creek	0.45	16 ft.	
South Fork Water Gap	South Fork Murderers Creek	0.15	0.04	
Tex Creek Gather	Tex Creek	0.09	0.08	
	Murderers Creek	0.09	0.03	
Timber Mountain	Crazy Creek	1.61	0	
Vester Creek (Exclosure)	Vester Creek	0.40	0	
Watershed (Exclosure)	South Fork Deer Creek	0.48	0.48	
Allotment Total			52.24	
Mount Vernon	Belshaw Creek	Belshaw Creek	2.41	0
	Belshaw Riparian	Belshaw Creek	1.12	1.10
	Bear Creek	Bear Creek	0.98	0
		Bear Creek tributary	0.23	0
	Beech Creek	0.31	0	
Allotment Total			5.05	
McClellan	McClellan	McClellan Creek	0.94	0
Allotment Total			0.94	
McCullough	Section 21	East Fork Beech Creek	0.59	0
	Windmill Flat	Clear Creek	0.05	0
		East Fork Beech Creek	0.60	0
Allotment Total			1.24	
North Middle Fork	Austin	Mill Creek	0.30	0
	Bird	Bear Creek	0.77	0
		Middle Fork John Day River	0.53	0
Caribou	Little Boulder Creek tributary	0.24	0	

Allotment	Pasture	Stream	MCR steelhead Designated CH (miles) by Stream	MSRA
		Windlass Creek	1.05	0
		Caribou Creek	2.93	1.18
		Little Boulder Creek	2.89	0
	Beaver Exclosure	Beaver Creek	1.23	1.23
	Granite Boulder	Lemon Creek	1.05	0
		Beaver Creek	1.90	0
		Granite Boulder Creek	2.03	0
	Granite Boulder Riparian	Granite Boulder Creek	1.49	1.01
	Mosquito	Mosquito Creek	0.86	0
	River Unit	Tincup Creek	0.08	0
		Middle Fork John Day River	0.41	0.51
		Butte Creek	0.08	0.11
	Susanville	Beaver Creek	0.34	0
		Sunshine Creek	0.02	0
		Dry Creek	0.52	0
		Coyote Creek	1.63	0
		Wray Creek	3.03	0
		Myrtle Creek	2.59	0
		Deep Creek	3.23	0
		Elk Creek	1.12	0
		North Fork Elk Creek	0.03	0
		Badger Creek	2.29	0
	Big Boulder Creek	4.22	0	
	Tin Cup	Windlass Creek	1.19	0
	Tin Cup Riparian	Tincup Creek	0.28	0
	UNIT C	Mosquito Creek	0.20	0
	UNIT F	Mosquito Creek	1.18	0
Vinegar	Blue Gulch	1.16	0	
	Vinegar Creek	7.59	4.99	
	Vincent Creek	4.44	1.97	
Allotment Total			52.90	
Rail Creek	Rail	Call Creek	2.83	0
		Crescent Creek	0.50	0
		John Day River	5.98	1
		John Day River tributary	0.22	0
		Rail Creek	1.34	0
		Roberts Creek	2.97	0
		Allotment Total		
Reynolds Creek	Danish	Isham Creek	0.58	0
		Eureka Gulch	0.07	0
	Reynolds	Mossy Gulch	0.91	0
		North Reynolds Creek	3.69	0
		Reynolds Creek	5.00	0
Allotment Total			10.25	
Roundtop	Grub	Grub Creek	1.00	0.53
	Beech Creek	East Fork Beech Creek	0.93	0.29
	Short and Dirty	East Fork Beech Creek	0.09	0
	Tinker Creek	Tinker Creek	2.34	0.80
		East Fork Beech Creek	0.41	0

Allotment	Pasture	Stream	MCR steelhead Designated CH (miles) by Stream	MSRA
Allotment Total			4.77	
Seneca	Vance Creek	Hanscomb Creek	0.11	0
		Vance Creek	0.92	0
Allotment Total			1.03	
Slide Creek	East	Bear Creek	2.35	0
		Lick Creek	0.07	0
		Whiskey Creek	1.20	0
	West	Slide Creek	1.15	0
	Whiskey Riparian	Whiskey Creek	1.20	0
	Slide Riparian	Slide Creek	0.86	0.89
	Camp Riparian	Camp Creek	1.35	1.40
Stock Driveway	Slide Creek	0.48	0	
Allotment Total			8.66	
South Middle Fork	Deerhorn	Davis Creek	4.85	1.42
		Deerhorn Creek	1.91	1.67
		Little Butte Creek	3.37	0
		Placer Gulch	2.72	1.48
	Lower Butte	Butte Creek	1.12	1.12
		MFJDR unnamed tributary	0.27	0
		Ragged Creek	1.43	0
		Ruby Creek	1.16	0.95
	Sunshine	Sunshine Creek	2.85	0
	Upper Butte	Bennett Creek	0.49	0
		Butte Creek	3.09	0
		Ruby Creek	2.00	0
		Sulphur Creek	1.06	0
Allotment Total			26.32	
York	York Riparian	Slide Creek	1.05	0
Allotment Total			1.05	

1.3.1.15. Project Design Criteria (PDC)

The MNF and permittees will use the following PDCs in Table 7 to minimize or eliminate adverse effects of grazing on MCR steelhead and designated CH. These PDCs are integral components of the proposed action and all proposed grazing activities will be completed consistent with these criteria.

Table 7. Grazing Livestock Project Design Criteria.

#	Project Design Criteria (PDC)
1	Permittees must maintain all assigned perimeter and interior fences (including enclosure fences related to livestock management) prior to turnout each year. Existing enclosure fences (including those the Forest Service is responsible for) and any future riparian enclosure fences, will be inspected and maintained each year prior to turnout of livestock. The results of fence inspections will be reported to the MNF Responsible Official prior to approval of yearly grazing authorization.
2	Herding and trailing of livestock will be at historically-used roads or road crossing where available. Areas with saturated soils such as springs, seep, or meadows will be avoided.
3	Trailing will be controlled by herding of livestock, where permittees actively push livestock to the next pasture.

#	Project Design Criteria (PDC)
4	Spawning surveys will occur within all pastures containing critical habitat or documented spawning streams where turnout is expected to occur prior to July 1 for steelhead and after August 15 for bull trout.
5	When redds are located, MNF range staff will notify permittees within 24 hours. Maps with redd locations will be provided by the MNF fisheries biologist or range staff within 72 hours, and redd surveys are required prior to livestock turnout before July 1 on that pasture.
6	To minimize risk of redd trampling, the MNF and permittees will utilize a number of tools to protect redds, which include, but are not limited to, these options: deferred rotation, rest, exclusion (if water gaps are present their location and size must be reviewed and documented by the District Fish Biologist), temporary electric fences, additional riding, or no grazing in pastures until after July 1 for MCR steelhead and before Aug 15 for bull trout.
7	Complete all required monitoring (implementation and effectiveness) at MIM DMA. The monitoring will be accomplished by an interdisciplinary team. Photos can augment but not replace MIM DMA monitoring.
8	The MNF will complete and document mid-season and move-trigger monitoring and checks of RHCAs for livestock use in each pasture that contains MCR steelhead CH and Columbia River bull trout.
9	Annual end-of-grazing use indicators will be used, along with pasture off dates and spawning seasons, to dictate when livestock are to be moved from pastures.
10	The MNF range and aquatic staff will provide NMFS and USFWS with an annual livestock grazing FINAL End of Year Report by April 15 of each year, for the previous grazing season.
11	All existing troughs, springs and ponds to be maintained will be prioritized at spring meetings with permittees. Maintenance of water developments is required as part of the term grazing permit. The proper function of these developments is critical for livestock distribution and helps reduce impacts to stream riparian areas.
12	Use of roads and off-road travel by permittees and MNF staff will follow these PDCs: <ul style="list-style-type: none"> • Vehicles are not authorized to travel through seeps, springs, or streams except for use of existing fords or road crossings; • All refueling activities and fuel storage will occur at least 150 feet away from live streams; • Off-highway vehicle (OHV) routes within 100 feet of streams will not be visible so that access routes do not become new trails and minimize disturbance to riparian vegetation; • OHV travel off established roads within 100 feet of streams would occur only during periods when soil is dry and rutting or compaction is not apparent.

1.3.2. Allotment-Specific Proposed Actions

Grazing Strategies for Individual Allotments

Grazing Strategies identified for each allotment, stratified by MCR steelhead population, are summarized in Table 2 in Section 1.3 Proposed Action, above.

The following allotment-by-allotment writeups describe the proposed action in terms of: permit number with associated term date and acres included, permit start and end dates, pasture use and rotation schedule, authorized livestock (i.e., c/c or yearlings) and associated animal unit months (AUM). The proposed action under consultation is for the 2023–2027 livestock grazing seasons on 28 MNF allotments.

Pasture use dates are included in pasture rotation tables for each allotment. Pasture use dates are **bolded** when the scheduled livestock use occurs prior to July 1, when MCR steelhead spawning occurs and redd(s) are present. The pasture rotation table also displays whether a DMA, PIBO or Photo site exists for each pasture that contains a stream with CH or MSRA. Pastures lacking the required ESA monitoring DMA site are noted, and DMA sites must be established before livestock turnout occurs.

1.3.2.1. Allotment-Specific Actions (alphabetical order)

Aldrich Allotment

The MNF proposes to authorize livestock grazing on the Aldrich allotment for two permits for five years, 2023–2027. Two herds will be grazed. The number of c/c, allotment on/off dates, and AUM for each permit are listed in Table 8.

Table 8. Aldrich Allotment Permit and Permit Information.

Permit Number	Permit Exp. Date	Total Acres	Permitted Number of Livestock * c/c/AUM /HM	Permit Season Begin and End Dates
0604010039	12/31/2024**	1,412	100/182/138	7/20–8/30
0604010016	12/31/2024**	19,165	250/1671/1266	5/15–10/15
<p>* c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments. ** permits will be need to be renewed during the consultation duration. Bolded font when the scheduled livestock use occurs prior to July 1.</p>				

The allotment contains 4.45 miles of streams designated MCR steelhead CH on Cabin Creek, Todd Creek, Smokey Creek, Flat Creek, and Widows Creek. There are no MSRA reaches identified within the Aldrich allotment (Table 9).

Table 9. Middle Columbia steelhead, miles of critical habitat by allotment within the Endangered Species Act Action Area.

Pasture Name	Stream Name	Steelhead Critical Habitat	MSRA
Cabin–Todd	Cabin Creek	1.21	0.00
Cabin–Todd	Todd Creek	1.00	0.00
Smokey–Oliver	Smokey Creek	0.73	0.00
Smokey–Oliver	Flat Creek	0.40	0.00
Widows Creek Basin	Flat Creek	0.05	0.00
Widows Creek Basin	Widows Creek	1.06	
Total Miles		4.45	0.00

This allotment includes six pastures including one holding/gather pasture: Cabbage Patch Camp. The gather pasture is small and is used for overnight or short term stays when livestock are moved throughout the allotment. Pastures are not used more than once per year, with the exception of the Cabbage Patch Camp which can be used up to a total of 14 days per year.

Pasture dates and planned rotations are proposed and will be readdressed on a yearly basis to ensure proper use. Pasture use dates, livestock rotation and livestock numbers are presented in the Pasture Use Table 10.

Table 10. Pasture Rotation for the Aldrich Allotment 2023–2027.

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA PIBO /Photo
<u>Herd 1</u>						
Widows Creek Burn (no CH) 100 c/c pair	7/20–8/30	7/20–8/30	7/20–8/30	7/20–8/30	7/20–8/30	
<u>Herd 2</u>						
Widows Basin and Smokey–Oliver 250 c/c pair	7/1–10/15	7/1–10/15	7/1–10/15	7/1–10/15	7/1–10/15	Photo Point DMA on Cabin Creek
	7/1–10/15	7/1–10/15	7/1–10/15	7/1–10/15	7/1–10/15	
Aldrich Ridge 250 c/c pairs (no CH)	6/15– 10/15	6/15– 10/15	6/15– 10/15	6/15– 10/15	6/15– 10/15	
Cabin Todd * 250 c/c pairs	5/15–6/15	5/15–6/15	5/15–6/15	5/15–6/15	5/15–6/15	
Cabbage Patch Camp 100 c/c pair (no CH)	Gather	Gather	Gather	Gather	Gather	
<p>Bolded font when the scheduled livestock use occurs prior to July 1. * Turnout before July 1 requires completion of MCR steelhead spawning/incubation surveys in CH. ** Lacking DMA for ESA monitoring–establishing a DMA is required before livestock turnout in pasture.</p>						

Herd 1 (100 c/c)

Widows Creek Burn Pasture: (1,412 acres). This pasture does not contain MCR steelhead CH or MSRA. This is the only pasture for Herd 1 and is used for 40 days each year.

Herd 2 (250 c/c)

Widows Creek Basin, Cabin–Todd, Aldrich Ridge, and Smokey–Oliver Pastures: (19,124 acres). These pastures contain approximately 4.45 miles of MCR steelhead CH and no MSRA. Aldrich Ridge does not contain any CH. Due to the steep topography of these pastures, and the lack of fences, they are managed as one pasture. Because there are no fences separating these pastures, livestock are moved throughout the allotment according to natural barriers; which are steep ridgetops that form rough pasture boundaries that are marginally effective at containing livestock. Therefore, only one photo-point DMA has been established so far, which is located on Cabin Creek.

Cabbage Patch Camp Pasture: (41 acres). This pasture does not contain MCR steelhead CH or MSRA. This is a holding pasture used for two weeks, with up to 100 c/c holding when livestock are herded from pasture to pasture.

Riding and salting will occur to keep cattle in the uplands. Riders will also keep the herd moving and rotated between pastures. A photo-point DMA is located within the Cabin–Todd pasture for this allotment.

Beech Creek Allotment

The MNF proposes to authorize livestock grazing for one permit on the Beech Creek allotment for the next five years 2023–2027. The Beech Creek allotment is currently operated by one permittee as an on/off grazing strategy. Pasture use dates, and livestock numbers are presented in Table 11.

Table 11. Beech Creek Allotment Permit Information.

Permit Number	Permit Exp. Date	Total Acres	Permitted number of Livestock c/c Pair/AUM/HM**	Permit Season Begin and End Dates	Modifications by Date
0604010010	12/31/2023	1,663	35/304/230	*5/15 to 11/30	5/23/2019
<p>** Turnout before July 1 requires completion of MCR steelhead spawning/incubation surveys in critical habitat. Bolded font when the scheduled livestock use occurs prior to July 1.</p> <p>* c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments.</p>					

The allotment includes 1.46 miles of MCR steelhead designated CH, and 1.35 miles of MSRA on East Fork Beech Creek (Table 12). The Grouse and Timber pastures do not have CH or MSRA.

Table 12. Miles of Middle Columbia River steelhead critical habitat and most sensitive riparian areas (MSRA) by pasture within the Beech Allotment.

Pasture Name	Stream Name	Steelhead Critical Habitat (miles)	MSRA (miles)
Beef	East Fork Beech Creek	1.06	1.13
Patterson	East Fork Beech Creek	0.40	0.22
Total Miles		1.46	1.35

Livestock are typically trailed into the pastures of the Beech Creek allotment from the adjacent private land or allotments, which are owned by the permittee. The pastures of this allotment are used by the permittee to facilitate livestock movement back and forth between the permittee’s private land and the NFS allotments. Therefore, the proposed action for this allotment incorporates actions for other allotments that the permittee manages (See also John Day and Mt. Vernon allotments). Table 13 displays the pasture use dates and rotation.

The Beech Creek allotment is different than other allotments in several ways:

1. Not all of the pastures of the allotment border each other; some are separated by up to 12 miles.
2. Given that the pastures do not border one another, livestock do not rotate through them in the traditional manner.

3. The pastures include varying amounts of private land owned by the permittee and managed with the NFS land.
4. The pastures of this allotment are located in different watersheds.
5. Only the Beef and Patterson pastures are adjacent to one another, and are used with the grazing rotation of the John Day and Fox allotments.

Patterson Pasture: (665 acres). The pasture contains 0.40 miles of steelhead CH and 0.22 miles of MSRA. This pasture will be used for approximately 4 weeks per year, typically early in the season. Livestock enter the private land portion of this pasture (south of the MNF boundary) first in the season, on the permitted “on date.” It typically takes 2 weeks before livestock reach the MNF’s portion of this pasture.

- Livestock enter the private land portion of this allotment located to the south of the forest. They use the Patterson pasture and then are moved north toward the forest where they enter the Beef pasture.
- This pasture contains a water gap of approximately 15 ft. that allows cattle access to East Fork Beech Creek steelhead CH/MSRA.

Beef Pasture: (360 NFS acres, 160 acres private lands).

The pasture contains 1.06 miles of steelhead CH and 1.13 miles of MSRA. This pasture will be used in the early season after June 1, for approximately 2 to 4 weeks per year. This pasture has an MNF and PIBO DMA located on the East Fork of Beech Creek.

Timber Pasture: (94 NFS acres).

The pasture does not contain MCR steelhead CH or MSRA. This pasture is used for 2 weeks typically late in the season.

- The MNF is currently working on combining this pasture with the Mt. Vernon allotment and removing it as a pasture of the Beech Creek allotment.

Grouse Pasture: (1,892 acres). The pasture does not contain MCR steelhead CH or MSRA. This pasture is used for 3 weeks early in the season for the livestock that are entering the Mt. Vernon allotment. There is a PIBO DMA adjacent to the pasture just outside the allotment fence boundary.

- The Forest Service is currently working on combining this pasture with the Mt. Vernon allotment and removing it as a pasture of the Beech Creek allotment.

Table 13. Proposed pasture rotation for the Beech Creek Allotment 2023–2027.

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA PIBO or Photo Point
Patterson** (35c/c)	*5/15–11/30	*5/15–11/30	*5/15–11/30	*5/15–11/30	*5/15 – 11/30	CH fenced except water gap
Beef** (35c/c)	*5/15–11/30	*5/15–11/30	*5/15–11/30	*5/15–11/30	*5/15–11/30	MIM DMA PIBO
Grouse** (35c/c)	5/15–11/30	5/15–11/30	5/15–11/30	5/15–11/30	5/15–11/30	CH Fenced

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA PIBO or Photo Point
Timber (35c/c)	5/15–11/30	5/15–11/30	5/15–11/30	5/15–11/30	5/15–11/30	No CH
<p>Bolded font when the scheduled livestock use occurs prior to July 1. *Turnout before July 1 requires completion of MCR steelhead spawning/incubation surveys in critical habitat (Section 6.1.5) **Rotation will be adjusted annually. Pasture length of use is described in text above. Cattle will not be grazing allotment wide for entire season of use, only a maximum of 230 head months (as permitted) will be authorized in any year.</p>						

Camp Creek Allotment

The MNF proposes to authorize grazing annually on the Camp Creek allotment for the 2023–2027 livestock grazing seasons. The number of c/c/AUM, HM, allotment on/off dates, for the permit are listed in Table 14.

Table 14. Camp Creek Allotment Permitted livestock numbers and on/off dates during 2023–2027.

Allotment Name	Permit No.	Permitted Number of Livestock c/c Pair/AUM/HM**	On/off Dates
Camp Creek	0604010009	50/330/250	06/01 *–10/31
<p>* Turnout before July 1 requires completion of MCR steelhead spawning/redd surveys in CH. Bolded font when the scheduled livestock use occurs prior to July 1. ** c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments.</p>			

Camp Creek allotment contains a total of 2.2 miles of MCR steelhead CH and 2.5 miles of MSRA. Table 15 below displays the streams with designated CH and MSRA along with their associated pasture. Table 16 displays the pasture use dates, AUM, and rotation schedule proposed for 2023–2027.

Lower Camp Creek Pasture: (55 acres). This pasture contains approximately 1.00 miles of MCR steelhead CH and 1.17 miles of MSRA. This pasture will be used by 50 c/c pairs for approximately 20 days. There is a MIM DMA located in this pasture on the MF John Day River.

North Pasture: (116 acres). This pasture does not contain CH or MSRA. This pasture will be used by 50 c/c pairs for approximately 20 days.

Gibbs Pasture: (64 acres). This pasture does not contain CH or MSRA. This pasture will be used by 50 c/c pairs for approximately 30 days.

Road Pasture: (147 acres). This pasture does not contain CH or MRSA. This pasture will be used by 50 c/c pairs for approximately 30 days.

Middle Camp Creek Pasture: (71 acres). This pasture contains approximately 0.35 miles of MCR steelhead CH and 0.63 miles of MSRA. This pasture will be used by 50 c/c pairs for approximately 25 days. There is a 124-foot water gap located on Camp Creek at the southern edge of the pasture. There is a MIM DMA located in this pasture on MF John Day River.

Campground Pasture: (29 acres). This pasture contains 0.32 miles of CH and 0.19 miles of MSRA. This pasture was rested and is proposed for rest for the next 5 years (2023–2027). There is a PIBO-I site/MIM DMA located in the Campground pasture on Camp Creek.

Upper Camp Creek Pasture: (252 acres). This pasture does not contain MCR steelhead CH or MSRA. This pasture is typically last in the rotation and used by 50 c/c pairs for approximately 35 days.

Camp Enclosure: (16 acres). This pasture contains approximately 0.53 miles of MCR CH and 0.51 miles of MSRA. This is a riparian/CH enclosure that will not be grazed for the life of this consultation. There are two PIBO-I site/MIM DMA located in this enclosure on Camp Creek. This monitoring location will help compare if grazing management is providing for a near natural rate of recovery in riparian areas.

Table 15. Middle Columbia River steelhead critical habitat (CH) and Most Sensitive Riparian Areas (MSRA) miles within Pastures in the Camp Creek Allotment.

Pasture Name	Stream Name	Steelhead Critical Habitat	MSRA
Campground	Camp Creek	0.32	0.19
Lower Camp Creek	Middle Fork John Day River	1.00	1.17
Middle Camp Creek	Middle Fork John Day River	0.28	0.51
Middle Camp Creek	Camp Creek	0.07	0.12
Camp Enclosure	Camp Creek	0.53	0.51
Overall Total Miles		2.2	2.5

Table 16. Proposed Pasture Rotation for the Camp Creek Allotment 2023–2027

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA/ Photo/PIBO
Lower Camp* 50 c/c CH and MSRA	7/11–7/31	6/21–7/11	7/11–7/31	6/21–7/11	7/11–7/31	DMA on MFJDR
North 50 c/c No CH	6/21–7/10	6/1–6/20	6/21–7/10	6/1–6/20	6/21–7/10	–
Gibbs 50 c/c No CH	8/1–9/1	7/11–8/10	8/1–9/1	7/11–8/10	8/1–9/1	–
Road 50 c/c No CH	9/2–10/1	8/10–9/5	9/2–10/1	8/10–9/5	9/2–10/1	–
Middle Camp* 50 c/c CH and MSRA	6/1–6/20	9/6–10/1	6/1–6/20	9/6–10/1	6/1–6/20	DMA on MFJDR est. 2016
Campground 50 c/c	Rested	Rest	Rest	Rest	Rest	DMA and PIBO-I site on Camp Creek

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA/ Photo/PIBO
CH and MSRA						
Upper Camp 50c/c No CH	10/1–10/30	10/1–10/30	10/1–10/30	10/1–10/30	10/1–10/30	–
Camp Exclosure	No Grazing	No Grazing	No Grazing	No Grazing	No Grazing	2 PIBO-I sites
* Turnout before July 1 requires completion of MCR steelhead spawning/redd surveys in CH. Bolded font when the scheduled livestock use occurs prior to July 1.						

Dark Canyon

The MNF proposed to authorize livestock grazing on the Dark Canyon allotment for the next five years. The allotment is currently operated by one permittee grazing one herd of cattle, with a total of 194 c/c for a permitted date of 6/15–10/30 (Table 17) not to exceed 1,162 AUM.

Table 17. Dark Canyon Allotment Permit Information.

Permit Number	Permit Exp. Date	Total Acres	Permitted Number of Livestock c/c Pair/AUM/HM**	Permit Season Begin and End Dates
0604010031	12/31/2026	31,913	194/1162/880	6/15* –10/30
*No CH is scheduled for grazing prior to July 1. Bolded font when the scheduled livestock use occurs prior to July 1.				
* c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments.				

The Dark Canyon allotment contains 15.24 miles of MCR steelhead CH and 3.94 miles of MSRA (Table 18).

Table 18. Miles of Middle Columbia River steelhead critical habitat (CH) and most sensitive riparian areas (MSRA) by pasture within the Dark Canyon Allotment.

Pasture	Stream	Critical Habitat (miles)	MSRA (miles)
Canyon Creek	Wall Creek	2.45	0.19
Canyon Creek	Middle Fork Canyon Creek	5.46	1.08
15 Road	Middle Fork Canyon Creek	0.14	0.13
Canyon Creek	Crazy Creek	1.91	0.00
Canyon Creek	Canyon Creek	3.47	1.50
15 Road	Canyon Creek	1.81	1.04
Total Miles		15.24	3.94

This allotment is used in a rotation with the potential to rest one or more pastures per year. These pastures will be grazed one time each year.

15 Road Pasture: (465 acres). This pasture contains approximately 1.95 miles of MCR steelhead CH and 1.17 miles of MSRA. Due to the design of this pasture, it is best suited as a gather

pasture and to be used for short durations. Therefore, 15 Road pasture is not included in the pasture rotation schedule. A PIBO-I site/MIM DMA is located on Middle Fork Canyon Creek.

Canyon Creek Pasture: (16,623 acres). This pasture contains approximately 13.30 miles of MCR steelhead CH and 2.77 miles of MSRA. The Canyon Creek pasture is typically fourth in the rotation cycle, with 194 c/c entering the pasture to remain for approximately 45 days. There is a MIM DMA located in this pasture on Canyon Creek.

Dark Canyon Pasture: (10,067 acres). This pasture does not contain MCR steelhead CH or MSRA. This pasture is typically last in the rotation, 194 c/c will enter the pasture and remain for approximately 30 days.

North Rock Springs Pasture: (2,275 acres). This pasture does not contain MCR steelhead CH or MSRA. This pasture is typically first in the rotation, 194 c/c will enter the pasture and remain for approximately 14 days.

South Rock Springs, and Wickiup: (2,484 acres). These pastures do not contain MCR steelhead CH or MSRA. These pastures are run together, 194 c/c pairs will enter the pasture and remain for approximately 45 days.

Proposed use dates, pasture rotations, and livestock numbers are presented in the pasture use table (Table 19).

Table 19. Pasture Proposed Rotation for the Dark Canyon Allotment 2023–2027.

Pasture Name Livestock numbers	2023	2024	2025	2026	2027	MIM DMA PIBO Photo
15 Road 50 c/c	Gather 7/1–10/30	Gather 7/1–10/30	Gather 7/1–10/30	Gather 7/1–10/30	Gather 7/1–10/30	DMA on Canyon Creek
Canyon Creek 194 c/c	8/16–9/30	8/16–9/30	8/16–9/30	8/16–9/30	8/16–9/30	DMA on Canyon Creek
North Rock Springs 194 c/c	7/31–8/15	7/31–8/15	7/31–8/15	7/31–8/15	7/31–8/15	No CH
Dark Canyon 194 c/c	10/1–10/30	10/1–10/30	10/1–10/30	10/1–10/30	10/1–10/30	No CH
South Rock Springs and Wickiup 194 c/c	6/15–7/30	6/15–7/30	6/15–7/30	6/15–7/30	6/15–7/30	No CH

Deadhorse Allotment

The MNF proposes to authorize livestock grazing on the Deadhorse allotment (15,534 acres) for the next five years, 2023–2027. The Deadhorse allotment is operated by two permittees, grazing two separate herds (Table 20).

Table 20. Deadhorse Allotment Permit and Permit Information.

Permit Number	Permit Exp. Date	Total Acres	Permitted Number of Livestock c/c Pair/AUM/HM	Permit Season Begin and End Dates
0604010034	12/31/2024	1,723	19/114/86	6/1*-10/15
0604010027	12/31/2026	13,811	155/921/698	6/1*-10/15

* Turnout before July 1 requires completion of MCR steelhead spawning/redd surveys in CH.

Bolded font when the scheduled livestock use occurs prior to July 1.

* c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments.

This allotment is currently divided into three pastures: North–Riley, Riley Creek Meadow, and Percival. These pastures are used once per year (Table 21). Riley Creek Meadow fence is scheduled to be rebuilt in 2024. North Riley and Riley Meadow will be run in common until the fence is built.

Herd one consists of 155 c/c with permitted use dates of 6/1–10/15. Herd two consists of 19 c/c with permitted use dates of 6/1–10/15.

Table 21. Proposed Pasture Rotation for the Deadhorse Allotment 2023–2027

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA PIBO Photo
Herd 1						
North/Riley* 155 c/c	6/1–10/15	6/1–10/15	6/1–10/15	6/1–10/15	6/1–10/15	DMA on Riley Cr. above CH
Riley Creek Meadow* 155 c/c No CH	Gather	Gather	Gather	Gather	Gather	No CH
Herd 2						
Percival 19 c/c No CH	6/1–10/15	6/1–10/15	6/1–10/15	6/1–10/15	6/1–10/15	No CH

* Turnout before July 1 requires completion of MCR steelhead spawning/redd surveys in CH.

Bolded font when the scheduled livestock use occurs prior to July 1.

The Deadhorse allotment contains 4.29 miles of MCR steelhead CH and 1.05 miles of MSRA (Table 22).

Table 22. Middle Columbia River steelhead critical habitat and most sensitive riparian areas (MSRA) for the Deadhorse Allotment.

Pasture Name	Stream Name	Steelhead Critical Habitat (miles)	MSRA (miles)
North	Riley Creek	1.43	0.00
North	Ingle Creek	2.86	1.05
Total Miles		4.29	1.05

Herd 1 (155 cow/calf pairs)

North/Riley and Riley Creek Meadow pastures: (13,811 acres). These pasture contain approximately 4.29 miles of MCR steelhead CH and 1.05 miles of MSRA (North pasture). These pastures are managed as one pasture, with cattle being distributed throughout. The Riley Creek Meadow fence is scheduled to be reconstructed in 2024 at which point the pastures will be used separately. Once the fence is reconstructed, the Riley Creek Meadow Pasture will be used only for short durations as a gather pasture; 155 c/c pairs enter these pastures and remain for approximately 135 days. There is a MIM DMA in the North pasture located on Riley Creek (BA Appendix A map). The location of this DMA will be reviewed by an ID team in 2023 to ensure that the current location meets the intent outlined in the Common to All monitoring strategy. The ID team will make a recommendation to the Forest Supervisor to either move or keep the DMA in the current location.

Herd 2 (19 cow/calf pairs)

Percival Pasture: (1,723 acres). This pasture does not contain MCR steelhead CH or MSRA. Nineteen c/c pairs enter this pasture and remain for approximately 135 days.

Deer Creek Allotment

The MNF proposes to authorize livestock grazing on the Deer allotment (2,997 acres) for 2023–2027. The allotment will have one permittee that will graze 88 c/c every odd year from June 11 to September 15. There is approximately 800 acres of private lands within the allotment. The allotment will be rested on even years. A MIM DMA was established on West Fork Deer Creek in 2017 (Table 23).

Table 23. Deer Creek Allotment Permit and Permit Information

Permit Number	Permit Exp. Date	Total Acres	Permitted Number of Livestock c/c Pair/AUM/HM**	Permit Season Begin and End Dates
0604010060	12/31/2031	2,997	88/371/281	*6/11–9/15
<p>* Turnout before July 1 requires completion of MCR steelhead spawning/redd surveys in CH. Bolded font when the scheduled livestock use occurs prior to July 1. * c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments.</p>				

The allotment contains 1.30 miles of MCR designated CH and 0.0 miles of MSRA on the West Fork Deer Creek (Table 24). Table 25 displays the period of use for the Deer allotment.

Table 24. Middle Columbia River steelhead critical habitat and most sensitive riparian areas (MSRA) for the Deer Creek Allotment.

Pasture Name	Stream Name	Steelhead Critical Habitat	MSRA
Deer	West Fork Deer Creek	1.30	0
Overall Total Miles		1.30	0

Table 25. Deer Allotment (single pasture) Proposed Use 2023–2027.

Pasture and Authorized Number	Total Acres	Season of Use 2023	Proposed Season of Use 2024	Proposed Season of Use 2025	Proposed Season of Use 2026	Proposed Season of Use 2027	MIM DMA/PIBO/Photo
Deer* (88 c/c)	2,100 NFS lands, 800 private lands	6/11–9/15	Rest	6/11–9/15	Rest	6/11–9/15	DMA on West Fork Deer Creek est. 2017
* Turnout before July 1 requires completion of MCR steelhead spawning/redd surveys in CH. Bolded font when the scheduled livestock use occurs prior to July 1.							

Dixie Allotment

The MNF proposes to authorize livestock grazing under one permittee on the Dixie allotment (26,907 acres) for the next five years, 2023–2027. MNF currently authorizes grazing one herd of cattle, with a total of 173 c/c for a permitted date of 6/1–10/15 (Table 26) not to exceed 1,029 AUM/779 HM. Two pastures currently exist in this allotment: Standard and Bear Creek. These pastures will be grazed one time per year.

A new fence separating East Fork Camp Creek drainage from the Bear pasture to create a third pasture is planned for future construction. This new pasture will be approximately 490 acres and is proposed to be grazed as a rest-rotation system. Until the fence is built, this area will continue to be managed as the Bear Pasture. Construction is dependent upon funding availability.

For the 2023–2027 consultation, grazing use prior to July 1 is restricted to the Standard Creek Pasture, which does not contain MSRA. This should reduce the likelihood of livestock–redd interactions. The proposed action includes redd surveys for pastures that are used prior to July 1. Snow has prevented surveyors’ access to this stream in every year, and the MNF has not been able to successfully survey for steelhead redds in the Standard Creek Pasture. MNF will evaluate the spawning potential in this stream in 2023 and share that information with the Level 1 Team. If Standard Pasture is found to contain potential spawning habitat, the MNF will develop an appropriate monitoring or protection strategy and notify the Level 1 Team. Fencing spawning habitat from livestock access, or delaying turnout in the pasture till after July 1, where spawning habitat is present may be implemented if surveys cannot be completed prior to spring turnout.

Table 26. Dixie Allotment Permit Information.

Permit Number	Permit Expiration Date	Total Acres	Permitted Number of Livestock c/c pair/AUM/HM**	Permit Season Begin and End Dates
0604010021	12/31/2025	26,907	173/1029/779	*6/1–10/15
<p>** Turnout before July 1 requires completion of MCR steelhead spawning/redd surveys in CH. Bolded font when the scheduled livestock use occurs prior to July 1. * c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments.</p>				

MCR steelhead CH is located on 6.54 miles and 1.08 miles of MSRA are within the allotment (Table 27).

Table 27. Middle Columbia steelhead, miles of critical habitat by allotment within the Dixie Creek Allotment

Pasture Name	Stream Name	Steelhead Critical Habitat	MSRA
Bear	Hall Creek	1.39	0.17
Bear	Bear Creek	0.70	0.00
Bear	Dixie Creek	2.30	0.91
Bear	EF Camp Creek	0.38	0.00
Standard	Standard Creek	1.77	0.00
Overall Total Miles		6.54	1.08

Standard: (12,777 acres – 7,428 NFS acres and 5,348 private/BLM land acres). This pasture contains approximately 1.77 miles of MCR steelhead CH and 0.00 miles of MSRA. This pasture is used by 130 c/c pairs for (50–70 days). In addition to the acres of NFS land in the pasture listed above (7,428) there is an additional 5,348 acres of private/BLM used congruently (43 c/c pairs) while the cattle are in this pasture. The photo point DMA is located on Standard Creek.

Bear Creek: (13,658 acres – 9,396 NFS acres and 4,079 private/BLM acres). This pasture contains approximately 4.39 miles of MCR steelhead CH and 1.08 miles of MSRA. This pasture is used by 173 c/c pairs for (60–75 days). In addition to the acres of Forest Service land in the pasture listed above (9,396) there is an additional 4,709 acres of private/BLM in this pasture. The private property has now been fenced which restricts the movement of livestock through the pasture. The DMA in this pasture is located in the MSRA on Dixie Creek.

Upper Dixie Camp: (approximately 472 acres). This pasture when completed will contain approximately 0.38 miles of MCR steelhead CH and 0.00 miles of MSRA in upper East Camp Creek in the Middle Fork John Day River subbasin. This pasture is part of the Camp Lick Decision within the Camp–Lick vegetation project. It has not been completed as of 2022. Completion is subject to funding, but is expected to be completed once thinning is underway in this pasture as is required in the Camp Lick opinion. This proposed fence will create a pasture on the west side of the current Bear pasture that will be used in a rest rotation by approximately 35 c/c pairs of the authorized livestock for no more than two weeks. There is a DMA in this pasture on Camp Creek.

Table 28 displays the proposed livestock use dates, pasture rotations, and livestock numbers for Dixie allotment.

Table 28. Proposed Pasture Rotation for the Dixie Allotment 2023–2027.

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA PIBO Photo Point
Standard * 173 c/c pairs	6/1–8/1	6/1–8/1	6/1–8/1	6/1–8/1	6/1–8/1	Photo point and browse use
Bear Creek 173 c/c pairs	8/2–10/15	8/2–10/15	8/2–10/15	8/2–10/15	8/2–10/15	DMA on Dixie Creek DMA on East Fork Camp Creek is not alternate to Dixie, but in addition to Dixie DMA
* Turnout before July 1 requires completion of MCR steelhead spawning/redd surveys in CH Bolded font when the scheduled livestock use occurs prior to July 1.						

Fawn Springs Allotment

The MNF proposed to authorize livestock grazing on the Fawn Springs allotment for the next 5 years, 2023–2027. The allotment is currently operated by one permittee grazing one herd of cattle, with a total of 107 c/c for a permitted date of 6/1–10/15 (Table 29) not to exceed 636 AUM (482 HM).

Table 29. Fawn Springs Allotment Permit Information.

Permit Number	Permit Expiration Date	Total Acres	Permitted Number of Livestock c/c Pair/AUM/HM**	Permit Season Begin and End Dates
0604010069	12/31/2032	6,537	107/636/482	6/1*–10/15
* Turnout before July 1 requires completion of MCR steelhead spawning/redd surveys in CH. Bolded font when the scheduled livestock use occurs prior to July 1. ** c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments.				

The Fawn Springs allotment contains 2.70 miles of MCR steelhead CH and 0.24 miles of MSRA (Table 30). MSRA is designated in the Lake pasture. Streams within the allotment with MSRA or CH are depicted in Table 31.

Table 30. Miles of Middle Columbia steelhead Critical Habitat and Most Sensitive Riparian Areas (MSRA) by Pasture within the Fawn Springs Allotment.

Pasture Name	Stream Name	Critical Habitat (miles)	MSRA (miles)
Lake	Wall Creek	1.71	0.07
Lake	East Fork Canyon Creek	0.99	0.17
Total Miles		2.70	0.24

Proposed use dates, pasture rotations, and livestock numbers are presented in the pasture use table (Table 31). Five pastures currently exist in this allotment: Alder, Fawn Springs, G-4, L-8 and Lake. One pasture, the Lake pasture, contains two streams with CH. These pastures are used in rotation once per year. Pasture dates and rotations are approximations and will be readdressed on a yearly basis to ensure proper use. Range readiness and utilization levels may result in varying on/off dates and pasture rotations within the parameters of authorized use.

Alder Pasture: (2,080 acres). This pasture does not contain MCR steelhead CH or MSRA; 107 c/c will enter the pasture and remain for approximately 45 days.

Fawn Springs Pasture: (1,518 acres). This pasture does not contain MCR steelhead CH or MSRA; 107 c/c will enter the pasture and remain for approximately 30 days.

G-4 Pasture: (432 acres). This pasture does not contain MCR steelhead CH or MSRA; 107 c/c will enter the pasture and remain for approximately 14 days.

L-8 Pasture: (436 acres). This pasture does not contain MCR steelhead CH or MSRA; 107 c/c will enter the pasture and remain for approximately 14 days.

Lake Pasture: (2,057 acres). This pasture contains approximately 2.70 miles of MCR steelhead CH and 0.24 miles of MSRA; 107 c/c will enter the pasture and remain for approximately 30 days. There is a PIBO-K site/MIM DMA located in this pasture located on Wall Creek.

Table 31. Proposed Pasture Rotation for the Fawn Springs Allotment 2023–2027.

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA PIBO Photo
Alder 107 c/c No CH	7/16–9/1	7/16–9/1	7/16–9/1	7/16–9/1	7/16–9/1	No CH
Fawn Spring 107 c/c No CH	9/2–10/1	6/16–7/15	9/2–10/1	6/16–7/15	9/2–10/1	No CH
G-4 107 c/c No CH	7/1–7/15	9/2–9/15	7/1–7/15	9/2–9/15	7/1–7/15	No CH
L-8 107 c/c No CH	10/1–10/15 70 AUM	6/1–6/15	10/1–10/15	6/1–6/15	10/1–10/15	No CH
Lake* 107 c/c CH and MSRA	6/1–7/11	9/15–10/15	6/1–7/1	9/15–10/15	6/1–7/1	DMA on Wall Cr. and PIBO-K site, Photo Point on EF Canyon Cr. Browse Use monitored

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA PIBO Photo
* Turnout before July 1 requires completion of MCR steelhead spawning/redd surveys in CH. Bolded font when the scheduled livestock use occurs prior to July 1.						

Fields Peak Allotment

The Fields Peak allotment totals 30,818 acres, and lies within the Murderers Creek, Fields Creek, and Laycock Creek, watersheds. There are 272 acres of private land intermingled with NFS lands. The private lands are unfenced and management of these lands has not been waived to the Forest Service. This allotment is divided into eight pastures (Table 32). Authorization to graze on this allotment is based on the conditions on the ground being ready to be grazed as determined by MNF staff. There will be a total of nine pastures once a fence is constructed creating the Miners Creek Riparian pasture. Of the eight pastures, five are larger pastures (Tex Creek, Murderers Creek, North Murderers Creek, Fields Peak, Miners pastures), and three are smaller pastures (Tex Creek Riparian, Murderers Creek Riparian, and Miners Creek Riparian).

There are also four exclosures (Tex Creek Livestock exclosure, Tex Creek Wildlife exclosure, Murderers Creek Guard Station, and Lemon exclosure). Three of these exclosures: Lemon, Tex Creek Wildlife, and Tex Livestock exclosure that are not authorized to be grazed by cattle for the 2023–2027 period. Livestock are excluded from the Murderers Creek Guard Station pasture and it is not included in proposed grazing rotations. Tex Creek Wildlife is 1.16 acres, and contains 330 ft. of CH and 330 ft. of MSRA on Tex Creek. Tex Creek Livestock Exclosure is 3.63 acres, and contains 1,000 ft. of CH and 300 ft. of MSRA on Tex Creek. Tex Creek Wildlife and Tex Livestock exclosures were built approximately 20 years ago and have not been grazed by livestock since they were built. The Lemon exclosure (14 acres) was built in 2016. It excludes livestock from 0.89 miles of Lemon Creek, which is the entirety of the CH designated on Lemon Creek.

The Fields Peak Allotment contains 21.62 miles of MCR steelhead CH and 7.62 miles of MSRA (BA Appendix A, map). MSRA is designated in Fields Peak, North Murderers Creek, Miners Creek, Tex Creek Riparian, Lemon, Murderers Creek Guard Station and Murderers Creek Riparian pastures.

Most pastures are not used more than once per year. Proposed pasture use dates and rotations are included in Table 32, and will be readdressed on a yearly basis to ensure proper use.

Table 32. Pasture Rotation for the Fields Peak Allotment 2023–2027. Exclosures are not included in this table. Exclosures are not proposed in rotation for livestock grazing.

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA PIBO/ Photo Point
<u>Herd 1</u>						
Fields Peak* 197 c/c pair	5/15–8/15	7/5–9/2	5/15–8/15	7/5–9/2	5/15–8/15	Photo point with browse use Monitored on Fields Cr. PIBO-K and I site on Fields Cr. **
Miners Creek 197 c/c pair	8/08–9/02	9/3–9/25	8/08–9/02	9/3–9/25	8/08–9/02	MIM DMA on Miners Creek
Tex Creek 197 c/c pair (25 c/c at one time) (CH excluded)	9/02–9/25	6/15–7/4	9/02–9/25	6/15–7/4	9/02–9/25	DMA within CH excluded on Tex Cr.
Murderers Creek 197 c/c pairs (CH excluded)	9/26–10/15	5/15–6/15	9/26–10/15	5/15–6/15	9/26–10/15	No CH
Tex Creek Riparian	Rest	Rest	Rest	Rest	Rest	DMA on Tex Creek
Murderers Creek Riparian	Rest	Rest	Rest	Rest	Rest	DMA on Murderers Creek
Miners Creek Riparian	Rest	Rest	Rest	Rest	Rest	DMA on Miners Creek
Lemon pasture	Exclosure	Exclosure	Exclosure	Exclosure	Exclosure	Excluded
<u>Herd 2</u>						
North Murderers Creek 40 c/c 2 Horses	6/15–10/15 6/01–10/15	6/15–10/15 6/01–10/15	6/15–10/15 6/01–10/15	6/15–10/15 6/01–10/15	6/15–10/15 6/01–10/15	Photo point DMA on White Creek

* Turnout before July 1 requires completion of MCR steelhead spawning/redd surveys in CH.

** MNF IDT will evaluate if photo point with browse is still appropriate at the current site and will review with Level 1 in 2024.

Bolded font when the scheduled livestock use occurs prior to July 1.

The MNF proposes to authorize livestock grazing on the Fields Peak allotment for the next five years, 2023–2027. The Fields Peak allotment is operated by two permittees, grazing two separate herds. Permit number, acres, livestock numbers, and season of use are identified in Table 33.

Table 33. Fields Peak Allotment Permit and Permit Information.

Permit #	Permit Exp. Date	Total Acres	Permitted Number of Livestock c/c Pair/Horses/AUM/HM**	Permit Season Begin and End Dates
0604010057	12/31/2030	5,321	40 c/c pair/214 AUM /162 HM 2 horses/12 AUM/9 HM	*6/15–10/15 6/1–10/15
0604010016	12/31/2024	25,213	197/0/797	*6/15–10/15
<p>* Turnout before July 1 requires completion of MCR steelhead spawning/redd surveys in CH. ** c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments. Bolded font when the scheduled livestock use occurs prior to July 1.</p>				

Herd one consists of 197 cow/calf pairs with authorized use dates of 6/15–10/15. Herd two consists of 40 cow/calf pairs and two horses with permitted use dates of 6/15–10/15. These pastures are not used more than once per year

The CH on Miners Creek, Sugar Creek, and Tex Creek contains a heavy shrub component which can limit livestock access to the stream. The MNF determined that an extensive amount of thinning would need to be completed for a fence installation to exclude all Miners Creek critical habitat in the Miners Creek Riparian Pasture. There is no current timeline of when a fence might be constructed.

Herd 1 (197 cow/calf pairs):

Fields Peak Pasture: (12,150 acres). This pasture contains approximately 8.21 miles of MCR steelhead CH and 0.31 miles of MSRA; 197 c/c pairs enter the pasture and remain for approximately 90 days. In September 2016, an MNF ID team conducted post-grazing monitoring on Fields Creek. It was concluded that Fields Creek is not capable of supporting a sedge/rush community. The stream was determined to have very little access to livestock, shrubs are the dominant vegetation, and trailing along the stream is unlikely. The ID team determined that monitoring of stubble height, woody browse and bank alteration was unnecessary due to the stream type and that photo point monitoring would be sufficient, with woody browse monitoring. There is a Photo Point with Browse Monitoring located in this pasture on Fields Creek. Therefore, only photo point and browse monitoring will occur in the Fields Peak Pasture 2023–2027.

Miners Creek Pasture: (6,152 acres). This pasture contains approximately 3.53 miles of MCR steelhead CH and 1.15 miles of MSRA. Miners Creek pasture is typically the second pasture in rotation; 197 c/c are permitted in this pasture for approximately 25 days. There is a MIM DMA located on Miners Creek.

Tex Creek Pasture: (3,255 acres). This pasture contains no accessible MCR steelhead CH or MSRA due to exclusion fencing. This is typically the third pasture in the rotation; 197 c/c are moved into this pasture for approximately 23 days.

Tex Creek Riparian Pasture: (61 acres). In 2015, Tex Creek was fenced into a 61 acre pasture called Tex Creek Riparian. The riparian pasture has 3 water gaps and contains 2.19 miles of CH and 1.63 miles of MSRA. There is a MIM DMA located in this pasture on Tex Creek. Three water gaps cross Tex Creek and the pasture is used to facilitate livestock movement between allotment pastures. This pasture is used only for a short duration (less than 1 week) and with a limited number of cattle (less than 50c/c). This pasture will not be grazed 2023–2027.

Murderers Creek Riparian Pasture: (163 acres). In 2015, a portion of Murderers Creek was fenced into a 163 acre pasture called Murderers Creek Riparian. This pasture contains 4.52 miles of CH and 4.17 miles of MSRA. There are 2 water gaps that cross Murderers Creek. This is a small pasture that will not typically be grazed and, therefore, will not be included in the rotation. Livestock use will be addressed on an annual basis. When used, there will be 100 c/c for no longer than 1 week. If this pasture is used, the Photo Point DMA located on Murderers Creek will be used. An ID team will determine if MIM is necessary. There is a 14-acre enclosure at the upper end of Murderers Creek, above CH that will not be authorized for grazing.

Miners Creek Riparian Pasture: (75 acres). This pasture contains approximately 3.53 miles of CH and 1.15 miles of MSRA (Tex Creek). This pasture will be used in conjunction with Miners Creek Pasture until the fence is completed to exclude the critical habitat on Miners Creek. Due to the heavy shrub component and steep terrain, extensive amounts of thinning need to be completed for this fence to be completed. Following completion of this fence, use will be addressed on an annual basis. When used, this pasture will be used to facilitate livestock movement to other pastures of the allotment. Up to 50 c/c pairs of cattle would be permittee for up to 7 days.

If this pasture is used, the Photo DMA located on Miners Creek will be used.

Murderers Creek Pasture: (3,610 acres). This pasture does not contain MCR steelhead CH or MSRA due to exclusion fencing. This is the fourth pasture in the rotation; 197 c/c are moved into this pasture for approximately 20 days. There are two 15-foot-wide water gaps on Murderers Creek within this pasture.

Tex Creek Wildlife Enclosure: (approximately 1.16 acres). This exposure contains 330 ft. of CH and 330 ft. of MSRA on Tex Creek. This pasture will not be grazed 2023–2027.

Tex Creek Livestock Enclosure: (approximately 3.63 acres). This enclosure contains 1,000 ft. of CH and 300 ft. of MSRA on Tex Creek. The enclosure is divided into two sections by a road that is used as a water gap for Tex Creek. This pasture will not be grazed 2023–2027.

Lemon Creek Pasture and Enclosure: (15 acres)—The Lemon pasture is described to contain 0.48 CH on Murderers Creek and 0.07 miles MSRA. The Lemon Creek enclosure contains approximately 0.85 miles of MCR steelhead CH and 0 miles of MSRA that is excluded. This pasture will not be grazed 2023–2027.

Herd 2 (40 cow/calf pairs, 2 horses):

North Murderers Creek (5,321 acres). Contains approximately 1.67 miles of MCR steelhead CH and 0.20 miles of MSRA on Murderers Creek; 40 c/c pairs will enter the pasture and remain

for approximately 123 days. Two horses will also enter the pasture and remain for approximately 137 days. There is a MIM DMA located in this pasture on White Creek. Critical habitat below the DMA is scheduled to be fenced in fall of 2023. This will exclude most of the accessible critical habitat in this pasture from grazing.

Streams with MCR steelhead CH and MSRA located within the Field Peak allotment are identified in Table 34.

Table 34. Middle Columbia River steelhead critical habitat (CH) and most sensitive riparian areas (MSRA) for the Fields Peak Allotment.

Pasture Name	Stream Name	Steelhead Critical Habitat (miles)*	MSRA (miles)
Fields Peak	Fields Creek	5.11	0.23
Fields Peak	Wickiup Creek	0.9	0.11
Fields Peak	Buck Cabin Creek	2.3	0
North Murderers Creek	White Creek	0.66	0
North Murderers Creek	Charlie Mack Creek	0.47	0
North Murderers Creek	Basin Creek	0.46	0
Miners Creek Riparian	Miners Creek	0.83	0
Miners Creek Riparian	Tex Creek	2.03	1.15
Miners Creek Riparian	Sugar Creek	0.67	0
Tex Creek Riparian	Tex Creek	2.19	1.63
North Murderers Creek	Murderers Creek	0.09	0.09
Lemon Creek	Murderers Creek	0.48	0.01
Murderers Creek Riparian	Murderers Creek	4.44	4.17
Murderers Creek Riparian	Basin Creek	0.02	0
Murderers Creek Riparian	Charlie Mack Creek	0.04	0
Murderers Creek Riparian	White Creek	0.02	0
Lemon Creek Exclosure**	Lemon Creek	0.85	0
Tex Creek Livestock Exclosure**	Tex Creek	1000 ft.	300 ft.
Tex Creek Wildlife Exclosure**	Tex Creek	330 ft.	330 ft.
Total Miles*		21.61	7.62
*MNF rounded stream miles to the nearest tenth decimal for each stream. The number of total steelhead critical habitat for the complete allotment includes all miles based on MNF GIS and therefore may result in slightly different totals. ** Exclosures will not be grazed 2023–2027.			

Fox Allotment

The MNF proposes to authorize livestock grazing on the Fox allotment for 2023–2027. The Fox allotment is currently operated by three permittees grazing three separate herds of cattle, with a total of 293 c/c permitted for 6/1–9/30, and not to exceed 1,425 AUM for the entire allotment. Proposed use dates, pasture rotations, and livestock numbers are presented in Table 35. The allotment contains a total of 14.13 steam miles of designated CH and 4.63 miles of MSRA. Table

36 displays the pastures with identified streams containing CH or MSRA. Four main pastures currently exist in this allotment. These pastures are planned to only be grazed one time per year, every year. Proposed pasture rotation is included in Table 37.

During 2023–2027 MNF management will evaluate if there is the need to exclude livestock and protect CH.

Table 35. Fox Allotment Permit Information.

Permit Number	Permit Exp. Date	Total Acres	Permitted Number of Livestock c/c Pair/AUM/HM**	Permit Season Begin and End Dates
0604010068	12/31/2032	12,725	95/462/350	6/11–9/30
0604010042	12/31/2027	5,531	125/661/501	6/1–9/30
0604010061	12/31/2031	8,328	73/355/269	6/11–9/30

** c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments.
Bolded font when the scheduled livestock use occurs prior to July 1.

Table 36. Miles of MCR Steelhead CH and MSRA by Pasture within Fox Allotment.

Pasture	Stream	Critical Habitat (miles)*	MSRA (miles)
South Fork	South Fork Long Creek	2.61	1.00
South Fork	Long Creek	0.14	0.16
Upper Fox	Smith Creek	0.86	0.00
Upper Fox	Dunning Creek	0.98	0.00
Lower Fox	Unnamed trib. to Mill Creek	0.58	0.00
Lower Fox	Fox Creek	4.04	3.47
Lower Fox	Mill Creek	0.53	0.00
Lower Fox	(Forty) Day Creek	1.66	0.00
Wiley	Mill Creek	0.35	0.00
Wiley	Murphy Creek	0.97	0.00
Wiley	Cottonwood Creek	1.41	0.00
Total Miles		14.13	4.63

*The MNF rounded stream miles to the nearest tenth decimal for each stream. The number of total steelhead critical habitat for the complete allotment includes all miles based on MNF GIS and therefore may result in slightly different totals.

Herd 1– Wiley Pasture: (8,328 acres). This pasture contains approximately 2.72 miles of MCR steelhead CH and no MSRA. This pasture is used by herd 1 (73 c/c) 6/11–9/30. The monitoring location in this pasture on Cottonwood Creek is a photo point approved by the IDT in 2016. Along with photos, browse use will be measured every year.

Herd 2– Upper Fox Pasture: (5,531 acres). This pasture contains approximately 1.84 miles of MCR steelhead CH and no MSRA. This pasture is used by herd 2 (125 c/c) 6/1–9/30. A photo

point DMA was established on Smith Creek. Due to the channel morphology this stream does not have the characteristics necessary for a MIM survey due to its ephemeral nature.

Herd 3–South Fork Pasture: (7,507 acres). This pasture contains approximately 2.75 miles of MCR steelhead CH and 1.16 miles of MSRA. This pasture is used first in the rotation by herd 3 (95 c/c) for approximately 75 to 85 days 6/11–9/1.

Lower Fox Pasture: (5,218 acres). This pasture contains approximately 6.81 miles of MCR steelhead CH and 3.47 miles of MSRA. This pasture is typically used second in the rotation (due to the high concentration of steelhead and MSRA) by herd 3 (95 c/c) for approximately 20 to 30 days 9/1–9/30.

Table 37. Proposed Pasture Rotation for the Fox Allotment, 2023–2027.

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	DMA PIBO Photo
Herd 1						
Wiley* 73 c/c pairs	6/11–9/30	6/11–9/30	6/11–9/30	6/11–9/30	6/11–9/30	Photo Point DMA Cottonwood Cr.
Herd 2						
Upper Fox* 125 c/c pairs	6/01–9/30	6/01–9/30	6/01–9/30	6/01–9/30	6/01–9/30	Photo Point DMA on Smith Cr.
Herd 3						
South Fork* 95 c/c pairs	6/11–9/1	6/11–9/1	6/11–9/1	6/11–9/1	6/11–9/1	MIM DMA on SF Long Cr. PIBO-I site on SF Long Cr.
Lower Fox 95 c/c pairs	9/2–9/30	9/2–9/30	9/2–9/30	9/2–9/30	9/2–9/30	MIM DMA and PIBO-K site on Fox Cr. PIBO-I site on Fox Cr.
* Turnout before July 1 requires completion of MCR steelhead spawning/redd surveys in CH. Bolded font when the scheduled livestock use occurs prior to July 1.						

Hanscomb Allotment

The MNF proposes to authorize livestock grazing on the Hanscomb allotment 2023–2027. The Hanscomb allotment includes approximately 9,878 acres, which is currently divided into four pastures (Table 39). The Hanscomb allotment contains 2.11 miles of MCR steelhead CH and 0.26 miles of MSRA. The Hanscomb allotment is operated by two permittees, grazing two separate herds. Herd one consists of 52 c/c with permitted use dates of 6/1–10/15. Herd two consists of 68 c/c with permitted use dates of 6/1–10/15 (see Table 38).

Table 38. Hanscomb Allotment Permit Information.

Permit Number	Permit Exp. Date	Total Acres	Permitted Number of Livestock c/c Pair/AUM/HM**	Permit Season Begin and End Dates
0604010017	12/31/2024	5,157	68/404/306	6/1–10/15
0604010034	12/31/2026	4,721	52/309/234	6/1–10/15

* c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments.

Bolded font when the scheduled livestock use occurs prior to July 1.

Each pasture is only used once per year. Proposed pasture rotation is included in Table 39.

Table 39. Proposed Pasture Rotation for the Hanscomb Allotment 2023–2027

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA PIBO Photo
Allen/Morris No CH 52 c/c	6/1–7/7	6/1–7/7	6/1–7/7	6/1–7/7	6/1–7/7	No CH
Geary Creek No CH 52 c/c	7/8–8/15	7/8–8/15	7/8–8/15	7/8–8/15	7/8–8/15	No CH
Upper Geary No CH 52 c/c	8/16–10/15	8/16–10/15	8/16–10/15	8/16–10/15	8/16–10/15	No CH
Laycock* 68 c/c	7/1–10/15	8/1–10/15	7/1–10/15	8/1–10/15	7/1–10/15	Photo Point DMA* on Laycock Creek

* A DMA will be established in 2023.

Bolded font when the scheduled livestock use occurs prior to July 1.

Herd 1 (52 c/c):

Allen/Morris Pasture: (477 acres). This pasture does not contain MCR steelhead CH or MSRA. This pasture is typically first in the rotation with 52 c/c pair entering the pasture and remaining for approximately 37 days.

Geary Creek Pasture: (478 acres). This pasture does not contain MCR steelhead CH or MSRA. This pasture is typically second in the rotation with 52 c/c pair remaining for approximately 37 days.

Upper Geary Pasture: (3,061 acres). This pasture does not contain MCR steelhead CH or MSRA. This pasture is typically last in the rotation with 52 c/c pair entering the pasture and remaining for approximately 60 days.

Herd 2 (68 c/c):

Laycock Pasture: (5,157 acres). This pasture contains 2.11 miles of MCR steelhead CH and 0.26 miles of MSRA (Table 40). A permitted 68 c/c will enter this pasture and remain for approximately 135 days. Laycock Meadow will be electric fenced every year prior to livestock turnout, until a permanent fence is constructed to keep livestock out of the meadow. There is a photo point located in this pasture on Laycock Creek. A DMA will be established in 2023.

Table 40. Middle Columbia steelhead, miles of critical habitat in the Hanscomb Allotment within the Endangered Species Act Action Area

Pasture Name	Stream Name	Steelhead Critical Habitat	MSRA
Laycock	Laycock Creek	1.5	0.26
Laycock	Hanscomb Creek	0.61	0
	Overall Total Miles	2.11	0.26

Herberger On/Off Allotment

The MNF proposes to authorize livestock grazing on the Herberger allotment for the next five years, 2023–2027. The Herberger allotment is operated by one permittee, grazing one herd of 8 c/c with permitted use dates of 8/1–10/15 (Table 41). Proposed pasture use dates, livestock rotation, and livestock numbers are presented in (Table 42). The Herberger pasture will be used once per year.

Table 41. Herberger Allotment Permit and Permit Information.

Permit number	Permit Exp. Date	Total Acres	Permitted Number of Livestock c/c Pair/AUM/HM**	Permit Season Begin and End Dates
0604010010	12/31/2023	563	8/26/20	8/1–10/15

* c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments.

Herberger Pasture: (563 acres). This pasture contains approximately 0.50 miles of MCR steelhead CH on East Fork Beech Creek and no MSRA. This pasture is an on/off pasture, with approximately 155 acres of NFS and 408 acres of privately managed land (connected to NFS land). This pasture is not part of a rotation because it is a single pasture allotment. It is used by 8 c/c of cattle for approximately 70 to 76 days between 8/1–10/15.

Table 42. Livestock Use for the Herberger Allotment 2023–2027.

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA/PIBO/Photo
Herberger 8 c/c	8/1–10/15 26 AUM	8/1–10/15 26 AUM	8/1–10/15 26 AUM	8/1–10/15 26 AUM	8/1–10/15 26 AUM	MIM DMA East Fork Beech Creek

Hot Springs Allotment

The MNF proposes to authorize livestock grazing on the Hot Spring on/off allotment for the next five years, 2023–2027. The Hot Springs allotment consists of four pastures and is currently operated by one permittee grazing one herd of cattle, with a total of 24 c/c permitted 5/20–6/30 and 53 yearlings 6/5–10/04 (Table 43). The 2022 BA described the off portion of the permit is 51 cow/calf (c/c) pairs from 5/20–6/30 and 73 yearlings from 6/5–10/4.

Table 43. Hot Springs Allotment Permit Information

Permit number	Permit Exp. Date	Total Acres (USFS)	Permitted Number of Livestock c/c Pair/AUM/HM**	Permit Season Begin and End Dates
01906	12/31/2029	4,693	24cc/44 AUM, 33 HM	5/20–6/30
01906	12/31/2029	4,693	53 yearlings/149 AUM, 213 HM	6/5–10/4

* c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments.
Bolded font when the scheduled livestock use occurs prior to July 1.

The Hot Springs allotment contains 2.66 miles of MCR steelhead CH and 0.31 miles of MSRA: 1.34 miles of CH and 0.31 miles of MSRA on Hot Springs pasture and 1.32 miles of CH in Gillette–Thompson Pasture.

Proposed use dates, pasture rotations, and livestock numbers are presented in (Table 44). The allotment has four pastures that are intermixed with NFS lands and private property. Two of the pastures, Gillette–Thompson and Hot Springs contain MCR steelhead CH. The Gillette–Thompson pasture has historically been used later than the other three pastures. The Gillette–Thompson pasture with Thompson Gulch (contains CH) is proposed for grazing use beginning June 25. However, livestock typically do not enter Thompson Gulch until after the steelhead spawning period, but do have access to the John Day River. Spawning surveys will be completed in the spring in Gillette–Thompson when livestock grazing is proposed prior to July 1. All four pastures will be grazed once each year.

Allen Pasture: This pasture does not contain MCR Steelhead CH or MSRA.

RL Pasture: This pasture does not contain MCR steelhead CH or MSRA.

Gillette–Thompson Pasture: This pasture contains MCR steelhead CH on the John Day River and Thompson Gulch. Livestock typically do not enter Thompson Gulch until after the steelhead spawning period. Spawning surveys are required if livestock are turned out prior to July 1.

Hot Springs Pasture: This pasture does contain MCR steelhead CH on Rail Creek. Livestock typically do not enter Hot Springs until after the steelhead spawning period. Spawning surveys are required if livestock are turned out prior to July 1.

Table 44. Pasture Use/Rotation for the Hot Springs Allotment 2023–2027

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027
Allen (on/off) No CH 24 c/c	6/1–7/10	6/1–7/10	6/1–7/10	6/1–7/10	6/1–7/10
RL (on/off) No CH 53 yearlings	6/15–6/30	6/15–6/30	6/15–6/30	6/15–6/30	6/15–6/30
Gillette–Thompson has CH* (on/off) 53 yearlings	7/1–8/25	7/1–8/25	7/1–8/25	7/1–8/25	7/1–8/25
Hot Springs has CH* (on/off) 53 yearlings	8/26–10/4	8/26–10/4	8/26–10/4	8/26–10/4	8/26–10/4

* Turnout before July 1 requires completion of MCR steelhead spawning/redd surveys in CH.
Bolded font when the scheduled livestock use occurs prior to July 1.

John Day Allotment

The MNF proposed to authorize livestock grazing on the John Day allotment for the next five years, 2023–2027. The John Day allotment is currently operated by one permittee grazing two separate herds of cattle, with a total of 177 c/c pairs permitted 6/11–10/25, not to exceed 1052 AUM (797 Head Months). Proposed use dates, and livestock numbers are presented in (Table 45). Four pastures currently exist in this allotment. This allotment’s pastures are used in a deferred rotation (Table 46). These pastures will only be grazed one time per year.

Table 45. John Day Allotment Permit Information.

Permit Number	Permit Exp. Date	Total Acres	Permitted Number of Livestock c/c Pair/AUM/HM**	Permit Season Begin and End Dates
0604010010	12/31/2023	18,530	177/1052/797	6/11–10/25

* c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments.

Thompson Pasture: (1,487 acres). This pasture does not contain MCR steelhead CH or MSRA. There are approximately 600 acres of unfenced private land encompassed within the Thompson

pasture, bringing the total acres in this pasture to approximately 2,100. This allotment is used in a deferred rotation, with three possible rotations. This pasture is used by 177 c/c for 20 to 30 days.

Lower Ennis Pasture: (2,996 acres). This pasture contains approximately 5.64 miles of MCR steelhead CH and 1.08 of MSRA. This pasture is used second or third in the rotation by 177 c/c for 20 to 35 days.

Upper Ennis Pasture: (7,024 acres). This pasture contains 0 miles of MCR steelhead CH and MSRA. There is approximately 160 acres of unfenced private land within the Upper Ennis pasture, bringing the total acres within this pasture to 7,496. This pasture is used by 177 c/c for 45 to 60 days.

McClellan Pasture: (6,923 acres). This pasture contains approximately 3.55 miles of MCR steelhead CH and 1.52 miles of MSRA. This pasture is used by 177 c/c for 15 to 30 days.

Table 46. Pasture Rotation for the John Day Allotment 2023–2027.

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA PIBO Photo Point
Thompson 177c/c pair	6/11–7/10*	9/2–10/1	7/2–7/31	6/11–7/10*	9/2–10/1	No CH
Lower Ennis 177 c/c pairs	7/11–8/10	8/11–9/1	8/1–8/25	7/11–8/10	8/11–9/1	MIM DMA and PIBO in East Fork Beech Cr
Upper Ennis 177 c/c pairs	8/11–10/10	6/11–8/10*	8/26–10/25	8/11–10/10	6/11–8/10*	Photo Point DMA on Clear Creek
McClellan 177 c/c pairs (Critical Habitat)	10/11–10/25	10/1–10/25	6/11–7/1*	10/11–10/25	10/1–10/25	MIM

* Turnout before July 1 requires completion of MCR steelhead spawning/redd surveys in CH.
Bolded font when the scheduled livestock use occurs prior to July 1.

The John Day allotment contains 9.19 miles of MCR steelhead CH and 2.6 miles of MSRA (Table 47).

Table 47. Miles of Middle Columbia River steelhead critical habitat and most sensitive riparian areas (MSRA) by pasture within the John Day Allotment.

Pasture Name	Stream Name	Steelhead Critical Habitat	MSRA
Lower Ennis	Clear Creek	2.85	0.41
Lower Ennis	Ennis Creek	1.30	0.00
Lower Ennis	Johnson Creek	0.34	0.00
Lower Ennis	East Fork Beech Creek	0.65	0.67
Lower Ennis	Beech Creek	0.07	0.00
Lower Ennis	Hog Creek	0.43	0
McClellan	McClellan Creek	3.55	1.52
Total Miles		9.19	2.6

Long Creek Allotment

The MNF proposes to authorize livestock grazing on the Long Creek allotment for the period 2023–2027. The allotment is operated by four permittees grazing one herd of cattle, with a total of 967 c/c permitted 6/1–10/15, not to exceed 5,750 AUM (4,355 HM) (Table 48). Fifteen pastures currently exist within this allotment. One enclosure, Coxie Enclosure, exists and will not be grazed for the duration of this consultation. A new “B” Riparian Enclosure was recently established and fences out Long Creek CH and MSRA within the Flat Camp pasture. Pastures will be grazed once per year.

Table 48. Long Creek Allotment Permit Information.

Permit Number	Permit Exp. Date	Total Acres	Permitted Number of Livestock c/c Pair/AUM/HM**	Permit Season Begin and End Dates*
0604010056	12/31/2029	49,782	100/595/450	6/1–10/15
0604010063	12/31/2028	49,782	219/1302/986	6/1–10/15
0604010024	12/31/2025	49,782	81/482/365	6/1–10/15
0604010008	12/31/2023	49,782	567/3371/2554	6/1–10/15

* Turnout before July 1 requires completion of MCR steelhead spawning/redd surveys in CH.
 ** c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments.
Bolded font when the scheduled livestock use occurs prior to July 1.

The Long Creek allotment contains 35.18 miles of MCR steelhead CH and 21 miles of MSRA (Table 49).

Table 49. Middle Columbia River steelhead, miles of Critical Habitat by allotment within Long Creek Allotment.

Pasture Name	Stream Name	Steelhead Critical Habitat (miles)	MSRA (miles)
Hiyu	Long Creek	1.10	0.29
	Jonas Creek	0.34	0.00
Flood Meadows	Long Creek	0.81	0.83
Flat Camp	Long Creek	1.0	0
	Jonas Creek	1.30	0.00
	Cottonwood Creek	3.29	0.00
Flat Camp “B” Riparian	Long Creek	0.95	0.95
Ladd	Long Creek	2.24	2.34
Flat Camp Cow Camp	Cottonwood Creek	0.31	0.00
Lick	Lick Creek	2.67	0.49
	West Fork Lick Creek	2.43	1.90
	Cougar Creek	2.53	0.77

Pasture Name	Stream Name	Steelhead Critical Habitat (miles)	MSRA (miles)
	Trail Creek	0.39	0.00
	Eagle Creek	0.66	0
	Charlie Creek	1.42	0.00
	Camp Creek	1.26	0.94
Lick Riparian	Lick Creek	2.29	2.37
Coxie Exclosure	Coxie Creek	0.54	0.00
Camp Riparian (Camp)	Camp Creek	0.55	0.55
	East Fork to Camp Creek	0.05	0.00
Camp Riparian (Eagle)	Camp Creek	0.21	0.48
	Eagle Creek	0.05	0.00
	Coxie Creek	0.02	0
Camp Riparian (Charlie)	Camp Creek	1.82	1.96
	Charlie Creek	0.08	0.00
Camp Riparian (Big Rocks)	Camp Creek	3.66	3.65
Camp Riparian (Cougar)	Camp Creek	2.43	3.11
	Trail Creek	0.03	0.00
	Cougar Creek	0.08	0.00
	Cottonwood Creek	0.25	0.00
	Whiskey Creek	0.09	0.00
Coxie Creek	EF Camp Creek	0.33	0
Total Miles*		35.18	21
*MNF rounded stream miles to the nearest tenth decimal for each stream for this table. However, total steelhead critical habitat for the complete allotment includes all miles based on MNF GIS and therefore may result in slightly different totals.			

Proposed rotation in the allotment is included in Table 50. The Long Creek allotment is not a deferred rotation grazing system. To adequately protect the riparian habitat in the Lick pasture, grazing will not occur until after July 1. In addition, the elevation of the Hiyu pasture does not allow for livestock to be turned into this pasture first in the rotation, because in recent years, this pasture still holds snow, or the range is not ready, by June. For these reasons the MNF has designated the rotation for this allotment to be Flat Camp, into Lick, and then into Hiyu. There is an exclosure proposed in the Cougar Creek drainage in the Lick pasture. This fence will place all 0.77 miles of MSRA, in conjunction with the 1.7 miles of fencing from the Camp Lick Vegetation Project will exclude Cougar Creek within the pasture. Since 2019, the Lick Pastures was rested until the Camp Lick Vegetation Project is completed. Once the vegetation project is completed the exclosure fence will be built.

Flat Camp Pasture: (10,793 acres). This pasture contains approximately 6.07 miles of MCR steelhead CH and 0.95 miles of MSRA. This pasture is generally used first in the rotation. This pasture is used for approximately 30 to 45 days. The permittee employs a full-time rider to move livestock. The camp where the full-time rider stays is located within this pasture (see description of “Flat Camp Cow Camp” below). The DMA on Flat Camp was moved from Long Creek to

Cotton Wood Creek in 2022 by an IDT. All critical habitat on Long Creek in the Flat Camp Pasture was fenced in the fall of 2021 (within the Flat Camp “B” Riparian Exclosure), and is excluded from livestock grazing.

Lick Pasture: (20,502 acres). This pasture contains approximately 11.35 miles of MCR Steelhead CH and 3.98 of MSRA. This pasture is generally used second in the rotation for approximately 35 to 50 days. This pasture was rested 2019–2022, but will be grazed 2023–2027.

Hiyu Pasture: (15,262 acres). This pasture contains approximately 1.44 miles of MCR Steelhead CH and 0.29 miles of MSRA. This pasture is generally used third in the rotation. This pasture is used for approximately 50 to 60 days. In 2023–2027, the CH and MSRA portion of Long Creek in this pasture will be excluded from grazing with an electric fence. The electric fence will be installed yearly prior to turnout of livestock and removed when the last cow leaves the pasture.

Ladd Pasture: (470 acres). This pasture contains approximately 2.24 miles of MCR steelhead CH and 2.34 miles of MSRA. This pasture is used early in the season to facilitate cattle moving onto the allotment. Four to five herds of approximately 100–150 cattle are held overnight in this pasture and then moved to the Flat Camp pasture.

Flood Meadows Pasture: (94 acres). This pasture contains approximately 0.81 miles of MCR steelhead CH and 0.83 miles of MSRA. Flood Meadows pasture is used as a gather pasture when gathering cattle out of the Hiyu pasture. Beginning 9/15–10/15, herds of approximately 100 c/c are gathered into this pasture, left overnight, and then moved to the Keeney Meadows pasture.

Keeney Meadows Pasture: (1,141 acres). This pasture does not contain MCR steelhead CH or MSRA. This pasture is generally used late in the season, starting approximately 9/1, by approximately 300 c/c for 20 to 30 days. This pasture is used to relieve pressure on CH in the Hiyu pasture late in the season.

Lick Creek Riparian Pasture: (100 acres). This pasture contains approximately 2.29 miles of MCR steelhead CH and 2.37 miles of MSRA. This is an overnight pasture used for gathering the cattle from the Lick Creek pasture and moving them to the Hiyu pasture. Typically, less than 100 c/c will be gathered out of this pasture daily. Pasture use is proposed for 8/20–9/10.

Corral Pasture: (209 acres). This pasture does not contain MCR steelhead CH or MSRA. This pasture is used in combination with Lick Creek Riparian to facilitate the move from the Lick Creek pasture to the Hiyu pasture. After cattle are gathered into the Lick Creek Riparian pasture they are moved to this pasture to relieve some of the pressure off of the riparian area. Once sufficient cattle are gathered (approximately 100 c/c) they are trailed to the Hiyu pasture. This pasture is generally used between approximately 8/20–9/10.

Coxie Creek Pasture: (753 acres). This pasture contains approximately 0.33 miles of MCR steelhead CH and no MSRA. This pasture is used to facilitate the move between the Lick Creek and the Hiyu pasture. Cattle are gathered into this pasture until sufficient numbers (approximately 100 c/c) are located and then moved to the Hiyu pasture the following day.

Coxie Exclosure: (7 acres). This pasture contains approximately 0.54 miles of MCR steelhead CH and no MSRA. Livestock are not authorized to graze in this exclosure.

Cougar Creek Exclosure: (27 acres). This is a proposed pasture currently within Lick pasture. Following the Camp Lick Vegetation Project this exclosure will be built and will exclude 0.77 miles of CH and MSRA on Cougar Creek from livestock use along riparian thinning treatments.

Flat Camp Cow Camp Pasture: (1 acres). This pasture contains approximately 0.31 miles of MCR steelhead CH and no MSRA. This pasture is where the full-time rider for this allotment stays throughout the summer. Within the pasture there is a cabin, a camp trailer hook up, and a set of horse corrals. During the summer the rider is on the allotment moving cattle every day, checking the most critical areas daily, and making it to the remainder of the CH throughout the week. A MIM DMA was established in 2017 on Cottonwood Creek.

Camp Creek Riparian–Camp Pasture: (20 acres). This pasture contains approximately 0.61 miles of MCR steelhead CH and 0.55 miles of MSRA. This pasture will be rested for the duration of this 2023–2027 consultation.

Camp Creek Riparian–Eagle Pasture: (9 acres). This pasture contains approximately 0.28 miles of MCR steelhead CH and 0.48 miles of MSRA. This pasture will be rested for the duration of this 2023–2027 consultation.

Camp Creek Riparian–Charlie Pasture: (143 acres). This pasture contains approximately 1.90 miles of MCR steelhead CH and 1.96 miles of MSRA. This pasture is used to facilitate the move between the Lick Creek and the Hiyu pastures. During the moving process cattle are gathered into this pasture (less than 100 c/c) and then moved to the Hiyu pasture the following day. This pasture is used in odd years approximately 8/20–9/10.

Camp Creek Riparian–Big Rocks Pasture: (379 acres). This pasture contains approximately 3.65 miles of MCR steelhead CH and 3.65 miles of MSRA. This pasture is used to facilitate the move between the Lick Creek pasture and the Hiyu pasture. During the moving process cattle are gathered into this pasture (less than 100 c/c) and then moved to the Hiyu pasture the following day. This pasture is used in even years approximately 8/20–9/10.

Camp Creek Riparian–Cougar Pasture: (300 acres). This pasture contains approximately 2.87 miles of MCR steelhead CH and 3.11 miles of MSRA. This pasture is used to facilitate the move between the Flat Camp pasture and the Lick Creek pasture. During the moving process cattle are gathered into this pasture (less than 100 c/c) and then moved to the Lick Creek pasture the following day. This pasture is used approximately 7/5–7/26.

Table 50. Pasture Rotation for the Long Creek Allotment 2023–2027.

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA/ Photo/PIBO
Flat Camp 967 cc/c (No CH)	6/1–7/5	6/1–7/5	6/1–7/5	6/1–7/5	6/1–7/5	DMA on Cottonwood Creek

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA/ Photo/PIBO
Lick Creek 967 c/c	7/6–8/20	7/6–8/20	7/6–8/20	7/6–8/20	7/6–8/20	DMA on WF Lick Cr. and NF Camp Cr. PIBO-I site on WF Lick Cr.
Hiyu 967 c/c	8/21–10/16	8/21–10/15	8/21–10/15	8/21–10/15	8/21–10/15	DMA on Long Cr.
Coxie Creek <100 c/c	Gather 8/20–9/20	Gather 8/20–9/20	Gather 8/20–9/20	Gather 8/20–9/20	Gather 8/20–9/20	DMA on Camp Cr.
Keeney Meadows <300 c/c No CH	9/15–10/15	9/15–10/15	9/15–10/15	9/15–10/15	9/15–10/15	DMA and PIBO-K site on SF Long Cr.
Lick Creek Riparian <100 c/c	Gather 8/20–9/10	Gather 8/20–9/10	Gather 8/20–9/10	Gather 8/20–9/10	Gather 8/20–9/10	DMA and PIBO-I site on Lick Cr.
Flood Meadows <100 c/c	Gather 9/15–10/1	Gather 9/15–10/1	Gather 9/15–10/1	Gather 9/15–10/1	Gather 9/15–10/1	DMA and PIBO-K site on Long Creek
Ladd * <150 c/c	Gather 6/1–6/14	Gather 6/1–6/14	Gather 6/1–6/14	Gather 6/1–6/14	Gather 6/1–6/14	DMA on Long Creek, PIBO-I site on Long Creek
Camp Creek Rip. (Camp) <100 c/c	Rest	Rest	Rest	Rest	Rest	DMA on Camp Cr.
Camp Creek Rip. (Eagle) <100 c/c	Rest	Rest	Rest	Rest	Rest	DMA needs to be established prior to grazing
Camp Creek Rip. (Charlie) <100 c/c	Gather 8/20–9/10	Rest	Gather 8/20–9/10	Rest	Gather 8/20–9/10	DMA on Camp Creek
Camp Creek Rip. (Big Rocks) <100 c/c	Rest	Gather 8/20–9/10	Rest	Gather 8/20–9/10	Rest	DMA and PIBO-I site on Camp Creek, PIBO- K site on Camp Creek
Camp Creek Rip (Cougar) <100 c/c	Gather 7/5–7/26	Gather 7/5–7/26	Gather 7/5–7/26	Gather 7/5–7/26	Gather 7/5–7/26	DMA and 3 PIBO-I sites on Camp Creek
Corral <100 c/c No CH	Gather 8/20–9/10	Gather 8/20–9/10	Gather 8/20–9/10	Gather 8/20–9/10	Gather 8/20–9/10	No CH

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA/ Photo/PIBO
Flat Camp Cow Camp <100 c/c	Gather 7/5–7/26	Gather 7/5–7/26	Gather 7/5–7/26	Gather 7/5–7/26	Gather 7/5–7/26	DMA on Cottonwood Cr.
Coxie Creek Enclosure	Rest	Rest	Rest	Rest	Rest	DMA needs to be established prior to grazing
* Turnout before July 1 requires completion of MCR steelhead spawning/redd surveys in CH.						

McClellan Allotment

The MNF proposes to authorize livestock grazing on the McClellan allotment for the period 2023–2027. The McClellan Allotment is operated by a single permittee with a permitted use date of 9/1–10/15 for 65 c/c (Table 51). The McClellan allotment includes approximately 2,814 acres in a single pasture: McClellan pasture.

Table 51. Permit information for the McClellan Allotment.

Permit ID	Permit Expiration Date	Total Acres	Permitted Number of Livestock c/c Pair/AUM/HM**	Permitted Use
0604010018	12/31/2025	2,814	65/129/96	9/01–10/15
** c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments.				

Proposed pasture use dates will be re-evaluated on a yearly basis to ensure appropriate use. Range readiness and utilization levels may result in varying On/Off dates and grazing will occur within the period of authorized use. The McClellan allotment contains 0.94 miles of MCR steelhead CH on McClellan Creek and no MSRA.

McClellan Pasture: (2,814 acres). This pasture contains approximately 0.94 miles of MCR steelhead CH and no MSRA. This is the only pasture in the allotment and has 65 c/c entering the pasture and remaining for approximately 45 days 9/1–10/15 (Table 52).

Table 52. Proposed Pasture Grazing for the McClellan Allotment.

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA/PIBO/ Photo
McClellan 65 c/c	9/1–10/15 133 AUM	9/1–10/15 133 AUM	9/1–10/15 133 AUM	9/1–10/15 133 AUM	9/1–10/15 133 AUM	Photo Point DMA McClellan Creek**

** Lacking DMA for ESA monitoring—establishing a DMA is required before pasture turnout.

McCullough Allotment

The MNF proposes to authorize livestock grazing on the McCullough allotment 2023–2027. The McCullough allotment is operated by one permittee, grazing one herd of 33 c/c, with permitted use dates of 6/1–8/5. Proposed pasture use dates, livestock rotation, and livestock numbers are presented in Table 53. A MIM DMA was established on both pastures in the allotment. These pastures will be used once per year. There is a total of 1.24 miles of CH, and no MSRA in the allotment.

Windmill Pasture: (484 acres). This pasture contains approximately 0.60 miles of MCR steelhead CH on East Fork Beech Creek and 0.05 miles on Clear Creek, and no MSRA. This pasture is part of an On/Off allotment. Therefore, the NFS land is managed in connection with adjacent private land. This pasture is used by 33 c/c for approximately 35 to 45 days 6/1–7/10.

Section 21 Pasture: (141 acres). This pasture contains approximately 0.59 miles of MCR steelhead CH on East Fork Beech Creek and no MSRA. This pasture is part of an On/Off allotment. Therefore, the NFS land is managed in connection with the adjacent private land. This pasture is used by 33 c/c for approximately 20 to 30 days 7/11–8/5.

Table 53. Pasture Use for McCullough Allotment 2023–2027.

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA/PIBO/Photo
Windmill Flat 33 c/c	6/1*–7/10 57 AUM	6/1*–7/10 57 AUM	6/1*–7/10 57 AUM	6/1*–7/10 57 AUM	6/1*–7/10 57 AUM	MIM DMA on East Fork Beech Creek
Section 21 33 c/c	7/11–8/5 58 AUM	7/11–8/5 58 AUM	7/11–8/5 58 AUM	7/11–8/5 58 AUM	7/11–8/5 58 AUM	MIM DMA on East Fork Beech Creek

* Turnout before July 1 requires completion of MCR steelhead spawning/incubation surveys in CH.
 ** c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments.

Lower Middle Fork Allotment

The MNF proposes to authorize livestock grazing on the Lower Middle allotment for the next five years, 2023–2027. The Middle Fork allotment is comprised of two pastures currently grazed together by one permittee as the Pizer pasture. The permittee grazes one herd, 190 c/c pairs, between 6/1–10/31 (Table 54). Pasture use dates are show below in Table 55.

Table 54. Lower Middle Fork Allotment Permit Information.

Allotment and permit number	Total Acres	Permitted Number of Livestock c/c Pairs/AUM/HM**	Permit Season Begin and End Dates*	Permit Issue and Expiration Dates
0604010053	17,136	190/1262/956	6/1–10/31	12/31/2029

* Turnout before July 1 requires completion of MCR steelhead spawning/redd surveys in CH.

** c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments.

The Lower Middle Fork allotment contains 16.41 miles of steelhead CH and 3.56 miles of MSRA.

Pizer Pasture: (17,137 acres). This pasture contains 16.41 miles of MCR steelhead CH and 3.56 miles of MSRA. Livestock, 190 c/c, are moved onto this pasture from private land no earlier than 6/1, and stay until the permitted off date of 10/31. At turnout, livestock are pushed to the top of the pasture. They then move south and west as the season progresses. This pasture is used with the Chicken House pasture at the same time. There is a PIBO-I and MIM DMA site located on Deadwood Creek. Prior to 2018, an electric fence was installed to protect a portion of the MSRA and CH from livestock grazing where aquatic restoration actions took place. The MIM DMA was historically within this enclosure. A new MIM DMA was established outside the temporary enclosure on Big Creek within the Pizer Pasture prior to turnout in 2018. The electric fencing enclosure reduced use but was not entirely effective in preventing cattle access to Deadwood Creek in 2017, 2020 and 2021. Electric fencing of this site will continue for the next five years (2023–2027) when livestock use is noted. In addition, both the Deadwood Creek DMA and the Big Creek DMA will be monitored.

Chicken House Pasture: (727 acres). This pasture is part of Pizer pasture. The pasture does not contain steelhead CH or MSRA. Due to a road slide/failure on Forest Road 2090 that took out the pasture boundary and water-gap fence on Big Creek, this pasture will be used with the Pizer pasture. In the future, Forest Road 2090 will be decommissioned and a new boundary fence will be installed. However, the date of fence installation is unknown. Upon completion of the new fence, this pasture will be used as a gathering pasture in the fall at the end of the grazing season only. Currently, there is no MIM DMA located in this pasture. Once the fence is installed for the Chicken House pasture to be grazed separately, the BMRD ID team will evaluate whether to establish a MIM DMA within the Chicken House pasture prior to livestock turnout.

Table 55. Lower Middle Fork Allotment Pasture Use Data 2023–2027

Pasture	2023	2024	2025	2026	2027	MIM DMA/PIBO /Photo
Pizer 190 c/c	6/1*–10/31 1262 AUM	6/1*–10/31 1262 AUM	6/1*–10/31 1262 AUM	6/1*–10/31 1262 AUM	6/1*–10/31 1262 AUM	MIM DMA and PIBO-K and I site on Deadwood Cr.
Chicken House 190 c/c	6/1*–10/31 Grazed with Pizer until fence is fixed	6/1*–10/31 Grazed with Pizer until fence is fixed	6/1*–10/31 Grazed with Pizer until fence is fixed	6/1*–10/31 Grazed with Pizer until fence is fixed	6/1*–10/31 Grazed with Pizer until fence is fixed	MIM DMA on Deadwood. **

* Turnout before July 1 requires completion of MCR steelhead spawning/incubation surveys in CH.

** Currently Chicken House pasture does not contain a DMA for ESA monitoring—once the pasture boundary fence is installed, MNF IDT will evaluate if a DMA needs to be established.

North Middle Fork Allotment

The MNF proposes to authorize livestock grazing on the North Middle Fork allotment for the period 2023–2027. The North Middle Fork allotment is operated by one permittee, grazing three separate herds, with permitted use 6/1–10/31 (Table 56). Proposed pasture use dates, livestock rotation and livestock numbers are presented in Table 57. There is a total of 52.90 miles of CH and 11 miles of MSRA within the allotment.

The North Middle Fork allotment contains 21 pastures that are grazed once per year, with the exception of holding pastures (Shop, Tailing, River, and Tincup pastures) which can be grazed more than once as cattle are gathered and moved to/from the allotment (see details below).

This allotment includes several trailing and holding pastures. These pastures are small and used as overnight stays when livestock are trailed into and out of the allotment.

The total permitted number of cattle for this allotment is 727 c/c. However, the permittee uses only 627 c/c for 3861 AUM (2925 HM) divided between the three herds as described above.

Table 56. North Middle Fork Allotment Permit Information.

Permit #	Permit Exp. Date	Total Acres	Permitted Number of Livestock c/c Pair/AUM/HM**	Permit Season Begin and End Dates *
0604010036	2/17/2026	64,357	577/3831/2902	6/1–10/31
			50/297/225	6/1–10/15
			100/195/148	6/1–7/15
* Turnout before July 1 requires completion of MCR steelhead spawning/incubation surveys in CH.				
**AUM use is calculated as the number of days the cattle are grazing a pasture multiplied by the number of cow/calf (1.32), then divided by 30.4167 (which is the average number of days in a month over a year), and rounded up to the whole AUM). A head month (HM) is one cow/calf pair for one month. Because the HM is the official unit of measurement for permitting on USFS lands, this BA is including both AUM and HM numbers. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments.				

Herd 1 (272 c/c):

Austin Pasture: (4,562 acres). This pasture contains 0.30 miles of steelhead CH and no MSRA. The pasture is first in the rotation (6/1) given the limited amount of available water later in the season. There is a photo point DMA within an enclosure on Mill Creek at the southern boundary of this pasture.

Upper and Lower Vinegar Pasture: (12,160 acres). There is a fence that separates Upper Vinegar and Lower Vinegar. However, it is proposed to be removed and these pastures are currently managed as one. This pasture contains 13.19 miles of steelhead CH and 6.96 miles of MSRA within the Lower Vinegar pasture. A proposed 272 c/c are moved from the Austin Pasture to these two pastures for 30 to 45 days during 7/1–8/15. There is a PIBO-K site/MIM DMA located in the Upper Vinegar pasture, and a PIBO-I site/MIM DMA located in the Lower Vinegar pasture.

Caribou Pasture: (9,065 acres). The pasture contains 7.11 miles of steelhead CH and 1.18 miles of MSRA (Caribou Creek). From Upper and Lower Vinegar, 272 c/c are moved to the Caribou pasture for 30 to 45 days, 8/15–9/30. There is a MIM DMA in this pasture located on Caribou Creek.

Tincup Pasture: (1,205 acres). The Tincup pasture contains 1.19 miles of steelhead CH and no MSRA. There is 0.28 miles of CH on Tincup Creek (Tincup Riparian) excluded from the pasture with a fence, with the exception of a 15-foot water gap that was constructed in 2017. Windless Creek is the only stream in the pasture with CH, and has a MIM DMA established in 2017. This pasture is used as a holding pasture in the fall, 9/30–10/15. The permittee gathers and holds his cows in this pasture until livestock numbers reach a large enough group (approximately 100) to move home. This process continues until all the cows are off the allotment by the end of the permitted date of 10/15.

Tailing Pasture: (14 acres). This pasture does not contain steelhead CH that is accessible by livestock. Riparian pasture fencing was built in 2019 to exclude the 0.48 miles of CH and MSRA on the MFJDR from the Tailings pasture. This pasture will be used as an overnight holding pasture for groups of approximately 100 c/c, for a maximum of 10 days.

Shop Pasture: (63 acres). This pasture contains approximately 0.003 miles (15 ft.) of designated MCR steelhead CH at a water gap, and no MSRA. This small pasture, located north of county road 20, was historically used as a gather pasture when the county road and MFJDR were included within the pasture. The Shop pasture will be used for gathering/holding, for no longer than 48 hours.

River Pasture: (129 acres). This pasture contains 0.57 miles of CH and 0.62 miles of MSRA. This pasture is along county road 20 and the MFJDR, between the Caribou and Butte pastures. Cattle will be driven through this pasture to access other pastures with no holding of livestock proposed. Cattle are trailed along county road 20 through the pasture.

DeWitt Pasture: (32 acres). This pasture does not contain CH or MSRA. It is used at the end of the season by the permittee to hold cattle until they are moved off of the MNF.

C Pasture: (86 acres). This pasture does not contain CH or MSRA. This MFJDR within this pasture was fenced and excluded from livestock access in 2019. This pasture will be used for a maximum of 7 days 6/1–7/1, with a maximum of 125 c/c. The use during the 7 days includes five different groups of approximately 125 c/c each, with each group staying 24 hours.

Herd 2 (271 c/c):

Granite Boulder Pasture: (8,178 acres). This pasture contains 4.98 miles of steelhead CH and 1.01 miles of MSRA. The Granite Boulder pasture is used in rotation with the Susanville Pasture. This pasture is typically used first in the rotation for 30 to 45 days, before cattle move to the Susanville pasture. Livestock are turned out as early as 6/1. However, not all 271 c/c get to this pasture until 6/10, because the permittee trails cattle on county road 20 to the pasture in bunches of approximately 100 c/c from his home ranch. A fence excluding the MSRA on Beaver Creek,

except a water gap, was built in 2017. When the enclosure was built, the MIM DMA moved upstream outside of the enclosure.

Livestock are removed from Granite Boulder pasture different than they are from other pastures. This is due to the size, shape, and forage available in the uplands of this pasture. Livestock are removed from the lower portion of this pasture, farthest south and below forest road 4550. This initial process typically takes less than one week. Once all of the livestock are removed from this portion of the pasture, the permittee inspects the pasture 2 to 4 times per week to ensure that no livestock have crossed the 4550 road and accessed this portion of the pasture. If livestock are found below the 4550 road they are immediately moved to the next pasture, Susanville. Approximately 70 percent of the cattle (190 c/c) in this pasture are removed during the first move. Approximately, 10 c/c are removed each week from the Granite Boulder pasture until all of the cattle have been moved to the next pasture. When used first in the rotation typically all of the cattle have been removed from this pasture by 9/1.

This process is used for several reasons:

- It decreases the utilization of CH in the next pasture in the rotation (Susanville).
- It decreases the utilization of the upland forage in the next pasture in the rotation (Susanville).
- The uplands of the Granite Boulder pasture have ample forage to support the livestock for extended periods of time.
- The access to the CH in the portion of this pasture above the 4550 road is limited by the steep gradient, heavy downfall timber, and mature hardwood component.

There is currently an enclosure on the east side of the Granite Boulder pasture called the Granite Boulder enclosure. This enclosure is 163 acres in size, has not been grazed since 2011, and will continue to not be grazed. A MIM DMA is located within this enclosure on Granite Boulder Creek.

Susanville Pasture: (26,867 acres). This pasture contains 19.02 miles of steelhead CH and no MSRA. This pasture will be rotated alternately between the west or east side, prior to the Granite Boulder pasture. Due to terrain and the size of the pasture, the permittee moves livestock, using salt, to either the far west or east depending on the rotation schedule for that year, for approximately 100 days. There are two MIM DMAs located on Dry and on Deep Creek within this pasture.

Mosquito Riparian Pasture: (94 acres). This pasture contains 0.86 miles of steelhead CH, and no MSRA. For the 2023–2027 consultation period, this pasture will be used as a holding pasture in the fall when the Granite Boulder pasture is grazed first. There is a MIM DMA located on Mosquito Creek within this pasture.

Herd 3 (50 c/c):

G and H Pastures: (774 acres). This pasture does not contain steelhead CH or MSRA. These pastures are used as part of the rotation for 2 to 3 weeks.

A, B, B1, and D Pastures: (355 acres). This pasture contains 20 ft. of steelhead CH but no MSRA. The CH in D pasture is part of a water gap on Mosquito Creek. These are small pastures used for 2 to 3 weeks in rotation throughout the grazing season.

Bird Pasture: (180 acres). This pasture contains 1.3 miles of steelhead CH and no MSRA. Approximately 0.77 miles of CH is located on Bear Creek and 0.53 miles of CH on the MFJDR in the pasture accessible by livestock. This pasture is used for 2 to 3 weeks in rotation with the other pastures. In 2017, a MIM DMA was established on Bear Creek. The current allotment boundary fence along the MFJDR needs repair. This fence will be rebuilt by 2024. Spawning and redd surveys will be completed when livestock turn out and access to critical habitat occurs prior to July 1.

F Pasture: (299 acres). This pasture contains 1.18 miles of steelhead CH and no MSRA. This pasture is used for 1 to 2 weeks in rotation with the other pastures. There is a MIM DMA located on Mosquito Creek.

Table 57. Pasture Rotation for the North Middle Fork Allotment 2023–2027.

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA/PIBO /Photo
<u>Herd 1</u>						
Austin 272 c/c pair	*6/1– 6/30	*6/1 –6/30	*6/1 –6/30	*6/1–30	*6/1–6/30	Photo point DMA in Exclosure on Mill Cr.**
Upper/Lower Vinegar 272 c/c pair	7/1–8/16	7/1–8/15	7/1–8/15	7/1–8/15	7/1–8/15	MIM DMA, PIBO-K and I site on Vinegar Cr.
Caribou 272 c/c pair	8/16– 9/20	8/16–9/20	8/16–9/20	8/16–9/20	8/16–9/20	MIM DMA on Caribou Cr.
Tincup 125 c/c pair	Gather 9/2– 10/15	Gather 9/2–10/15	Gather 9/2–10/15	Gather 9/2–10/15	Gather 9/2–10/15	MIM DMA Tincup Cr within new 2017 Exclosure. DMA (2017) Windlass Cr.
Shop Holding (No CH) 125 c/c pair	Gather 9/2– 10/15	Gather 9/2–10/15	Gather 9/2–10/15	Gather 9/2–10/15	Gather 9/2–10/15	No CH
River Holding (No CH) 272 c/c pair	Trailing only	Trailing only	Trailing only	Trailing only	Trailing only	No CH
Tailing Holding (No CH) 125 c/c pair	Gather 9/2– 10/15	Gather 9/2–10/15	Gather 9/2–10/15	Gather 9/2–10/15	Gather 9/2–10/15	No CH
<u>Herd 2</u>						
Granite Boulder* 271 c/c	6/1–7/15	6/1–7/15	6/1–7/15	6/1–7/15	6/1–7/15	DMA Granite Boulder Exclosure DMA on Beaver Cr. outside Exclosure.
Susanville 271 c/c	7/16– 10/31	7/16–10/31	7/16–10/31	7/16–10/31	7/16– 10/31	DMA on Dry Cr. DMA on Deep Cr. (est. 2017)

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA/PIBO /Photo
Mosquito Riparian 271 c/c	Fall use (trailing) 9/1– 10/31 24 AUM	Fall use (trailing) 9/1–10/31 24 AUM	Fall use (trailing) 9/1–10/31 24 AUM	Fall use (trailing) 9/1–10/31 24 AUM	Fall use (trailing) 9/1–10/31 24 AUM	DMA on Mosquito Cr.
Herd 3						
Bird* 84 c/c	6/1–6/15	6/1–6/15	6/1–6/15	6/1–6/15	6/1–6/15	DMA on Bear Creek (est. 2017)
A/B No CH 84 c/c	6/16– 6/30	6/16–6/30	6/16–6/30	6/16–6/30	6/16–6/30	PIBO on MFJDR excluded from B pasture.
C* No CH (fenced) 125 c/c	6/1–7/1	6/1–7/1	6/1–7/1	6/1–7/1	6/1–7/1	DMA on MFJDR (MFJDR excluded in pasture)
D/B1 No CH 84 c/c	7/1–7/17	7/1–7/17	7/1–7/17	7/1–7/17	7/1–7/17	No CH
F 84 c/c	7/25–8/9	7/25–8/9	7/25–8/9	7/25–8/9	7/25–8/9	DMA on Mosquito Cr. est. 2017.
G/H No CH 84 c/c	8/2–9/30	8/2–9/30	8/2–9/30	8/2–9/30	8/2–9/30	No CH
<p>* Turnout before July 1 requires completion of MCR steelhead spawning/redd surveys in CH. ** When pasture does not contain a DMA for ESA monitoring, MNF IDT will evaluate if a DMA needs to be established prior to turn out. Bold font indicates livestock proposed use prior to July 1.</p>						

South Middle Fork Allotment

The MNF proposes to authorize livestock grazing on the South Middle Fork allotment for the 2023–2027 period. The South Middle Fork allotment is operated by one permittee, grazing one herd of cattle of 278 c/c and 1,845 AUM, with permitted use dates of 6/1–10/31 (Table 58). Proposed pasture use dates, livestock rotation, and livestock numbers are presented in the Pasture Use Table (Table 59).

Table 58. South Middle Fork Allotment Permit Information.

Permit Number	Permit Exp. Date	Total Acres	Permitted Number of Livestock c/c Pair/AUM/HM	Permit Season Begin and End Dates
0604010055	12/31/2029	33,740	278/1845/1398	6/1–10/31
<p>** c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments.</p>				

Table 59. Proposed Pasture Rotation for the South Middle Fork Allotment 2023–2027.

Pasture	2023	2024	2025	2026	2027	MIM DMA/ Photo/PIBO
Deerhorn 278 c/c	9/6–10/31	7/21–9/15	9/6–10/31	7/21–9/15	9/6–10/31	DMA on Deerhorn Cr.
Upper Butte* 278 c/c	7/11–8/31	6/1–7/20	7/11–8/31	6/1–7/20	7/11–8/31	DMA on Butte Cr. (est. 2017)
Lower Butte 278 c/c	9/1–9/5	9/16–9/20	9/1–9/5	9/16–9/20	9/1–9/5	DMA on Butte Cr.
Balance No CH 278 c/c	6/1–6/20	10/11–10/31	6/1–6/20	10/11–10/31	6/1–6/20	No CH
Sunshine* 278 c/c	6/21–7/10	9/21–10/10	6/21–7/10	9/21–10/10	6/21–7/10	DMA and PIBO-K site on Sunshine Cr. (same location)

* Turnout before July 1 requires completion of MCR steelhead spawning/redd surveys in CH.

The allotment contains 26.34 miles of CH on streams within Upper Butte, Lower Butte, Deerhorn, and Sunshine pastures, and 6.64 MRSA stream miles located within Lower Butte and Deerhorn pastures. These pastures will be used once per year.

Upper Butte Pasture: (10,000 acres). This pasture contains approximately 6.65 miles of MCR steelhead CH and no MSRA. This pasture will be used 30 to 55 days depending on conditions and rotation. A MIM DMA was established on Butte Creek in 2017.

Lower Butte Pasture: (3,334 acres). This pasture contains approximately 3.98 miles of MCR steelhead CH and approximately 2.07 miles of MSRA. This pasture will be used for four days. There is currently a DMA located on Butte Creek within the MSRA in this pasture.

Deerhorn Pasture: (13,863 acres). This pasture contains approximately 12.85 miles of MCR steelhead CH and approximately 4.57 miles of MSRA. This pasture will not be used before July 1. This pasture will be used 30 to 60 days depending on the conditions and the rotation. There is currently a DMA located on Deerhorn Creek within the MSRA. All MSRA is proposed for exclusion in Davis Creek and Placer Gulch. The CH in the Deerhorn pasture has also been proposed for exclusion. However, as of 2022 exclusion fencing has not been constructed.

Sunshine Pasture: (3,388). This pasture contains approximately 2.85 miles of MCR steelhead CH and no MSRA. This pasture will be used 14 to 30 days. There is currently a PIBO DMA (154-11-K) located on Sunshine Creek in this pasture.

Balance Pasture: (1,959 acres). This pasture does not contain MCR steelhead CH or MSRA. This pasture could potentially be used first or last in the rotations, for 14 to 30 days.

Mt. Vernon Allotment

The MNF proposed to authorize livestock grazing on the Mount Vernon Allotment for 2023–2027, for one permittee grazing two separate herds of cattle totaling 319 c/c, not to exceed 1,618 AUM, and a permitted use date of 6/11–10/15.

The Mt. Vernon allotment contains 5.05 miles of MCR steelhead CH and 1.1 miles of MSRA. A MSRA is designated in the Belshaw Riparian pasture.

Proposed use dates and livestock numbers are presented in Table 60. This allotment is currently divided into six pastures: Belshaw Meadows, Belshaw, Belshaw Riparian, Bear Creek, Birch Creek, and Cohoe. The Birch, Belshaw Meadows, and Cohoe pastures do not contain MCR steelhead CH or MSRA. This allotment will be used in a modified deferred rotation schedule (Table 62). Two pastures will only be grazed one time per year, and two pastures being used as gather pastures may be used multiple times by small groups of cattle. Table 61 displays the streams in the Mt. Vernon allotment that contain CH or MSRA.

Table 60. Mt. Vernon Allotment permit information.

Permit Number	Permit Exp. Date	Total Acres	Permitted Number of Livestock c/c Pair/AUM/HM	Permit Season Begin and End Dates
0604010010	12/31/2023	30,992	319/1618/1227	6/11–10/5
<p>** c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments.</p>				

Table 61. Middle Columbia River steelhead critical habitat and most sensitive riparian areas (MSRA) by pasture within the Mt Vernon Allotment.

Pasture Name	Stream Name	Steelhead Critical Habitat (miles)	MSRA (miles)
Belshaw	Belshaw Creek	2.41	0.00
Belshaw Riparian	Belshaw Creek	1.12	1.10
Bear Creek	Bear Creek	0.98	0.00
	Tributary to Bear Creek	0.23	0.00
	Beech Creek	0.31	0.00
Total Miles		5.05	1.10

Herd 1 (100 c/c):

Belshaw Pasture: (8,303 acres). This pasture contains approximately 2.41 miles of MCR steelhead CH and no MSRA. This pasture is used by the remaining permitted number of cattle

that are not in herd 2, approximately 100 c/c for 80 to 100 days, 6/11–9/20. This pasture has a MIM DMA on Belshaw Creek.

Herd 2 (219 c/c):

Bear Creek Pasture: (14,862 acres). This pasture contains approximately 1.52 miles of MCR steelhead CH and no MSRA. This pasture will be used by 219 c/c for a maximum of 60 to 70 days, 6/11–8/10. The DMA is located on Bear Creek.

Birch Pasture: (5,057 acres). This pasture does not contain MCR steelhead CH or MSRA. This pasture is used second in rotation by approximately 219 c/c and with grazing for 20 to 35 days, 8/1–9/15.

Herds 1 & 2 (319 c/c):

Belshaw Riparian Pasture: (506 acres). This pasture contains approximately 1.12 MCR steelhead CH and 1.10 miles of MSRA. This pasture will be used to facilitate the movement of cattle from Belshaw to Coho pastures 9/15–9/22, with the maximum number of cattle 319 c/c at any given time.

Belshaw Meadows: (106 acres). This pasture does not contain MCR steelhead CH or MSRA. This pasture will be used to facilitate the movement of cattle from Bear to Coho pastures for one week 9/10–9/20, with the maximum number of cattle 319 c/c at any given time.

Coho Pasture: (2,158 acres). This pasture does not contain MCR steelhead CH or MSRA. This pasture will be used last in the rotation. The permittee combines the two herds of cattle into this pasture before moving them home. This pasture is grazed for approximately 20 days with 319 c/c, 9/15–10/05.

Table 62. Pasture Rotation for the Mt. Vernon Allotment 2023–2027.

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA PIBO Photo Point
<u>Herd 1</u>						
Belshaw 100 c/c **	7/9–9/15 299 AUM	6/11*–9/20 422 AUM	6/11*–9/20 422 AUM	6/11*–9/20 422 AUM	6/11*–9/20 422 AUM	MIM DMA with bank alteration and browse only
<u>Herd 2</u>						
Bear Creek 219 c/c	6/11*–8/10 579 AUM	6/11*–8/10 579 AUM	6/11*–8/10 579 AUM	6/11*–8/10 579 AUM	6/11*–8/10 579 AUM	MIM DMA with bank alteration and browse
Birch Creek 219 c/c	8/10–9/15 219 c/c 343 AUM	8/10–9/15 219 c/c 343 AUM	8/10–9/15 219 c/c 343 AUM	8/10–9/15 219 c/c 343 AUM	8/10–9/15 219 c/c 343 AUM	No CH

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA PIBO Photo Point
Herds 1 & 2						
Belshaw Riparian 100 c/c	Gather 9/15–9/22	Gather 9/15–9/22	Gather 9/15–9/22	Gather 9/15–9/22	Gather 9/15–9/22	MIM DMA and PIBO
Belshaw Meadows 100 c/c	Gather 9/10–9/20	Gather 9/10–9/20	Gather 9/10–9/20	Gather 9/10–9/20	Gather 9/10–9/20	No CH
Cohoe 319 c/c	9/15–10/05	9/15–10/05	9/15–10/05	9/15–10/05	9/15–10/05	No CH
<p>* Turnout before July 1 requires completion of MCR steelhead spawning/incubation surveys in CH. ** c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments.</p>						

Murderers Creek Allotment

The MNF proposes to authorize livestock grazing on the Murderers Creek allotment for the period 2023–2027. Murderers Creek is managed under two permittees with three separate herds under a deferred rotation.

The North herd consists of 175 c/c with permitted use dates of 5/15–10/15. The Middle herd consists of 200 c/c with permitted use dates of 6/1–6/30 and 300 c/c pairs with permitted use dates of 7/1–10/15. The South herd consists of 400 c/c pairs with permitted use dates of 7/1–10/15. Table 63 displays the proposed livestock grazing use dates and authorized c/c and AUM for the three permits on Murderers Creek allotment. Pasture use dates, livestock rotations and livestock numbers are presented in Table 65.

The allotment is divided into 27 pastures, including enclosures and several pastures that contain small portions of State and BLM lands. In general, the pastures do not get used more than once per year, with the exception of these gather and holding pastures.

This allotment includes both trailing and gather pastures: South Fork (SF) Murderers Creek Gather, Murderers Creek Gather, Tex Creek Gather, John Young Cow Camp. These pastures are small and used for overnight or short-term stays when livestock are trailed into or out of the allotment, as well as to facilitate moves within the allotment. Pasture dates and rotations are approximations and will be readdressed on a yearly basis to ensure proper use. Two new riparian pastures, Dans Creek Riparian and Orange Creek Riparian, were created by fencing the MSRA and CH on Dans Creek and Orange Creek in the Dans Creek pasture in 2020. CH and MSRA is excluded in Blue Ridge pasture and SF Murderers Creek Pasture.

Table 63. Murderers Creek Allotment Permit and Permit Information.

Permit #	Permit Exp. Date	Total Acres	Permitted Number of Livestock c/c Pair/AUM/HM**	Permit Season Begin and End Dates*
0604010064	12/31/31	21,727	175/1162/886	5/15–10/15
0604010050	12/31/2028	13,093	200/260/197	6/1–6/30
		13,093	300/929/1055	7/1–10/15
0604010064	12/31/31	27,941	400/1857/1407	5/15–10/15
		27,941	4/26/22	5/15–10/30

* Turnout before July 1 requires completion of MCR steelhead spawning/incubation surveys in CH.
 ** c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments.

North Herd (175 c/c):

Red Rocks, Martin Corrals and Oregon Mine Pastures: (17,753 acres). These pastures contain approximately 21.36 miles of MCR steelhead CH and 6 miles of MSRA. Fences burned in this allotment in 2004 and, due to non-use, were never rebuilt. Consequently, these three pastures are now managed as one; 175 c/c pairs will enter the pastures as early as 5/15 and remain for 115 to 130 days. There is a MIM DMA located in the Oregon Mine pasture along Murderers Creek, which is the only MSRA stream in these pastures. A fence is proposed to exclude Murderers Creek in the allotment. The fence has not been constructed as of 2022.

Oregon Mine Campground Pasture: (38 acres). This pasture contains approximately 0.35 miles of MCR steelhead CH and 0.35 miles of MSRA. This pasture contains a maintained campground. In an effort to keep cattle out of this campground, this pasture will typically only be used for trailing to facilitate movement of cattle along the road; 175 c/c will trail through this pasture twice, once between 5/15–6/1 and once between 9/15–10/15.

Dans Creek Pasture: (3,686 acres). This pasture does not contain MCR steelhead CH or MSRA; 175 c/c enter the pasture and stay for approximately 35 days.

Dans Creek Riparian Pasture: (11 acres). This pasture contains approximately 0.75 miles of MCR steelhead CH and 0.75 miles of MSRA, and was established in 2020. There is a MIM DMA along Dans Creek in this pasture. This pasture will be rested 2023–2027 to protect critical habitat and MSRA.

Orange Creek Riparian Pasture: (7 acres). This pasture contains approximately 0.55 miles of MCR steelhead CH and 0 miles of MSRA. This pasture will be rested 2023–2027.

Murderers Creek Gather Pasture: (74 acres). This pasture contains approximately 0.82 miles of MCR steelhead CH and 0.83 miles of MSRA. This is a gather pasture and is utilized for short durations while cattle are being moved on and off the allotment. This pasture also contains a set of corrals. It is used for approximately 14 days, 5/15–10/15, during turn on and turn off. This pasture was administratively moved into the Murderers Creek Allotment from Fields Peak Allotment in 2020. There is a MIM DMA located on Murderers Creek.

Tex Creek Gather Pasture: (158 acres). This pasture contains approximately 0.18 miles MCR steelhead CH and 0.11 MSRA. This pasture contains approximately 90 acres of land owned by the State including all the critical habitat streams, except for a 150-foot water gap on Murderers Creek. The FS land in this pasture is all upland, with the exception of the water gap. The State-owned land within this pasture is managed by the State of Oregon and is used in conjunction with this allotment for short durations while cattle are being moved between pastures. This pasture is used for approximately 14-day periods for pasture moves between 6/15 and 10/15. This pasture was administratively moved into the Murderers Creek Allotment from Fields Peak Allotment.

Middle Herd (300 c/c):

Timber Mountain Pasture: (5,028 acres). This pasture contains approximately 1.61 miles of MCR steelhead CH and 0 miles of MSRA. It is typically the first pasture in the rotation; 200 c/c pairs enter the pasture and remain for approximately 30 days. There is a photo point located at a DMA on Crazy Creek.

South Fork Exclosure: (154 acres). This pasture contains approximately 0.80 miles of MCR steelhead CH and 0.77 miles of MSRA. This is an exclosure which will not be grazed 2023–2027.

Horse Mountain Pasture: (4,085 acres). This pasture contains 0 miles of MCR steelhead CH and 0 miles of MSRA. Cattle access to CH and MSRA along SF Murderers Creek is limited to two water gaps, due to a riparian pasture that was built in 2011; 300 c/c pairs enter this pasture and remain for approximately 45 days.

Horse Mountain Exclosure: (57 acres). This pasture contains approximately 1.82 miles of MCR steelhead CH and 1.82 miles of MSRA that was formerly counted in Horse Mountain pasture. This is an exclosure and will not be authorized for grazing 2023–2027.

Blue Ridge and Antelope Springs Pasture: (7,981 acres). These pastures contain approximately 2.66 miles of MCR steelhead CH, and 0.50 miles MSRA. These pastures are grazed and managed as one pasture; 300 c/c pairs will enter the pasture and remain for approximately 45 days. All critical habitat and MSRA in the pasture is fenced and livestock excluded.

South Fork Murderers Creek Gather Pasture: (61 acres). This pasture contains approximately 0.45 miles of MCR steelhead CH and MSRA. It was created to fence out all SF Murderers Creek as in the Blue Ridge pasture. Livestock can access a 16-foot water gap identified as MSRA within the pasture. This is a gather pasture and is utilized for short durations while cattle are being moved from pasture to pasture.

Bark Cabin Exclosure: (9 acres). This pasture contains approximately 0.11 miles of MCR steelhead CH and no MSRA. This is an exclosure and will not be authorized for grazing 2023–2027.

Blue Creek Unit Enclosures: (12 acres). This pasture contains approximately 0.73 miles of MCR steelhead CH and 0.61 miles of MSRA. This unit is comprised of 4 small pastures. This unit is an enclosure and will not be authorized for grazing 2023–2027.

Antelope Enclosure Pasture: (2 acres). This pasture does not contain MCR steelhead CH or MSRA. This pasture will not be grazed and is not included in the rotation.

South Herd (400 c/c)

John Young Meadow Pasture: (707 acres). This pasture contains approximately 0.09 miles of MCR steelhead CH and 0.08 miles of MSRA; 400 c/c pairs will enter the pasture and remain for approximately 14 to 21 days in rotation with the other pastures. There is a MIM DMA located on SF Murderers Creek.

John Young Cow Camp Pasture: (286 acres). This pasture does not contain MCR steelhead CH or MSRA. The CH along SF Murderers Creek has been excluded from livestock use with the exception of a water gap. Approximately half of this pasture is comprised of State land, which includes CH along SF Murderers Creek in a water gap. This pasture is used both as a mid-season gather pasture as well as an end-of-season holding pasture, and a set of corrals are located here; 400 c/c pairs use this pasture for 7 days at the end of the season.

Frenchy Butte Pasture: (13,047 acres). This pasture contains approximately 9.98 miles of MCR steelhead CH and 7.52 miles of MSRA. This pasture is used approximately 45 days. There is a MIM DMA located on Deer Creek within the MSRA.

Deer Creek Pasture: (13,855 acres). This pasture contains approximately 8.95 miles of MCR steelhead CH and 6.91 miles of MSRA. This pasture is used for approximately 45 days. There is a PIBO-K site and MIM DMA located on Deer Creek within the MSRA.

Watershed Pasture: (23 acres). This pasture contains approximately 0.48 miles of MCR steelhead CH and 0.48 miles of MSRA. This pasture will be rested and not authorized for grazing 2023–2027.

Deer Creek Guard Station Pasture: (12 acres). This pasture does not contain MCR steelhead CH or MSRA. This pasture will be rested and not authorized for grazing 2023–2027.

Deer Creek Horse Pasture: (7 acres). This pasture does not contain MCR steelhead CH or MSRA. This is a horse pasture which is not typically grazed and is not included in the rotation. It is used recreationally with the Guard Station.

Vester Creek (Enclosure): (4 acres). This pasture contains 0.4 miles of MCR steelhead CH and no MSRA. This pasture will be rested and not authorized for grazing 2023–2027.

There is a total of 52.21 CH stream miles and 26.27 MSRA stream miles in the allotment. Pastures with CH or MSRA are identified in Table 64.

Table 64. Middle Columbia River steelhead critical habitat and most sensitive riparian areas (MSRA) by pasture in the Murderers Creek Allotment.

Pasture Name	Stream Name	Steelhead Critical Habitat (Miles)	MSRA (miles)
Timber Mountain	Crazy Creek	1.61	0.00
South Fork Exclosure	South Fork Murderers Creek	0.76	0.77
South Fork Exclosure	Crazy Creek	0.03	0
Horse Mountain Exclosure	South Fork Murderers Creek	1.82	1.82
South Fork Murderers Creek Gather Riparian	South Fork Murderers Creek	0.45	16 ft.
Bark Cabin Exclosure	Bark Cabin Creek	0.11	0.00
Blue Creek Unit Exclosure	Blue Creek	0.73	0.61
Blue Ridge Exclosure	Bark Cabin Creek	0.61	0.00
Blue Ridge Exclosure	South Fork Murderers Creek	2.05	0.30
Red Rocks	Duncan Creek	3.47	0.00
Martin Corrals	Thorn Creek	3.83	0.00
Martin Corrals	Duncan Creek	1.33	0.00
Martin Corrals	Murderers Creek	2.08	2.07
Oregon Mine	Duncan Creek	1.12	0.00
Oregon Mine	Tennessee Creek	2.04	0.00
Oregon Mine	Thorn Creek	3.13	0.00
Oregon Mine	Murderers Creek	3.95	3.93
Oregon Mine Campground	Murderers Creek	0.35	0.35
Orange Creek Riparian	Orange Creek	0.55	0.00
Dans Creek Riparian	Dans Creek	0.75	0.75
John Young Meadow	South Fork Murderers Creek	0.09	0.08
Deer Creek	Deer Creek	2.47	2.47
Deer Creek	Corral Creek	2.51	2.47
Deer Creek	South Fork Deer Creek	1.75	1.25
Deer Creek	North Fork Deer Creek	2.22	0.72
Watershed Pasture	South Fork Deer Creek	0.48	0.48
Frenchy Butte	Deer Creek	6.61	6.56
Frenchy Butte	Buck Creek	1.60	0.96
Frenchy Butte	Blue Creek	0.33	0.00
Frenchy Butte	Vester Creek	1.45	0.00
Vester Creek Exclosure	Vester Creek	0.40	0.00
Murderers Creek Gather	Murderers Creek	0.76	0.78
Murderer Creek Gather	Dans Creek	0.06	0.05
Tex Creek Gather	Murderers Creek	0.09	0.03
Tex Creek Gather	Tex Creek	0.09	0.08
Total Miles*		52.21	26.27
*MNF provided stream miles provided based on GIS mapping and provided rounded miles in tables. Total miles above may slightly differ.			

Table 65. Proposed Pasture Rotation for the Murderers Creek Allotment 2023–2027.

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA/PIBO Photo
<u>North Herd</u>						
Red Rocks Martin Corrals* Oregon Mine 175 c/c	5/15–9/25	5/15–9/25	5/15–9/25	5/15–9/25	5/15–9/25	MIM DMA on Murderers Creek PIBO-I site on Thorn Creek
Oregon Mine Campground* 175 c/c	5/15–5/25 9/20–9/30 Trailing	Trailing 5/15–5/25 9/20–9/30	5/15–5/25 9/20–9/30 Trailing	5/15–5/25 9/20–9/30 Trailing	5/15–5/25 9/20–9/30 Trailing	MIM DMA and PIBO-K site on Murderers Creek
Dans Creek 175 c/c (CH Fenced)	9/25–10/15	9/25–10/15	9/25–10/15	9/25–10/15	9/25–10/15	No CH
Dans Creek Riparian Pasture	Rest	Rest	Rest	Rest	Rest	DMA on Dans Creek
Orange Creek Riparian	Rest	Rest	Rest	Rest	Rest	DMA Needs to be established if grazed
Murderers Creek Gather	Gather 5/15–10/15	Gather 5/15–10/15	Gather 5/15–10/15	Gather 5/15–10/15	Gather 5/15–10/15	MIM DMA on Murderers Creek
Tex Creek Gather	Gather 5/15–10/15	Gather 5/15–10/15	Gather 5/15–10/15	Gather 5/15–10/15	Gather 5/15–10/15	–
<u>Middle Herd</u>						
** In 2024 and 2026, on July 1, 100 c/c pairs will be added into the grazing rotation.						
Timber Mountain* 200 c/c	6/1–6/30	6/1–6/30	6/1–6/30	6/1–6/30	6/1–6/30	MIM DMA (for browse) only Photo Point
Horse Mountain 300 c/c (CH fenced)	7/1–8/15	9/1–10/15	7/1–8/15	9/1–10/15	7/1–8/15	No CH
Blue Ridge and Antelope Springs 300 c/c (CH Fenced)	8/16–10/15	7/1–8/30	8/16–10/15	7/1–8/30	8/16–10/15	–
South Fork Exclosure	Rest	Rest	Rest	Rest	Rest	PIBO
South Fork Murderers Creek Gather 300 c/c (CH Fenced)	Rest	Gather 9/1–9/5 11 AUM	Rest	Gather 9/1–9/5 11 AUM	Rest	No CH

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA/PIBO Photo
South Herd						
Frenchy Butte 400 c/c	7/1–8/15	7/1–8/15	7/1–8/15	7/1–8/15	7/1–8/15	MIM DMA on Deer Cr. PIBO-K site on Deer Cr.
Deer Creek 400 c/c	8/15–9/30	8/15–9/30	8/15–9/30	8/15–9/30	8/15–9/30	MIM DMA and PIBO-K site on Deer Cr. PIBO-K site on NF Deer Cr.
John Young Meadow 400 c/c	10/1–10/15	10/1–10/15	10/1–10/15	10/1–10/15	10/1–10/15	MIM DMA and PIBO-K Site on SF Murderers Cr.
John Young Cow Camp (No CH) 400 c/c	Gather 10/7–10/15	Gather 10/7–10/15	Gather 10/7–10/15	Gather 10/7–10/15	Gather 10/7–10/15	–

* Turnout before July 1 requires completion of MCR steelhead spawning/incubation surveys in CH.

** Lacking DMA for ESA monitoring—establishing a DMA is required before livestock turn out into pasture.

Rail Creek Allotment

The MNF proposes to authorize livestock grazing on the Rail Creek allotment for the period 2023–2027. The Rail Creek allotment is currently operated by one permittee grazing one herd of cattle, with a total of 150 c/c pairs permitted 8/1–9/30 (Table 66), not to exceed 397 AUM. Permitted livestock use increased since the last consultation period, 2018–2022, because a land exchange added more land to the allotment in 2020. The Rail Creek allotment contains 13.84 miles of MCR steelhead CH, and 1.0 miles of MSRA on the John Day River. MIM DMAs are located in the Rail pasture on Roberts Creek and the John Day River.

The Rail Creek allotment consists of one pasture, Table 67.

Table 66. Rail Creek Allotment Permit Information.

Permit Number	Permit Exp. Date	Total Acres (USFS)	Permitted Number of Livestock c/c/AUM	Permit Season Begin and End Dates
01868	12/31/2029	27,097 776 private lands	150/397/300	8/1–9/30
<p>** c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments.</p>				

Table 67. Pasture Rotation for the Rail Creek Allotment 2023–2027

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027
Rail Creek Pasture 150 c/c pairs	8/1–9/30	8/1–9/30	8/1–9/30	8/1–9/30	8/1–9/30

Reynolds Allotment

The Reynolds Creek allotment contains 10.25 miles of MCR steelhead CH in Reynolds, North Reynolds, Mossy Gulch, Eureka Gulch, and Isham creeks, and 0 miles of MSRA.

The MNF proposes to authorize livestock grazing on the Reynolds Creek allotment for 2023–2027. The Reynolds Creek allotment consists of three pastures (Reynolds, Danish, and Davis) operated by one permittee grazing one herd of cattle, 6/1–9/18 (Tables 68 and 69).

Steelhead CH within the Danish pasture is located in the very most headwaters of Eureka Gulch, Isham and Dans Creek subwatersheds, with approximately 0.65 total CH miles located on Isham Creek, and Eureka Gulch. The longest portion includes 0.58 miles in the Danish pasture on Isham Creek. A field visit on 6/6/2017 confirmed that Eureka Gulch and Dans Creek (location of CH in allotment boundary is not certain) are intermittent within the pasture and Isham Creek is perennial.

Table 68. Reynolds Creek Allotment Permit Information

Permit Number	Permit Exp. Date	Total Acres (USFS)	Permitted Number of Livestock c/c Pair/AUM/HM	Permit Season Begin and End Dates
01898	12/31/2025	21,288	166 c/c, 792 AUM, 600 HM	6/1–9/18
<p>** c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments.</p>				

Livestock turnout to the Danish and Davis pastures occur after steelhead spawning. Livestock rotate from the Danish pasture to the Davis pasture every year.

The Reynolds Creek pasture was rested from 2018–2022 and will be rested for this consultation (2023–2027).

Table 69. Pasture Use/Rotation Reynolds Creek Allotment 2023–2027.

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027
Danish 166 c/c	7/1–8/18	7/1–8/18	7/1–8/18	7/1–8/18	7/1–8/18
Davis 166 c/c	8/19–9/18	8/19–9/18	8/19–9/18	8/19–9/18	8/19–9/18
Reynolds Creek	Rest	Rest	Rest	Rest	Rest

Exclosure fencing of Danish pasture in the headwaters of Isham Creek was recommended in 2017, but has not been constructed as of 2022. There is uncertainty if Dans Creek is located within the allotment boundary. The MNF will assess it to determine if the identified CH on Dans Creek is actually in the pasture. If the CH is within the pasture, the MNF will establish a MIM DMA on either Dans Creek or Isham Creek in 2023.

Roundtop Allotment

The MNF proposes to authorize livestock grazing on the Roundtop allotment 2023–2027. The Roundtop allotment is currently operated by one permittee grazing one herd of cattle (Tables 70 and 72).

Table 70. Roundtop Allotment Permit Information.

Permit number	Permit Expiration Date	Total Acres	Permitted Number of Livestock c/c Pair/AUM/HM *	Permit Season Begin and End Dates
0604010067**	12/31/2032	13,705	200/1059/802	6/1–9/30
** c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments.				

The Roundtop allotment contains 4.77 miles of MCR steelhead CH and 1.62 miles of MSRA. MSRA is designated in the Grub Creek, Tinker, and Beech pastures (Table 71).

Table 71. Miles of Middle Columbia River steelhead critical habitat and most sensitive riparian areas (MSRA) by pasture within the Roundtop Allotment.

Pasture Name	Stream Name	Steelhead Critical Habitat	MSRA
Grub	Grub Creek	1.0	0.53
Beech	East Fork Beech Creek	0.93	0.29
Tinker	Tinker Creek	2.34	0.80
Tinker	East Fork Beech Creek	0.41	0.00
Short N Dirty	East Fork Beech Creek	0.09	0.00
Total Miles		4.77	1.62

The Roundup Allotment contains six pastures used in a rotation, each grazed once per year, and with the potential to rest one or more pastures per year.

Short n Dirty Pasture: (2,903 acres). This pasture contains fenced CH with a (0.09 miles) 15-foot water gap in CH on East Fork Beech Creek. This pasture is used first or third in the rotation by 200 c/c for 25 to 35 days.

Tinker Pasture: (4,801 acres). This pasture contains approximately 2.75 miles of MCR steelhead CH and 0.80 miles of stream identified as MSRA.

Beech Creek Pasture: (539 acres). This pasture contains approximately 0.93 miles of MCR steelhead CH and 0.29 miles of MSRA. Due to the sensitive habitat in Tinker creek and East fork of Beech creek, Tinker Creek and Beech Creek pastures will be grazed together in an effort to protect the riparian systems in both pastures. The combined pastures will be grazed second or fourth in the rotation by 200 c/c pairs for approximately 10 to 20 days. Restoration work has occurred on Tinker Creek. To protect the restoration work, an electric fence was installed enclosing the project area along with the DMA. A new DMA was established on Tinker Creek in 2020.

4 Corners Pasture: (3,996 acres). This pasture does not contain MCR steelhead CH or MSRA. This pasture is used fourth in the rotation by 200 c/c for 40 to 50 days.

Grub Pasture: (842 acres). This pasture contains approximately 1.00 miles of MCR steelhead CH and 0.53 miles of MSRA. This pasture is used fifth or second in the rotation by 200 c/c for approximately 10 to 14 days.

Tode Pasture: (624 acres). This pasture does not contain MCR steelhead CH or MSRA. This pasture is used sixth or fifth in the rotation by approximately 100 c/c for 10 to 14 days.

4 Corners and Tode will be grazed together on odd-numbered years by approximately 200 cc/pairs for 50 to 65 days.

Table 72. Pasture Rotation for the Roundtop Allotment 2023–2027.

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA PIBO Photo Point
Short n Dirty 200 c/c pairs (CH fenced with water gap)	*6/1–7/1	8/30–9/30	*6/1–7/1	8/30–9/30	*6/1–7/1	No DMA established (15-foot CH water gap)
Tinker and Beech 200 c/c pairs (CH and MSRA)	7/2–7/21	8/10–8/29	7/2–7/21	8/10–8/29	7/2–7/21	MIM DMA
4 Corners 200 c/c pairs (No CH)	Combined use with Tode	6/26–8/9	Combined use with Tode	6/26–8/9	Combined use with Tode	No CH
Grub 100 c/c pairs (CH and MSRA)*	9/21–9/30	*6/15–6/25	9/21–9/30	*6/15–6/25	9/21–9/30	MIM DMA
Tode ~100 c/c pairs (No CH)	Combined use with 4 Corners	6/1–6/14	Combined use with 4 Corners	6/1–6/14	Combined use with 4 Corners	No CH
4 Corners and Tode 200 c/c pairs (No CH)	7/22–9/20	Pastures used separately– use described above	7/22–9/20	Pastures used separately– use described above	7/22–9/20	No CH

* Turnout before July 1 requires completion of MCR steelhead spawning/redd surveys in CH.

Seneca Allotment

The MNF proposes to authorize livestock grazing on the Seneca allotment 2023–2027. The Seneca allotment is operated by a single permittee 6/15–10/30 (Tables 73 and 75). The Seneca allotment contains 1.03 miles of CH and no MSRA (Table 74).

Table 73. Seneca Creek Allotment Permit Information

Permit number	Permit Expiration Date	Total Acres	Permitted Number of Livestock c/c Pair/AUM/HM	Permit Season Begin and End Dates
0604010034	12/31/2026	10,249	170//771	6/15–10/30

This allotment includes one gather pasture. This pasture is small and is used as an overnight or short term stay when livestock are trailed into or out of the allotment. All other pastures are used once per year. Designated CH is on 0.11 miles on Hanscomb Creek and 0.92 miles of Vance Creek. There is no MSRA in the allotment.

Vance Creek Pasture: (5,541 acres). This pasture contains approximately 1.03 miles of MCR steelhead CH and 0 miles of MSRA. This pasture is typically second in the rotation; 170 c/c will enter the pasture and remain for approximately 45 days. There is a Photo Point DMA in this pasture located on Vance Creek.

Camp Creek Pasture: (3,968 acres). This pasture does not contain MCR steelhead CH or MSRA. This pasture is typically last in the rotation; 170 c/c will enter the pasture and remain for approximately 60 days.

Camp Creek Management Pasture: (704 acres). This pasture does not contain MCR steelhead CH or MSRA; 170 c/c will enter the pasture and remain for approximately 14 days.

Koehler Pasture: (36 acres). This pasture does not contain MCR steelhead CH or MSRA. This is a gather pasture and is utilized for short durations while cattle are being moved onto and/or off the allotment.

Table 74. Proposed Pasture Rotation for the Seneca Allotment 2023–2027.

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA PIBO Photo
Vance Creek 170 c/c	7/1–8/15	7/1–8/15	7/1–8/15	7/1–8/15	7/1–8/15	Photo Point DMA on Vance Creek
Camp Creek 170 c/c No CH	8/16– 10/15	8/16– 10/15	8/16– 10/15	8/16– 10/15	8/16– 10/15	No CH
Camp Creek Management Pasture 170 c/c No CH	6/15– 6/30	6/15– 6/30	6/15– 6/30	6/15– 6/30	6/15– 6/30	No CH
Koehler 170 c/c No CH	Gather	Gather	Gather	Gather	Gather	No CH

Slide Creek Allotment

The MNF proposes to authorize livestock grazing on the Slide Creek allotment 2023–2027. The Slide Creek allotment is currently operated by 3 permittees grazing one herd of cattle 6/1–10/15 (Tables 75 and 77).

Table 75. Slide Creek Allotment Permit Information

Permit Number	Permit Exp. Date	Total Acres	Permitted Number of Livestock c/c Pair/AUM/HM*	Permit Season Begin and End Dates
0604010008	12/34/2023	25,123	546/3246/2459	6/1–10/15
0604010051	12/31/2028	25,123	170/1011/766	6/1–10/15
0604010033	12/31/2026	25,123	61/363/275	6/1–10/15
** c/c is cow/calf pairs, AUM is animal unit month, and HM is head month; AUM is calculated as the number of days the cattle are grazing a pasture, multiplied by the number of c/c (1.32), then divided by 30.4167 (the average number of days in a month per year). An HM is one c/c pair for one month. The HM is the official unit of measurement for permitting on USFS lands. The AUM and HM as presented are interchangeable, meaning there is no increase or decrease in the permitted number of livestock on the allotments.				

The Slide Creek allotment contains nine pastures, 8.65 miles of MCR steelhead CH, and 2.29 miles MSRA (Table 76).

Table 76. Middle Columbia River steelhead critical habitat and most sensitive riparian areas (MSRA) in the Slide Creek Allotment.

Pasture Name	Stream Name	Steelhead Critical Habitat (miles)	MSRA (miles)
East	Bear Creek	2.35	0.00
	Whiskey Creek	1.20	0.00
	Lick Creek	0.07	0
West	Slide Creek	1.15	0.00
Whiskey Riparian	Whiskey Creek	1.20	0.00
Slide Riparian	Slide Creek	0.86	89
Camp Riparian	Camp Creek	1.35	1.40
Stock Driveway	Slide Creek	0.48	0
Total Miles		8.65	2.29

East Pasture: (12,748 acres). The East pasture contains approximately 3.61 miles of MCR steelhead CH and 0 miles of MSRA. This pasture is used in the grazing rotation for approximately 50 to 65 days.

West Pasture: (4,522 acres). This pasture contains approximately 1.15 miles of MCR steelhead CH and no MSRA. This pasture is in the grazing pasture rotation schedule for approximately 25 to 35 days.

Sale Area Pasture: (6,303 acres). This pasture does not contain MCR steelhead CH or MSRA. This pasture is used for approximately 35 to 45 days.

Hog Pasture: (636 acres). The Hog pasture does not contain MCR steelhead CH or MSRA. This pasture is used to relieve pressure from the Sale Area pasture. It is used in the rotation for approximately 20 to 30 days, generally by less than 100 c/c.

Whiskey Flats Pasture: (171 acres). This pasture does not contain any MCR Steelhead CH or MSRA. This pasture is used to facilitate the move between the East and the West pastures. Cattle will be gathered into this pasture until sufficient numbers are collected (100 c/c) and then they will be trailed to the West pasture.

Slide Holding Pasture: (90 acres). This pasture does not contain MCR steelhead CH or MSRA. This pasture is used to facilitate the move between the West and Sale pastures. Cattle are gathered into this pasture until sufficient numbers are collected (100 c/c) and then they will be trailed to the Sale pasture.

Stock Driveway (Move) Pasture: (90 acres). This pasture contains 0.48 miles of MCR steelhead CH and 0 miles designated of MSRA. This pasture will be used annually; on odd years it will be used early in the year to facilitate the move from the Sale pasture to the East pasture, and on even years it will be used late in the year to facilitate the move from the West pasture to the Sale pasture. There is a PIBO-K site and MIM DMA in this pasture on Slide Creek.

Slide Riparian Pasture: (289 acres). This pasture contains 0.86 miles of MCR Steelhead CH and 0.89 miles designated as MSRA. This pasture is not scheduled to be used through the life of the consultation. Ninety acres will be fenced off to create the Stock Driveway pasture. There is a MIM DMA located on Slide Creek within this pasture. Animal unit months/head months are not calculated for this pasture; it will be rested for the duration of the consultation (2023–2027).

Camp Riparian Pasture: (100 acres). This pasture contains approximately 1.35 miles of MCR steelhead CH and 1.40 miles designated as MSRA. This pasture is proposed for use in all years. Cattle are gathered into this pasture until sufficient numbers have been collected (approximately 100 c/c) and then they are trailed to the West pasture.

Whiskey Riparian Pasture: (210 acres). This pasture contains approximately 1.20 miles of MCR steelhead CH and 0 miles of MSRA. This pasture will be rested for this consultation period (2023–2027).

Table 77. Pasture Rotation for the Slide Creek Allotment 2023–2027.

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA/ Photo/ PIBO
East* 777 c/c	6/1–8/1	7/16–9/15	6/1–8/1	7/16–9/15	6/1–8/1	MIM DMA on Bear Cr.
West 777 c/c	8/2–8/31	9/16–10/15	8/2–8/31	9/16–10/15	8/2–8/31	MIM DMA on Slide Cr.
Sale Area No CH 777 c/c	9/1–10/15	10/15–7/15	9/1– 10/15	6/1–7/15	9/1–10/15	No CH

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA/ Photo/ PIBO
Hog No CH +/- 100 c/c	9/15–10/15	6/1–7/1	9/15– 10/15	6/1–7/1	6/1–7/1	No CH
Slide Holding No CH +/- 100 c/c	Gather 10/10–10/15	Gather 7/15–7/20	Gather 10/10– 10/15	Gather 7/15–7/20	Gather 10/10–10/15	No CH
Slide Riparian +/- 100 c/c	Rest	Rest	Rest	Rest	Rest	DMA on Slide Cr.
Stock Driveway 100c/c	Gather 8/31–9/6	Gather 7/1–7/7	Gather 8/31–9/6	Gather 7/1–7/7	Gather 8/31–9/6	MIM DMA and PIBO-K site on Slide Cr.
Camp Riparian +/- 100 c/c	Gather 9/15–9/21	Gather 9/15–9/21	Gather 9/15– 9/21	Gather 9/15–9/21	Gather 9/15–9/21	MIM DMA and PIBO-I site on Camp Creek
Whiskey Flats No CH +/- 100 c/c	Gather 9/15–9/21	Gather 9/15–9/21	Gather 9/15– 9/21	Gather 9/15–9/21	Gather 9/15–9/21	No CH
Whiskey Riparian (Rested)	Rest	Rest	Rest	Rest	Rest	MIM DMA on Whiskey Cr.
* Turnout before July 1 requires completion of MCR steelhead spawning/redd surveys in CH.						

York Allotment

The MNF proposes to authorize livestock grazing on the York allotment 2023–2027. The York (on/off) allotment is operated by one permittee grazing one herd of cattle, with a total of 12 c/c for a permitted use date of 6/1–10/30, not to exceed 71 AUM (60 HM). The allotment contains three pastures: Slide, East, and York Riparian. The York enclosure is within the York Riparian pasture, and is not authorized for grazing. These pastures will be grazed once per year.

The York allotment contains 1.05 mile of MCR steelhead CH in the York Riparian pasture and 0 miles of MSRA (Table 78). Tentative use dates, pasture rotations, and livestock numbers are presented in (Table 79).

Table 78. Miles of Middle Columbia River steelhead critical habitat and most sensitive riparian areas (MSRA) by pasture within the York Allotment.

Pasture Name	Stream Name	Steelhead Critical Habitat	MSRA
York Riparian	Slide Creek	1.05	0.0
Total Miles		1.05	0.0

Slide Pasture: (645 acres). This pasture does not contain MCR steelhead CH or MSRA. This pasture is grazed in conjunction with private land within the Slide pasture of the York allotment.

East Pasture: (153 acres). This pasture does not contain MCR steelhead CH or MSRA. This pasture is grazed in conjunction with private land within the East pasture of the York allotment.

York Riparian Pasture: (127 acres). This pasture contains approximately 1 mile of MCR steelhead CH and 0 miles of MSRA. This pasture is used to gather cattle which are held for approximately 24 hours before being moved to the next pasture or removed from the allotment. Cattle will be in this pasture between 7 to 21 (maximum) days. This pasture will be used as a gathering pasture to remove livestock from the allotment.

Table 79. Pasture Rotation for the York Allotment 2023–2027.

Pasture Name Livestock Numbers	2023	2024	2025	2026	2027	MIM DMA/ Photo/ PIBO
East* 12 c/c pairs	6/1–7/1	6/1–7/1	6/1–7/1	6/1–7/1	6/1–7/1	No CH
Slide 12 c/c pairs	7/2–9/16	7/2–9/16	7/2–9/16	7/2–9/16	7/2–9/16	No CH
York Riparian 12 c/c pairs	Rest	9/17–10/1	Rest	9/17–10/1	Rest	MIM DMA and PIBO-I site on Slide Creek
* Turnout before July 1 requires completion of MCR steelhead spawning/redd surveys in CH.						

2. ENDANGERED SPECIES ACT: BIOLOGICAL OPINION AND INCIDENTAL TAKE STATEMENT

The ESA establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat upon which they depend. As required by section 7(a)(2) of the ESA, each Federal agency must ensure that its actions are not likely to jeopardize the continued existence of endangered or threatened species or to adversely modify or destroy their designated critical habitat. Per the requirements of the ESA, Federal action agencies consult with NMFS, and section 7(b)(3) requires that, at the conclusion of consultation, NMFS provide an opinion stating how the agency’s actions would affect listed species and their critical habitats. If incidental take is reasonably certain to occur, section 7(b)(4) requires NMFS to provide an ITS that specifies the impact of any incidental taking and includes reasonable and prudent measures (RPMs) and terms and conditions to minimize such impacts.

2.1. Analytical Approach

This biological opinion includes both a jeopardy analysis and an adverse modification analysis. The jeopardy analysis relies upon the regulatory definition of “jeopardize the continued existence of” a listed species, which is “to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species” (50 CFR 402.02). Therefore, the jeopardy analysis considers both survival and recovery of the species.

This biological opinion also relies on the regulatory definition of “destruction or adverse modification,” which “means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species” (50 CFR 402.02).

The designation of critical habitat for MCR steelhead used the term primary constituent element (PCE) or essential features. The 2016 final rule (81 FR 7414; February 11, 2016) that revised the critical habitat regulations (50 CFR 424.12) replaced this term with physical or biological features (PBFs). The shift in terminology does not change the approach used in conducting a “destruction or adverse modification” analysis, which is the same regardless of whether the original designation identified PCEs, PBFs, or essential features. In this biological opinion, we use the term PBF to mean PCE or essential feature, as appropriate for the specific critical habitat.

The ESA Section 7 implementing regulations define effects of the action using the term “consequences” (50 CFR 402.02). As explained in the preamble to the final rule revising the definition and adding this term (84 FR 44976, 44977; August 27, 2019), that revision does not change the scope of our analysis, and in this opinion, we use the terms “effects” and “consequences” interchangeably.

We use the following approach to determine whether a proposed action is likely to jeopardize listed species or destroy or adversely modify critical habitat:

- Evaluate the rangewide status of the species and critical habitat expected to be adversely affected by the proposed action.
- Evaluate the environmental baseline of the species and critical habitat.
- Evaluate the effects of the proposed action on species and their critical habitat using an exposure–response approach.
- Evaluate cumulative effects.
- In the integration and synthesis, add the effects of the action and cumulative effects to the environmental baseline, and, in light of the status of the species and critical habitat, analyze whether the proposed action is likely to: (1) directly or indirectly reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species; or (2) directly or indirectly result in an alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species.
- If necessary, suggest a reasonable and prudent alternative to the proposed action.

2.2. Rangewide Status of the Species and Critical Habitat

In this opinion we examine the status of each species that is likely to be adversely affected by the proposed action. The status is determined by the level of extinction risk that the listed species face, based on parameters considered in documents such as recovery plans, status reviews, and listing decisions. This informs the description of the species’ likelihood of both survival and recovery. The species status section also helps to inform the description of the species’ “reproduction, numbers, or distribution” for the jeopardy analysis. We also examine the condition of critical habitat throughout the designated area, evaluate the conservation value of the various watersheds as well as coastal and marine environments that make up the designated area, and discuss the function of the PBFs that are essential for the conservation of the species.

The summaries that follow describe the status of MCR steelhead and their CH that occurs within the geographic area of this proposed action and considered in this opinion.

2.2.1. Status of the Species

For Pacific salmon and steelhead, we commonly use the four “viable salmonid population” (VSP) criteria (McElhany et al. 2000) to assess the viability of the populations that, together, constitute the species. These four criteria (spatial structure, diversity, abundance, and productivity) encompass the species’ “reproduction, numbers, or distribution” as described in 50 CFR 402.02. When these parameters are collectively at appropriate levels, they maintain a population’s capacity to adapt to various environmental conditions and allow it to sustain itself in the natural environment.

“Spatial structure” refers both to the spatial distributions of individuals in the population and the processes that generate that distribution. A population’s spatial structure depends on habitat quality and spatial configuration, and the dynamics and dispersal characteristics of individuals in the population.

“Diversity” refers to the distribution of traits within and among populations. These range in scale from DNA sequence variation in single genes to complex life history traits (McElhany et al. 2000).

“Abundance” generally refers to the number of naturally-produced adults (i.e., the progeny of naturally-spawning parents) in the natural environment (e.g., on spawning grounds).

“Productivity”, as applied to viability factors, refers to the entire life cycle (i.e., the number of naturally-spawning adults produced per parent). When progeny replace or exceed the number of parents, a population is stable or increasing. When progeny fail to replace the number of parents, the population is declining. McElhany et al. (2000) use the terms “population growth rate” and “productivity” interchangeably when referring to production over the entire life cycle. They also refer to “trend in abundance,” which is the manifestation of long-term population growth rate.

For species with multiple populations, once the biological status of a species’ populations has been determined, we assess the status of the entire species using criteria for groups of populations, as described in recovery plans and guidance documents from technical recovery teams. Considerations for species viability include having multiple populations that are viable, ensuring that populations with unique life histories and phenotypes are viable, and that some viable populations are both widespread to avoid concurrent extinctions from mass catastrophes and spatially close to allow functioning as metapopulations (McElhany et al. 2000).

In the summary that follows, we describe the current status of the MCR steelhead and their designated critical habitat that occurs within the geographic area of the proposed action and are considered in this opinion. More detailed information on the status and trends of MCR steelhead, and their biology and ecology, are in the listing regulations and critical habitat designations published in the Federal Register (Table 80), applicable recovery plan (NMFS 2009), and the viability analysis prepared by the Northwest Fisheries Science Center (NWFSC) for the status

reviews (Ford 2022). These additional documents are incorporated by reference and are available on the [NMFS West Coast Region website \(https://www.westcoast.fisheries.noaa.gov\)](https://www.westcoast.fisheries.noaa.gov).

Table 80. Listing status, status of critical habitat designation and protective regulations, and relevant Federal Register (FR) decision notices for Endangered Species Act-listed Middle Columbia River steelhead considered in this opinion.

Species	Listing Status	Critical Habitat	Protective Regulations
Middle Columbia River Steelhead (<i>Oncorhynchus mykiss</i>)	Threatened 3/25/1999; 64 FR 14517	9/02/05; 70 FR 52630	6/28/05; 70 FR 37160

Middle Columbia River Steelhead

On March 25, 1999, NMFS listed the Middle Columbia River (MCR) steelhead (*O. mykiss*) distinct population segment (DPS) as a threatened species (64 FR 14517). On August 16, 2022, in the agency’s 5-year review for Upper Columbia River steelhead, NMFS concluded that the species should remain listed as threatened (NMFS 2022).

The MCR steelhead DPS includes all naturally spawned anadromous steelhead originating below natural and manmade impassable barriers from the Columbia River and its tributaries upstream of the Wind and Hood Rivers (exclusive) to and including the Yakima River; it excludes fish originating from the Snake River basin. It also includes steelhead from artificial propagation programs: the Touchet River Endemic Program; Umatilla River Program; and the Deschutes River Program (85 FR 81822, Dec. 17, 2020). This DPS does not include steelhead in the upper Deschutes River basin, which are designated as a nonessential experimental population (71 FR 834, Jan. 5, 2006).

Estimates of historical (pre-1960s) abundance indicate that the total historical run size for this DPS might have been in excess of 300,000. Total run sizes for the major steelhead stocks above Bonneville Dam were estimated in the early 1980s to be approximately 4,000-winter steelhead and 210,000-summer steelhead. Based on dam counts for this period, the MCR steelhead DPS represented the majority of this total run estimate, so the returns to this DPS were probably somewhat below 200,000 at that time. It was also estimated that 74 percent of the returns to this DPS were of hatchery origin at that time.

Several factors led to NMFS’ 1999 conclusion that MCR steelhead were threatened: destruction and modification of habitat; overutilization for recreational purposes; impacts of hydropower development and operation; and high percentages of hatchery fish spawning naturally. Despite efforts to reduce the impact of these threats, extensive miles of stream remain inaccessible or unsuitable for steelhead, many habitat threats continue, and threats from on-going development remain (NMFS 2022).

Life History. Summer steelhead enter freshwater between May and October and require several months to mature before spawning; winter steelhead enter freshwater between November and April and spawn shortly thereafter. Summer steelhead usually spawn farther upstream than winter steelhead (NMFS 2009). Steelhead may enter streams and arrive at spawning grounds

weeks or months (and even up to a year) before they spawn. They are therefore vulnerable to disturbance and predation. They need cover, in the form of overhanging vegetation, undercut banks, submerged vegetation, submerged objects such as logs and rocks, floating debris, deep water, turbulence, and/or turbidity. Once in the river, steelhead apparently rarely eat and grow little, if at all (NMFS 2009).

Summer rearing takes place primarily in the faster parts of pools, although young-of-the-year are abundant in glides and riffles. Winter rearing occurs more uniformly at lower densities across a wide range of fast and slow habitat types. Depending on water temperature, steelhead eggs may incubate for 1.5 to 4 months before hatching. Young steelhead typically rear in streams for 1-3 (or sometimes more) years before migrating to the ocean. Some juveniles move downstream to rear in larger tributaries and mainstem rivers. Most fish in this DPS spend 1 to 2 years in saltwater before re-entering freshwater (NMFS 2009). Repeat spawning for Columbia River basin steelhead ranges from reported rates of 2 to 4 percent above McNary Dam (Busby et al. 1996) to 17 percent in the unimpounded tributaries below Bonneville Dam (at RM 146.1). Adult survival to allow repeat spawning of MCR steelhead is compromised by the need to pass multiple mainstem dams multiple times (NMFS 2022).

Spatial structure and diversity. The DPS comprises 20 historical populations (three of which are extirpated) grouped into the following four major population groups (MPGs): Cascades Eastern Slope Tributaries; John Day River; Yakima River; and Umatilla/Walla Walla (Table 81). The spatial structure risk ratings are either very low or low for 13 populations and moderate for the four remaining extant populations. Diversity risk ratings are moderate for the vast majority of populations in this DPS. The most common reason for moderate diversity risk ratings are genetic impacts from hatchery supplementation and/or straying from out-of-basin stocks (Ford 2022). Updated information indicates that stray levels into the John Day River populations have decreased in recent years. Out-of-basin hatchery stray proportions remain high in spawning reaches within the Deschutes River basin and the Umatilla, Walla Walla, and Touchet River populations. The Yakima River upper mainstem population is the only one with a high-risk rating for the integrated spatial structure/diversity metric. This is due to a substantial decrease in distribution from historic levels and loss of life-history and phenotypic diversity inferred from habitat degradation (including passage impacts). Steelhead in the John Day River are part of the John Day River MPG.

Abundance and productivity. As reported in the most recent viability assessment (Ford 2022), the five-year (2015–2019) geometric mean abundance estimates for 16 of the 17 evaluated populations are lower than the corresponding estimates for the previous five-year period by varying degrees, with an average decline of 43 percent. Only the Klickitat River population exhibited an increase in spawner abundance. The fifteen-year trends in natural-origin spawner abundance is slightly negative for ten populations, neutral for two populations and slightly positive for four populations. Some of the positive trends are driven largely by peak returns in the earlier years of the averaging time period. Natural origin spawning estimates are highly variable relative to minimum abundance thresholds across the populations in the DPS (Ford 2022). Freshwater productivity is considered to be low to moderate across the populations. Two of the four MPGs contain populations that have achieved a low or very low risk rating for the integrated abundance/productivity metric. However, this is insufficient for these MPGs to be

considered viable on the whole. The majority of populations are not achieving their desired abundance and productivity targets.

Recovery. The recovery strategy consists of a DPS-wide [recovery plan](#) (NMFS 2009) and associated geographic management unit plans (Klickitat, NMFS 2009; Oregon, Carmichael and Taylor 2010; Rock Creek, NMFS 2009; SE Washington, SRSRB 2011; White Salmon River, NMFS 2013; and Yakima Basin, YBFWRB 2009). In these plans, NMFS adopted the viability criteria metrics defined by the Interior Columbia Technical Recovery Team (ICTRT 2007) as the biological recovery criteria for the DPS. The recovery and management unit plans call for achieving MPG-level viability (low risk), through different combinations of viability status of the MPG's component populations (NMFS 2009). For example, at least half of the populations in the MPG must be viable and at least one population must be highly viable for the MPG to be regarded as viable (NMFS 2009). The recovery documents described the most likely scenario to achieve viability in each MPG. The latest viability ratings for MCR steelhead populations and their proposed viability ratings to support recovery are summarized in Table 81. Overall, none of the MPGs currently meet viability criteria (Ford 2022, NMFS 2022). The newly re-established run in the White Salmon River and the developing time series of population data from the Klickitat River and Rock Creek warrant consideration in the recovery plan.

Widespread areas of degraded or inaccessible habitat continue to persist for all four MPG's due to: (1) dams and irrigation infrastructure; (2) low summer flows and high summer water temperatures; (3) disconnected floodplains; and (4) loss of riparian function. Other factors pertain to some MPG's more than others, such as grazing effects in the John Day River MPG, and levees in the Walla Walla and Umatilla Rivers and in the Yakima River MPG's. Finally, the effects of increasing floodplain development and other anthropogenic factors likely offset at least some restoration benefits, but are not well documented or quantified. There remain numerous opportunities for habitat restoration or protection throughout the range of this DPS. The greatest opportunities to advance recovery of the species over the next five years include: (1) protect and enhance coldwater refugia habitat in the Columbia River; (2) advance water conservation agreements, improve streamflows, and lower water temperatures in tributary habitats; (3) restore complex floodplain habitats; and (4) provide/improve passage and screening (NMFS 2022).

Crozier et al. (2019) recently completed a climate vulnerability assessment for Pacific salmon and steelhead, including MCR steelhead. Crozier et al. (2019) concluded that the MCR steelhead DPS has a high risk of overall climate vulnerability based on its high risk for biological sensitivity, high risk for climate exposure, and moderate capacity to adapt. The adult freshwater stage was rated the most highly vulnerable life stage due to high summer stream temperatures.

Summary. Overall, this DPS is at a moderate risk of extinction. Recent five-year returns experienced steep declines across most populations. Natural-origin spawning estimates are highly variable relative to minimum abundance thresholds across the populations in the DPS. Four of the populations rated at "low" or "very low" risk for abundance and productivity, while the remaining populations are rated as "moderate" to "high" risk. Additional priority recovery actions and best management practices that apply to all populations and protect the highest quality habitats and conserve ecological processes that support population viability must be implemented to recover this species.

Limiting factors. Limiting factors for this species include (NMFS 2009; Ford 2022):

- Degradation of floodplain connectivity and function, channel structure and complexity, riparian areas, fish passage, stream substrate, stream flow, and water quality.
- Mainstem Columbia River hydropower-related impacts.
- Degraded estuarine and nearshore marine habitat.
- Hatchery-related effects.
- Harvest-related effects.
- Effects of predation, competition, and disease.

Table 81. Summary of viable salmonid population (VSP) parameter risks and overall current status and proposed recovery goals for each population in the Middle Columbia River steelhead distinct population segment (Ford 2022; NMFS 2009).

Major Population Group	Population (Run Type)	VSP Risk Rating ¹		Viability Rating	
		Abundance/Productivity	Spatial Structure/Diversity	2022 Assessment	Proposed Recovery Goal ²
Cascades Eastern Slope Tributaries ³	Klickitat River (summer/winter [sw])	Moderate	Moderate	Maintained	Viable
	White Salmon River (summer [su])			<i>Functionally Extirpated</i>	
	Rock Creek (su)	High	Moderate	High Risk	Maintained
	Fifteenmile Creek (winter [wi])	Moderate	Low	Maintained	Viable
	Deschutes River Westside (su)	High	Moderate	High Risk	Viable
	Deschutes River Eastside (su)	Moderate	Moderate	Maintained	Viable
	Crooked River (su)			<i>Extirpated</i>	
John Day River ⁴	John Day River Lower Mainstem (su)	Moderate	Moderate	Maintained	Viable
	North Fork John Day (su)	Very Low	Low	Highly Viable	Viable
	Middle Fork John Day (su)	Very Low	Moderate	Viable	Option
	John Day River Upper Mainstem (su)	Moderate	Moderate	Maintained	Option
	South Fork John Day River (su)	Very Low	Moderate	Viable	Maintained
Umatilla / Walla Walla ⁵	Touchet River (su)	High	Moderate	High Risk	Option
	Walla Walla River (su)	Moderate	Moderate	Maintained	Option
	Umatilla River (su)	Moderate	Moderate	Maintained	Viable
	Willow Creek (su)			<i>Functionally Extirpated</i>	
Yakima River ⁶	Yakima River Upper Mainstem (su)	Moderate	High	High Risk	Option
	Naches River (su)	Moderate	Moderate	Maintained	Option
	Toppenish Creek (su)	Moderate	Moderate	Maintained	Maintained
	Satus Creek (su)	Low	Moderate	Viable	Option

¹Risk ratings are defined based on the risk of extinction within 100 years: High = greater than or equal to 25 percent; Moderate = less than 25 percent; Low = less than 5 percent; and Very Low = less than 1 percent.

²There are several scenarios that could meet the requirements for species recovery, as indicated by the “Option” label. See the MPG specific notes for more detail.

³In order for the MPG to be viable, at least one of the four populations targeted for viable status must be highly viable.

⁴In order for the MPG to be viable, then (1) either the Middle Fork John Day or John Day River Upper Mainstem populations should be viable and the other may be maintained; and (2) at least three populations should be viable, one of which should be highly viable.

⁵In order for the MPG to be viable, at least two populations should be viable, one of which should be highly viable.

⁶In order for the MPG to be viable, at least two populations should be viable, one of which should be highly viable.

2.2.2. Status of the Critical Habitat

In this section, we examine the status of MCR steelhead designated critical habitat by examining the condition and trends of the essential PBFs of that habitat throughout the designated areas (Table 82). These features are essential to the conservation of the ESA-listed MCR steelhead because they support one or more of the species’ life stages (e.g., sites with conditions that support spawning, rearing, migration, and foraging). Rangewide, all habitat types are impaired to some degree, even though many of the watersheds comprising the fully designated area are ranked as providing high conservation value. The proposed action, however, affects only freshwater spawning, rearing, and migration habitats.

Table 82. Physical and biological features of critical habitat designated for ESA-listed Middle Columbia River steelhead, and corresponding species life history events.

Physical or Biological Features		Species Life History Event
Site Type	Site Attribute	
Freshwater Spawning	Substrate Water quality Water quantity	Adult spawning Embryo incubation Alevin growth and development
Freshwater Rearing	Floodplain connectivity Forage Natural Cover Water quality Water quantity	Fry/parr/smolt growth and development
Freshwater Migration	Free of artificial obstruction Natural cover Water quality Water quantity	Adult upstream migration and holding kelt (steelhead) seaward migration Fry/parr/smolt growth, development, and seaward migration
Estuarine Areas	Forage Free of artificial obstruction Natural cover Salinity Water quality Water quantity	Adult sexual maturation and “reverse smoltification” Adult upstream migration and holding Kelt (steelhead) seaward migration Fry/parr/smolt growth, development, and seaward migration

For salmon and steelhead, NMFS’ critical habitat analytical review teams (CHART) ranked watersheds within designated critical habitat at the scale of the fifth-field hydrologic unit code (HUC5) in terms of the conservation value they provide to each ESA-listed species that they support (NOAA Fisheries 2005). The conservation rankings are high, medium, or low. To determine the conservation value of each watershed to species viability, the CHART evaluated the quantity and quality of habitat features (e.g., spawning gravels, wood and water condition, and side channels), the relationship of the area compared to other areas within the species’ range, and the significance of the population occupying that area to the species’ viability criteria. Thus,

even if a location had poor habitat quality, it could be ranked with a high conservation value, if it were essential due to factors such as limited availability (e.g., one of a very few spawning areas), a unique contribution of the population it served (e.g., a population at the extreme end of geographic distribution), or the fact that it serves another important role (e.g., obligate area for migration to upstream spawning areas).

Interior Columbia Recovery Domain

Critical habitat has been designated in the Interior Columbia Basin for MCR steelhead, which includes the John Day River.

The construction and operation of water storage and hydropower projects in the Columbia River basin, including the run-of-river dams on the lower Columbia River, have altered biological and physical attributes of the mainstem migration corridor. A series of large regulating dams on the middle and upper Deschutes River affect flow and block access to upstream habitat, and have extirpated one or more populations from the Cascades Eastern Slope major population. Also, operation and maintenance of large water reclamation systems such as the Umatilla Basin and Yakima projects have significantly modified flow regimes and degraded water quality and physical habitat in this domain.

Hydroelectric development has modified natural flow regimes, resulting in higher water temperatures, changes in fish community structure leading to increased rates of piscivorous and avian predation on juvenile salmonids, and delayed migration time for both adult and juvenile salmonids. Physical features of dams such as turbines can also kill migrating fish. In-river survival is inversely related to the number of hydropower projects encountered by emigrating juveniles. Physical features of dams such as turbines also kill migrating fish. In-river survival of emigrating juveniles is inversely related to the number of hydropower projects encountered. Similarly, development and operation of irrigation systems and hydroelectric dams for water withdrawal and storage in tributaries have altered hydrological cycles, causing a variety of adverse impacts to salmon and steelhead spawning and rearing habitat.

Habitat quality in tributary streams in the Interior Columbia Basin varies from excellent in wilderness and roadless areas to poor in areas subject to heavy agricultural and urban development (Overton et al. 1995; Wissmar et al. 1994; and NMFS 2009). Reduced summer stream flows, impaired water quality, and reduction of habitat complexity are common problems for CH in developed areas, including in the John Day basin. Intense agriculture, alteration of stream morphology (i.e., channel modifications and diking), riparian vegetation disturbance, wetland draining and conversion, livestock grazing, dredging, road construction and maintenance, logging, mining, and urbanization (EPA 2021; Lee et al. 1997; McIver and Starr 2001; NMFS 2009) have degraded critical habitat throughout much of the Interior Columbia River basin. Changes in habitat quantity, availability, diversity, flow, temperature, sediment load and channel instability are common symptoms of ecosystem decline in areas of CH. Large-scale habitat assessments in the Interior Columbia basin indicate that in watersheds managed for natural resources extraction, the number of large pools has decreased from 20 to 87 percent (McIntosh et al. 1994).

Areas where habitat is still largely functioning appropriately include the upper South Fork Walla Walla, portions of the Deschutes Basin, and portions of the North Fork John Day River. Most of these areas are in designated wilderness or roadless areas.

Many stream reaches designated as CH in the Interior Columbia basin are over-allocated for withdrawals under state water law, with more allocated water rights than existing streamflow conditions can support in a given season or year. Irrigated agriculture is common throughout this region and withdrawal of water and resulting lowered stream flow increases summer stream temperatures, blocks fish migration, strands fish, and alters sediment transport (Spence et al. 1996). Continued operation and maintenance of large water reclamation systems such as the Umatilla Basin and Yakima Projects have disrupted riverine ecosystems. NMFS has identified reduced tributary stream flow and has been identified as a limiting factor for MCR steelhead. (NMFS 2007, NOAA Fisheries 2011).

Changes in habitat quantity, availability and diversity, flow, temperature, sediment load, and channel instability are common symptoms of ecosystem decline in areas of CH for MCR steelhead. Many streams in CH areas for this species are listed as water-quality limited on the Oregon Department of Environmental Quality's (ODEQ) section 303(d) Clean Water Act (CWA) list for parameters such as water temperatures, dissolved oxygen, or biological criteria (ODEQ 2022). Many areas that were historically suitable rearing and spawning habitat are now unsuitable due to high summer stream temperatures. Removal of riparian vegetation, alteration of natural stream morphology, and withdrawal of water for agricultural or municipal use all contribute to elevated stream temperatures. Additionally, the ODEQ identified total phosphates and fecal coliform as water quality limitations for many streams within the Lower Mainstem John Day River, and sediment for many North Fork John Day streams (NMFS 2004).

Contaminants such as insecticides and herbicides from agricultural runoff and heavy metals from mine waste are common in some areas of critical habitat. Common toxic contaminants found in the Columbia River system include legacy pesticides, current use pesticides, pharmaceuticals and personal care products, and trace elements (LCREP 2007). Bradford Island is part of the Bonneville Dam complex in the Columbia River operated by the Corps of Engineers. Historical operations and waste disposal at the site contaminated the land and river sediments with PCBs, toxic metals, and other chemicals that pose a health threat to people, fish, and wildlife of the Columbia River Basin. On March 17, 2022, the U.S. Environmental Protection Agency officially added Bradford Island as a Superfund site on the National Priorities List, prioritizing it for cleanup.

On September 2, 2005, NMFS published a final rule (70 FR 52630) to designate CH for MCR steelhead. Critical habitat has been designated for populations of MCR steelhead in the Upper John Day River, Lower John Day River, and the North, South, and Middle Forks of the John Day River. The Middle Fork, North Fork, and Upper John Day subbasins provide freshwater spawning, rearing, and migration PBFs for MCR steelhead. Critical habitat encompasses 15 subbasins in Oregon and Washington containing 111 occupied watersheds, as well as the Columbia River rearing/migration corridor. Most HUC5 watersheds with PBFs for salmon are in fair-to-poor or fair-to-good condition (NMFS 2005). However, most of these watersheds have some or a high potential for improvement. We rated conservation value of occupied HUC5

watersheds as high for 78 watersheds, medium for 24 watersheds, and low for 9 watersheds. Conservation value reflects several factors, including: (1) how important the area is for various life history stages, (2) how necessary the area is to access other vital areas of habitat, and (3) the relative importance of the populations the area supports relative to the overall viability of the Evolutionarily Significant Unit (ESU) or DPS.

Climate Change

Climate change generally exacerbates threats and limiting factors, including those currently impairing salmon and steelhead survival and productivity. The growing frequency and magnitude of climate change related environmental downturns will increasingly imperil many ESA-listed stocks in the Columbia River basin and amplify their extinction risk (Crozier et al. 2019, 2020, 2021). This climate change context means that opportunities to rebuild these stocks will likely diminish over time. As such, management actions that increase resilience and adaptation to these changes should be prioritized and expedited. For example, the importance of improving the condition of and access and survival to and from the remaining functional, high-elevation spawning and nursery habitats is accentuated because these habitats are the most likely to retain remnant snowpacks under predicted climate change (Tonina et al. 2022).

Climate change is already evident. It will continue to affect air temperatures, precipitation, and wind patterns in the Pacific Northwest (ISAB 2007, Philip et al. 2021), resulting in increased droughts and wildfires and variation in river flow patterns. These conditions differ from those under which native anadromous and resident fishes evolved and will likely increase risks posed by invasive species and altered food webs. The frequency, magnitude, and duration of elevated water temperature events have increased with climate change and are exacerbated by the Columbia River hydrosystem (EPA 2020a, 2020b; Scott 2020). Thermal gradients (i.e., rapid change to elevated water temperatures) encountered while passing dams via fish ladders can slow, reduce, or altogether stop the upstream movements of migrating salmon and steelhead (e.g., Caudill et al. 2013). Additional thermal loading occurs when mainstem reservoirs act as a heat trap due to upstream inputs and solar irradiation over their increased water surface area (EPA 2020a, 2020b, 2021). Consider the example of the adult sockeye salmon, both Upper Columbia and Snake River stocks, in 2015, when high summer water temperatures contributed to extremely high losses during passage through the mainstem Columbia and Snake River (Crozier et al. 2020), and through tributaries such as the Salmon and Okanogan rivers, below their spawning areas. Some stocks are already experiencing lethal thermal barriers during a portion of their adult migration. The effects of longer or more severe thermal barriers in the future could be catastrophic. For example, Bowerman et al. (2021) concluded that climate change will likely increase the factors contributing to pre-spawn mortality of Chinook salmon across the entire Columbia River basin.

Columbia River basin salmon and steelhead spend a significant portion of their life-cycle in the ocean, and as such the ocean is a critically important habitat influencing their abundance and productivity. Climate change is also altering marine environments used by Columbia River basin salmon and steelhead. This includes increased frequency and magnitude of marine heatwaves, changes to the intensity and timing of coastal upwelling, increased frequency of hypoxia (low oxygen) events, and ocean acidification. These factors are already reducing, and are expected to continue reducing, ocean productivity for salmon and steelhead. This does not mean the ocean is

getting worse every year, or that there will not be periods of good ocean conditions for salmon and steelhead. In fact, near-shore conditions off the Oregon and Washington coasts were considered good in 2021 (NOAA 2022). However, the magnitude, frequency, and duration of downturns in marine conditions are expected to increase over time due to climate change. Any long-term effects of the stressors that fish experience during freshwater stages that do not manifest until the marine environment will be amplified by the less-hospitable conditions there due to climate change. Together with increased variation in freshwater conditions, these downturns will further impair the abundance, productivity, spatial structure, and diversity of the region's native salmon and steelhead stocks (ISAB 2007, Isaak et al. 2018). As such, these climate dynamics will reduce fish survival through direct and indirect impacts at all life stages (NOAA 2022).

All habitats used by Pacific salmon and steelhead will be affected by climate dynamics. However, the impacts and certainty of the changes will likely vary by habitat type. Some changes affect salmon at all life stages in all habitats (e.g., increasing temperature), while others are habitat-specific (e.g., stream flow variation in freshwater, sea level rise in estuaries, upwelling in the ocean). How climate change will affect each individual salmon or steelhead stock also varies widely, depending on the extent and rate of change and the unique life-history characteristics of different natural populations (Crozier et al. 2008). The continued persistence of salmon and steelhead in the Columbia basin relies on restoration actions that improve climate resilience (Jorgensen et al. 2021) in freshwater spawning, rearing, and migratory habitats, including access to high elevation, high quality cold-water habitats, and the reconnection of floodplain habitats across the interior Columbia River basin.

2.3. Action Area

“Action area” means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02).

The action area includes all uplands, riparian areas, and both upstream and downstream areas affected by the proposed livestock grazing encompassed by the 28 allotments on the MNF covered by this consultation. MCR steelhead and their CH occur throughout the action area. All CH in the action area are presumed to contain and be occupied by MCR steelhead. The BAs did not identify any other stream reaches that were occupied by MCR steelhead that are not currently designated as CH. The effects of livestock grazing to ESA-listed species and CH are mostly localized impacts to riparian and aquatic areas; hence, the action area is contained within the NFS lands of the 28 allotments subject to this consultation. Table 6 in the Proposed Action section identifies all rivers and streams containing ESA-listed species and CH, including identifying the miles of CH within the action area.

The MNF consists of 1.7 million acres (m-ac) within its planning area, of which 91 percent (1.551 m-ac) is assigned active allotment management. There is approximately 1.229 m-ac (or 83 percent) of MNF lands suitable for grazing within active livestock grazing allotments. This consultation addresses a subset of the allotments identified for MNF that are identified within the range of MCR steelhead. The southeastern portion of the MNF lies outside of the range of

anadromous salmonids, that being all of the Emigrant Ranger District, and an estimated half of the Prairie City Ranger District within the Malheur River and Burnt River subbasins.

Figure 1 provides an overview of the 28 MNF allotments associated with this consultation and their juxtaposition to the MCR steelhead populations. Figure 2 includes the action areas containing the proposed action allotments that contains the Upper John Day River (UJDR) and the South Fork John Day River (SFJDR) steelhead population and their associated CH. Figure 22 (see below) includes the action areas containing allotments that contain the MFJDR steelhead populations and their associated CH. Figure 32 (see below) includes the action areas containing allotments that contain the North Fork John Day River (NFJDR) steelhead populations and their CH. The remaining Figures 3-32 contain allotment specific maps that display all pastures, uplands, riparian areas and streams where livestock grazing is proposed within the action area.

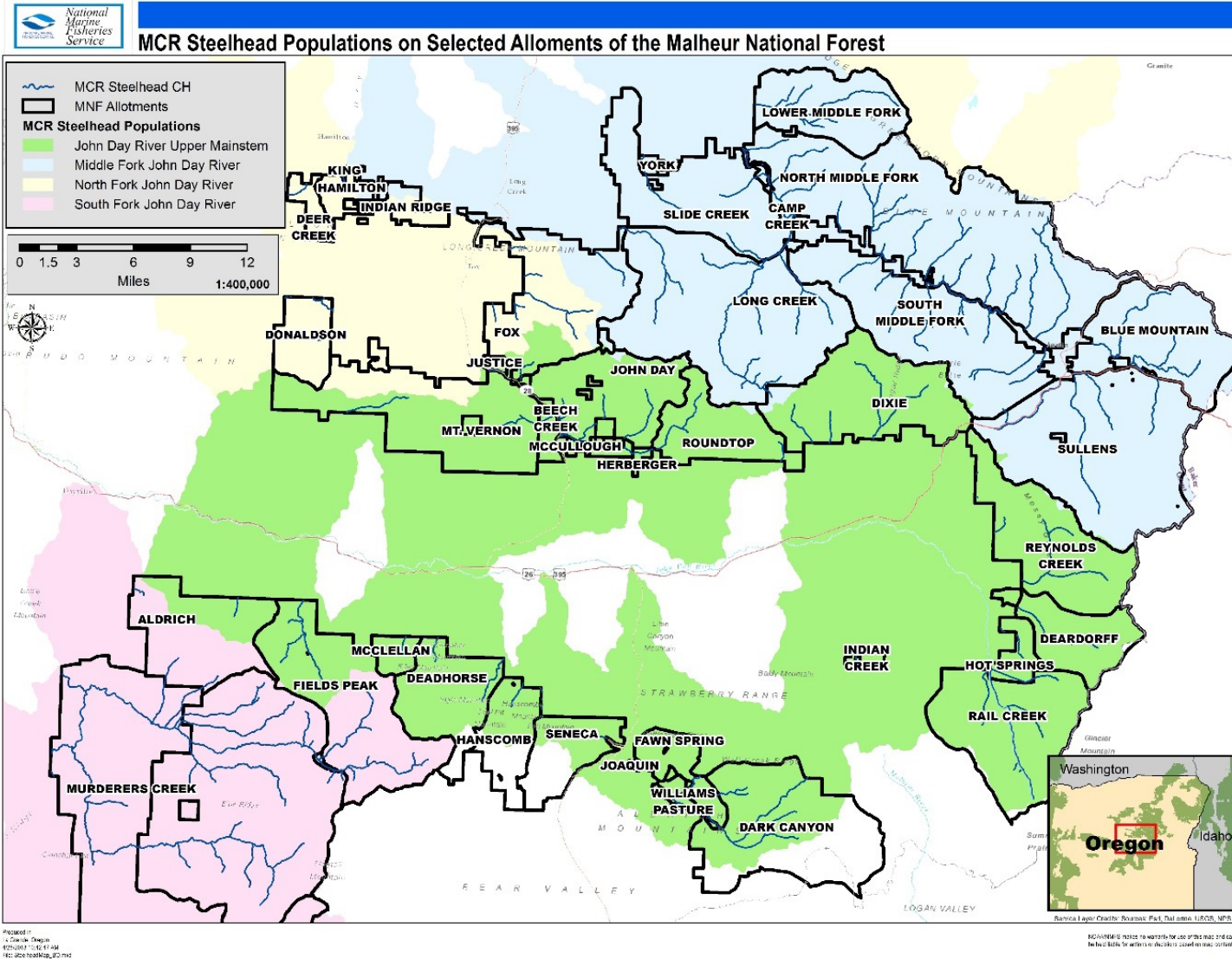


Figure 1. The Malheur National Forest and Grazing Allotments Overlaid on the Middle Columbia River Steelhead Population

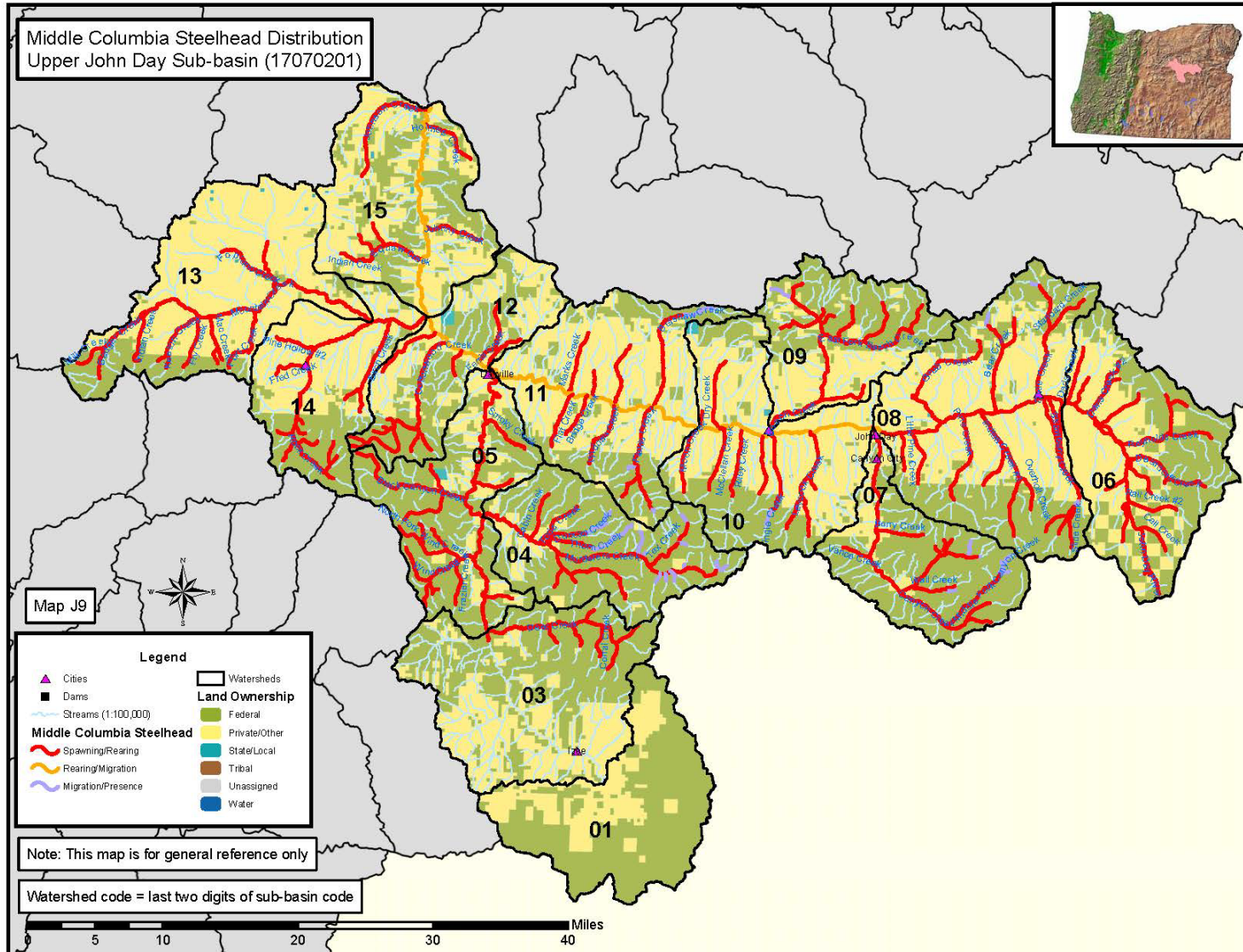


Figure 2. Upper John Day River and South Fork John Day River Populations of Middle Columbia River Steelhead with Designated Critical Habitat.

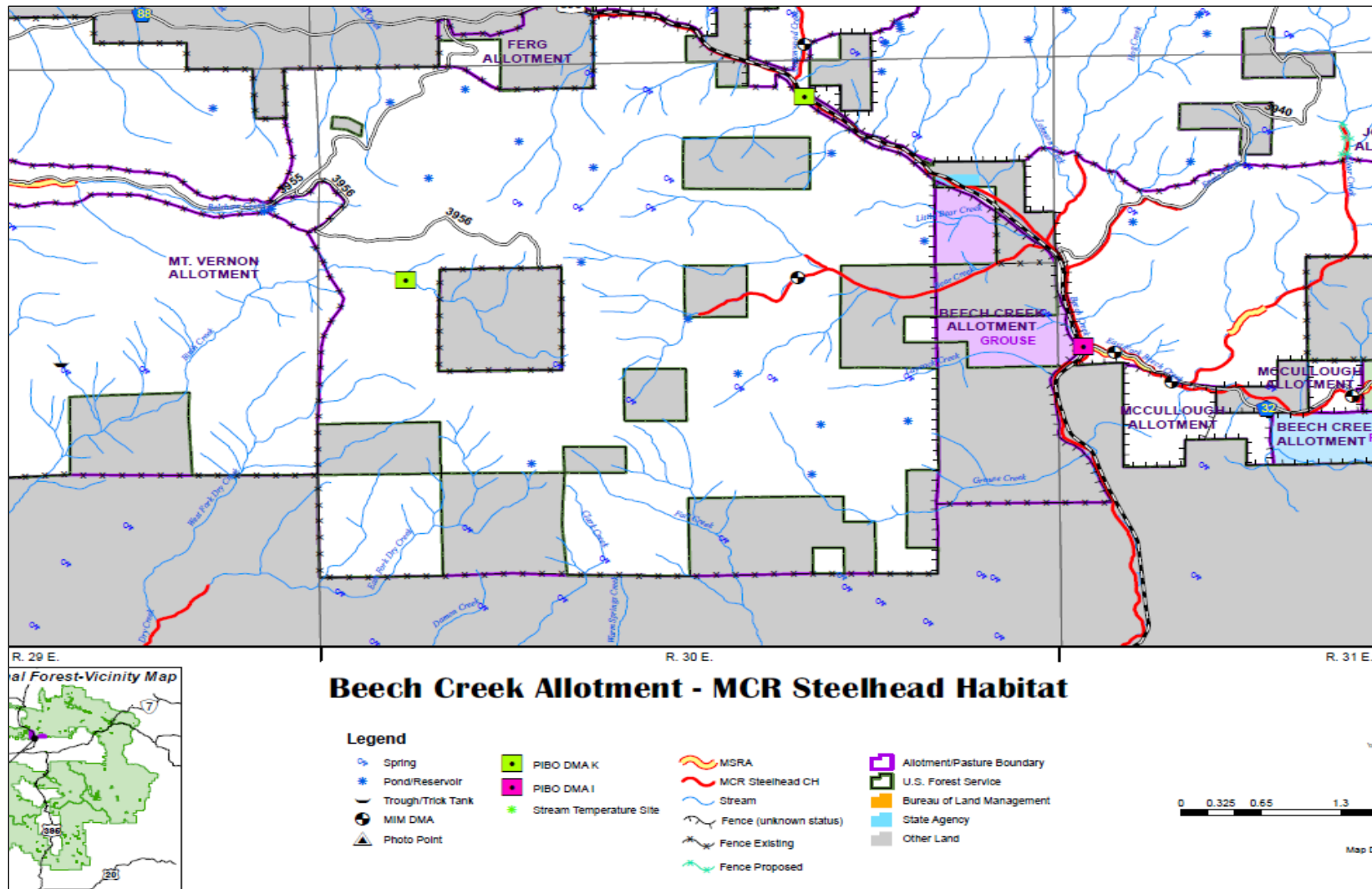


Figure 3. Beech Creek Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

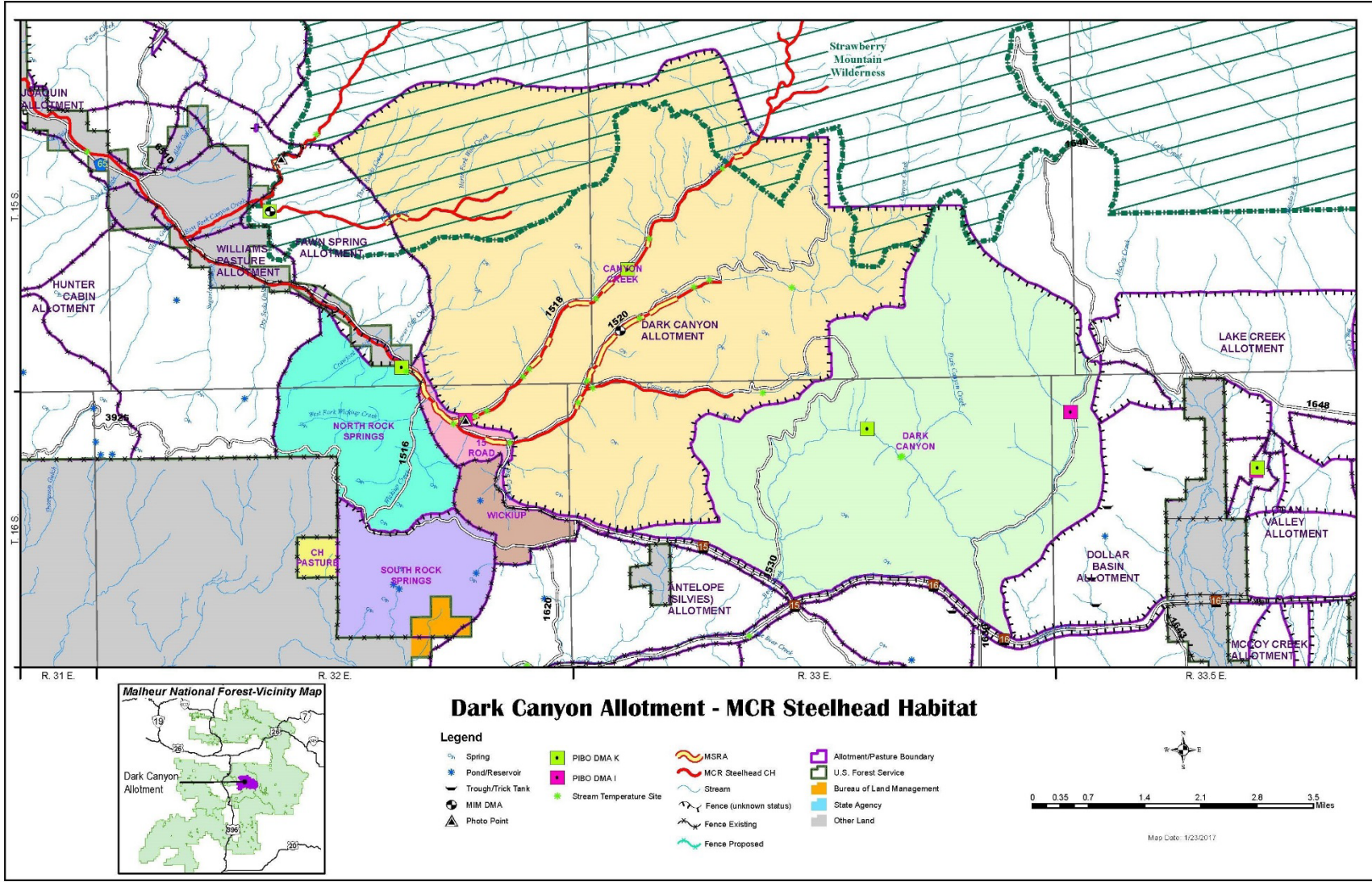


Figure 4. Dark Canyon Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

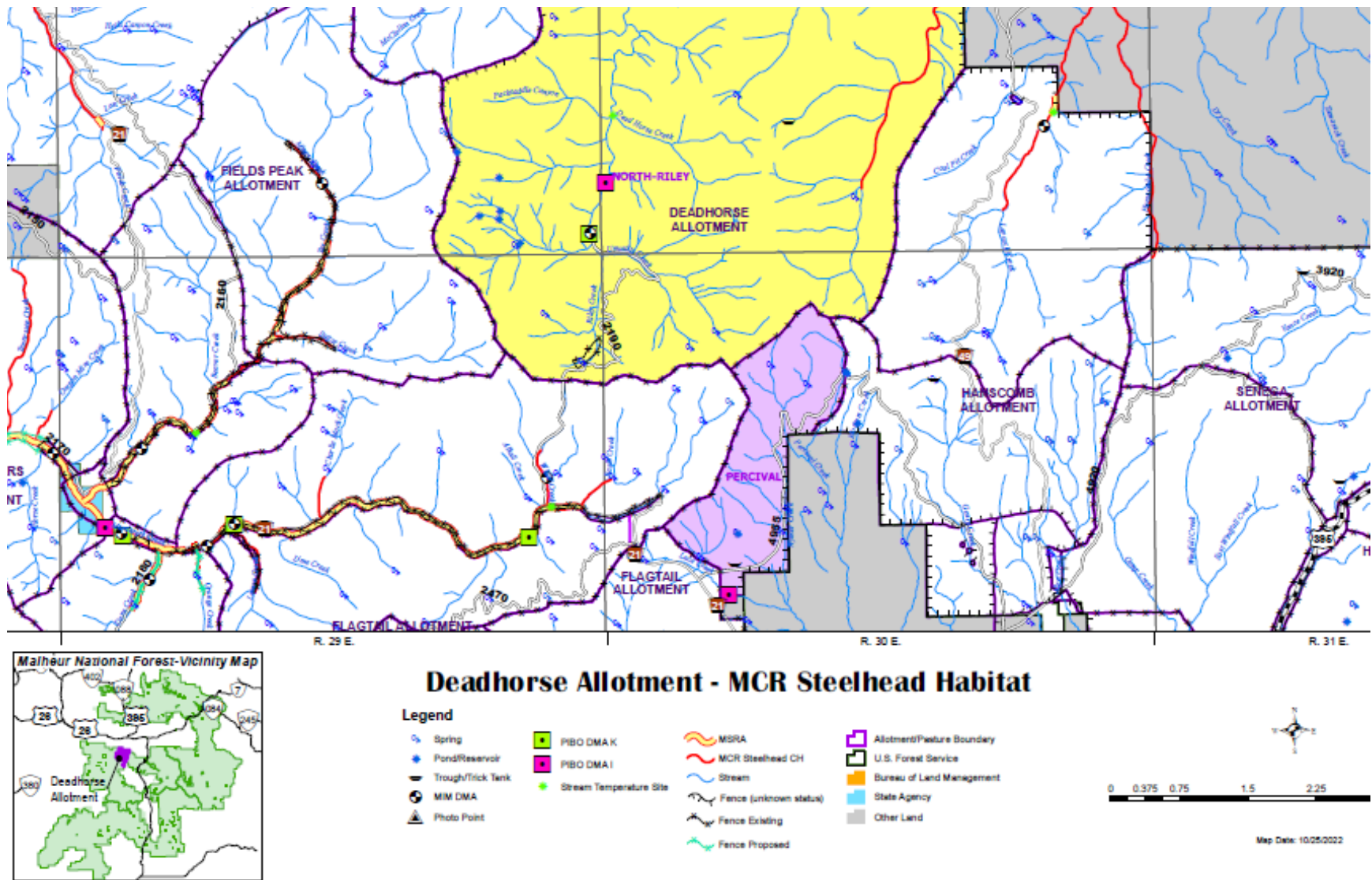


Figure 5. Deadhorse Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

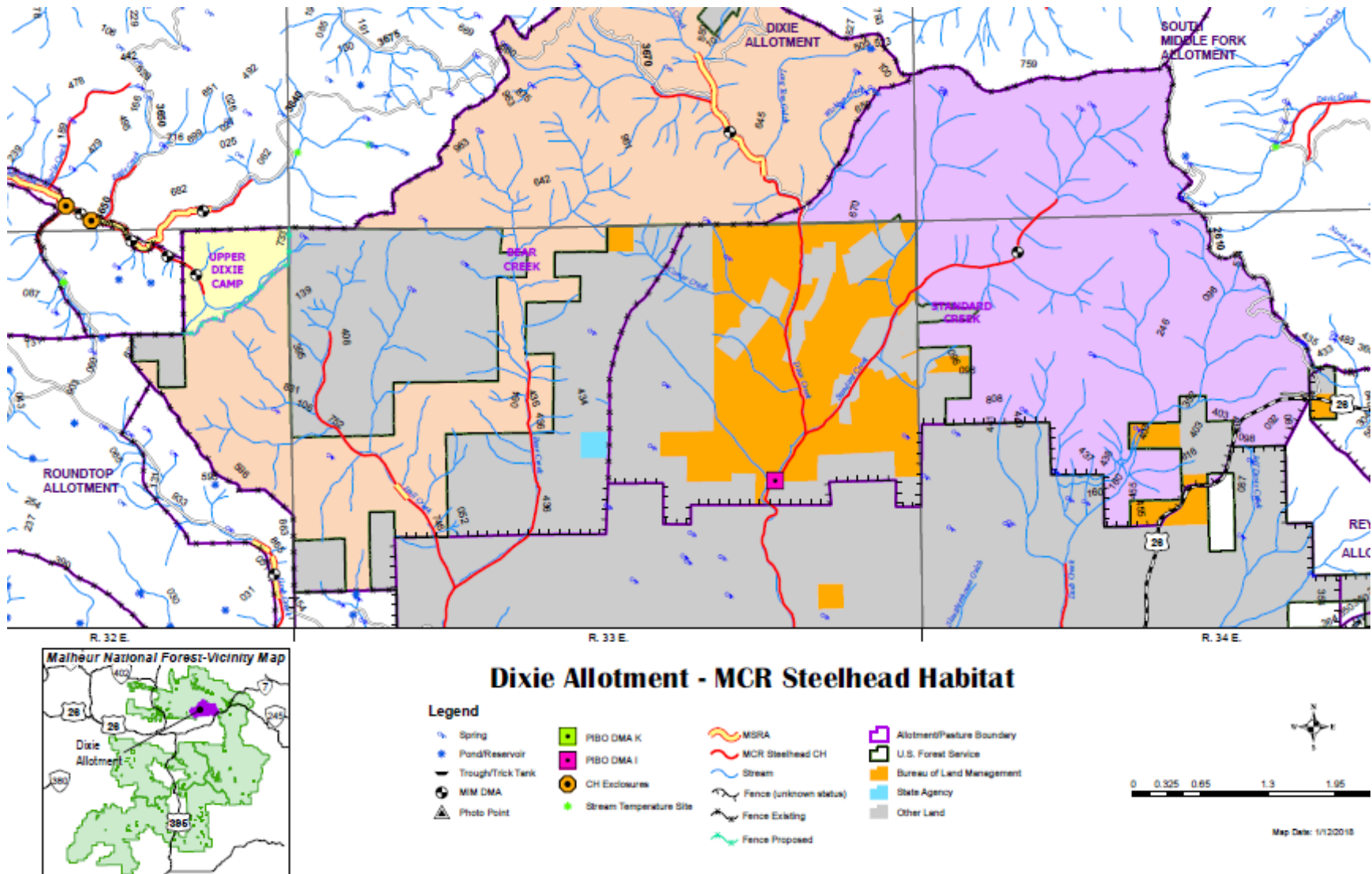


Figure 6. Dixie Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

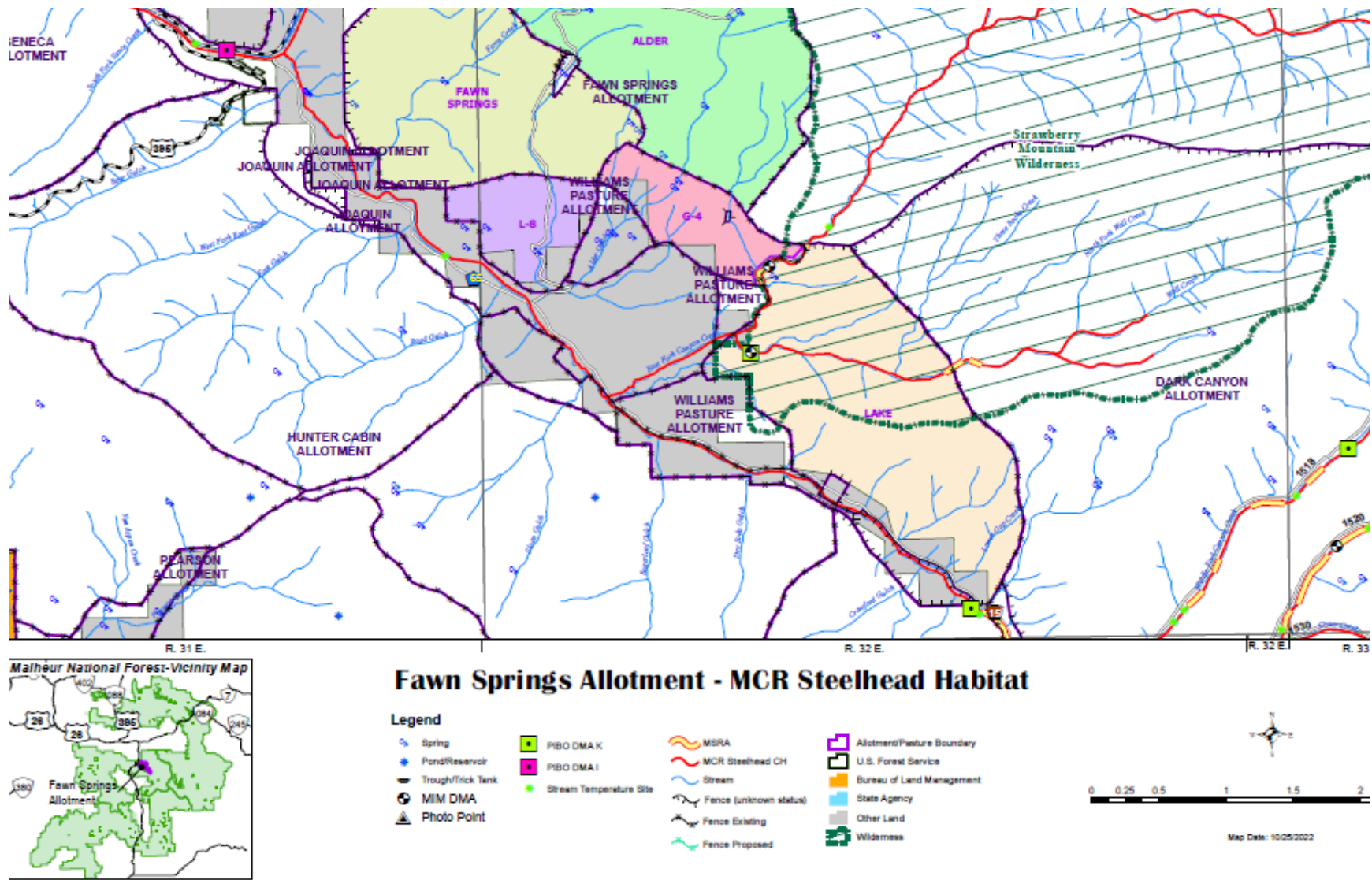


Figure 7. Fawn Springs Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

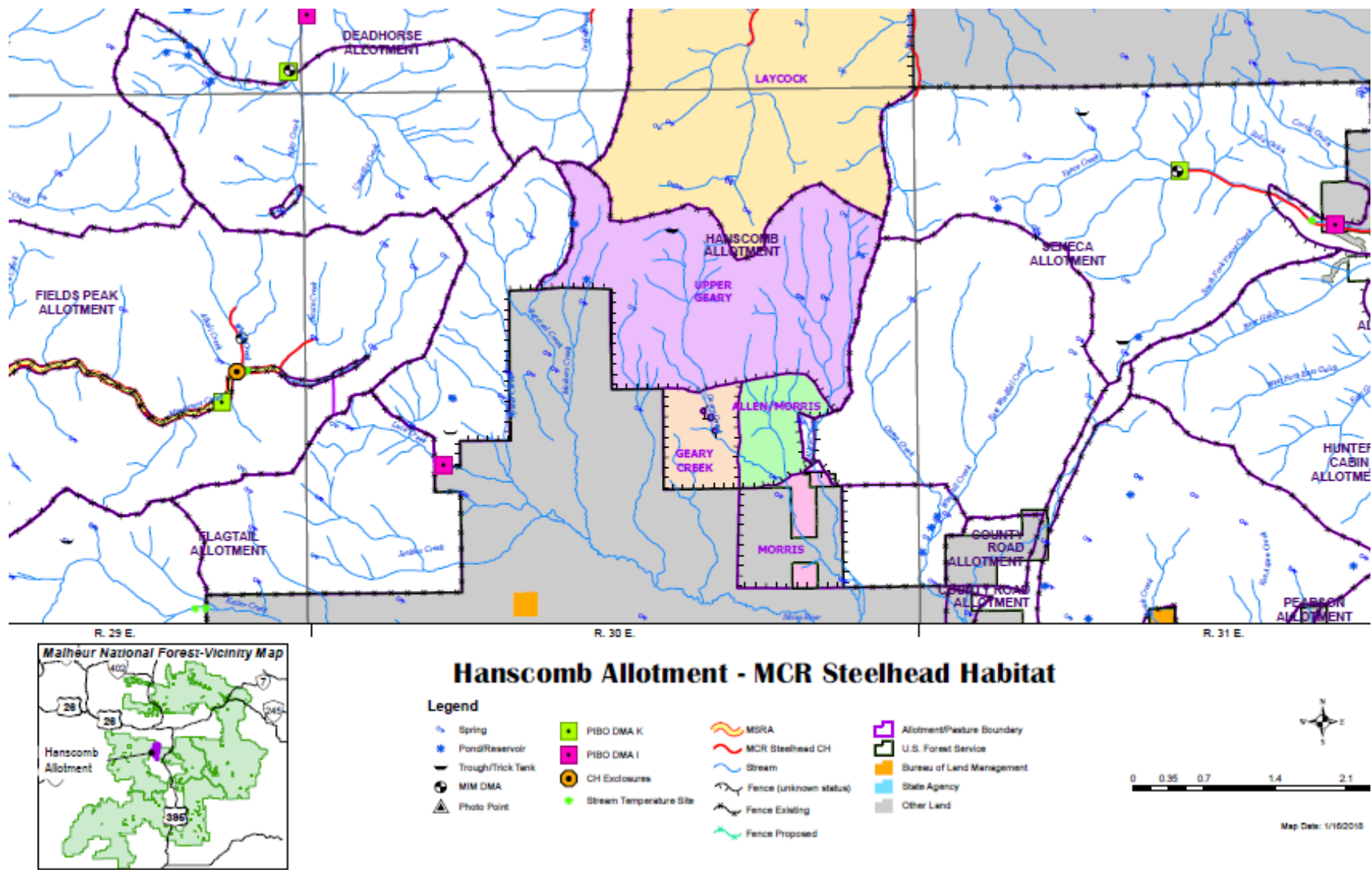


Figure 8. Hanscomb Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

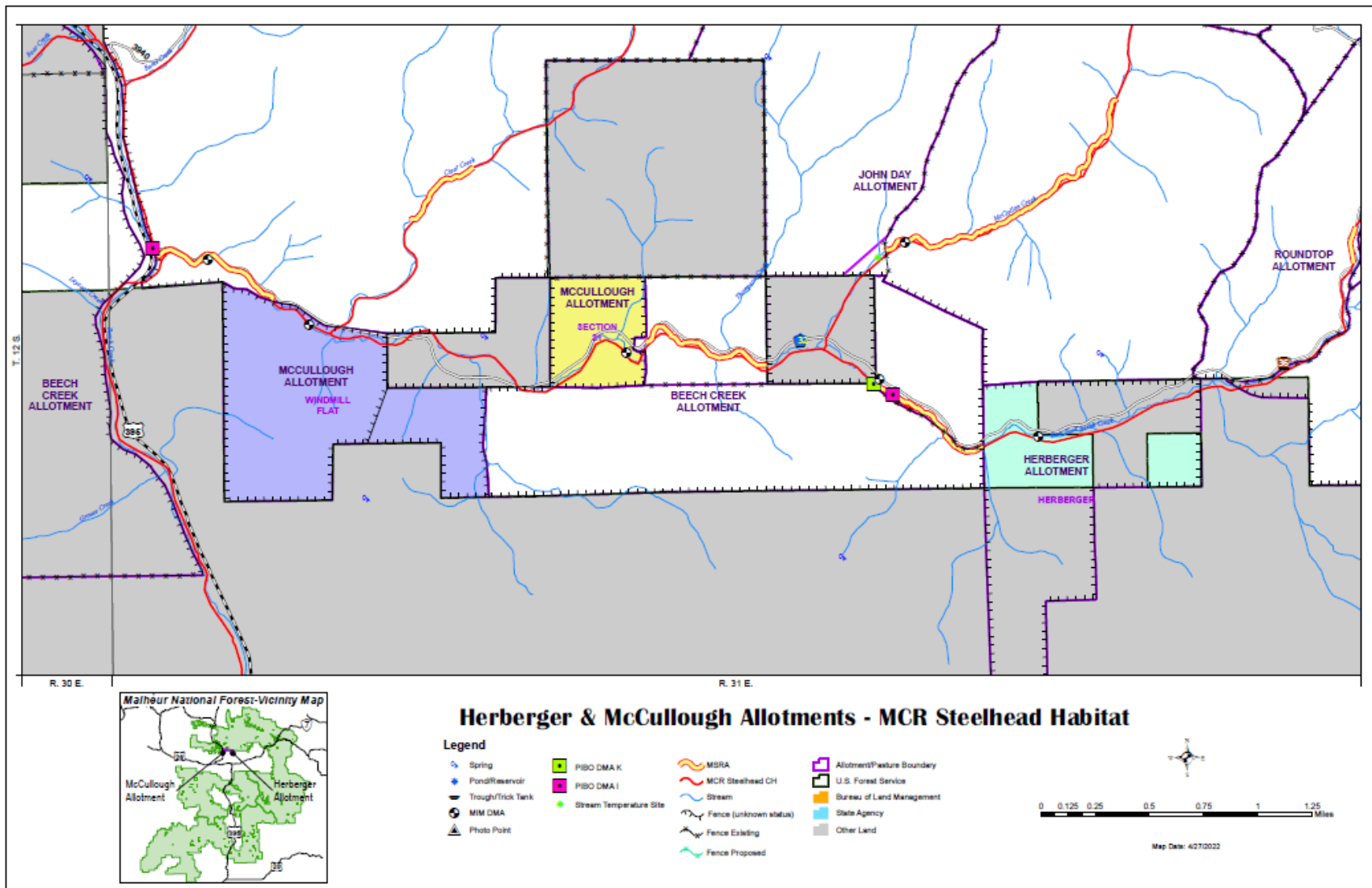


Figure 9. Herberger Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

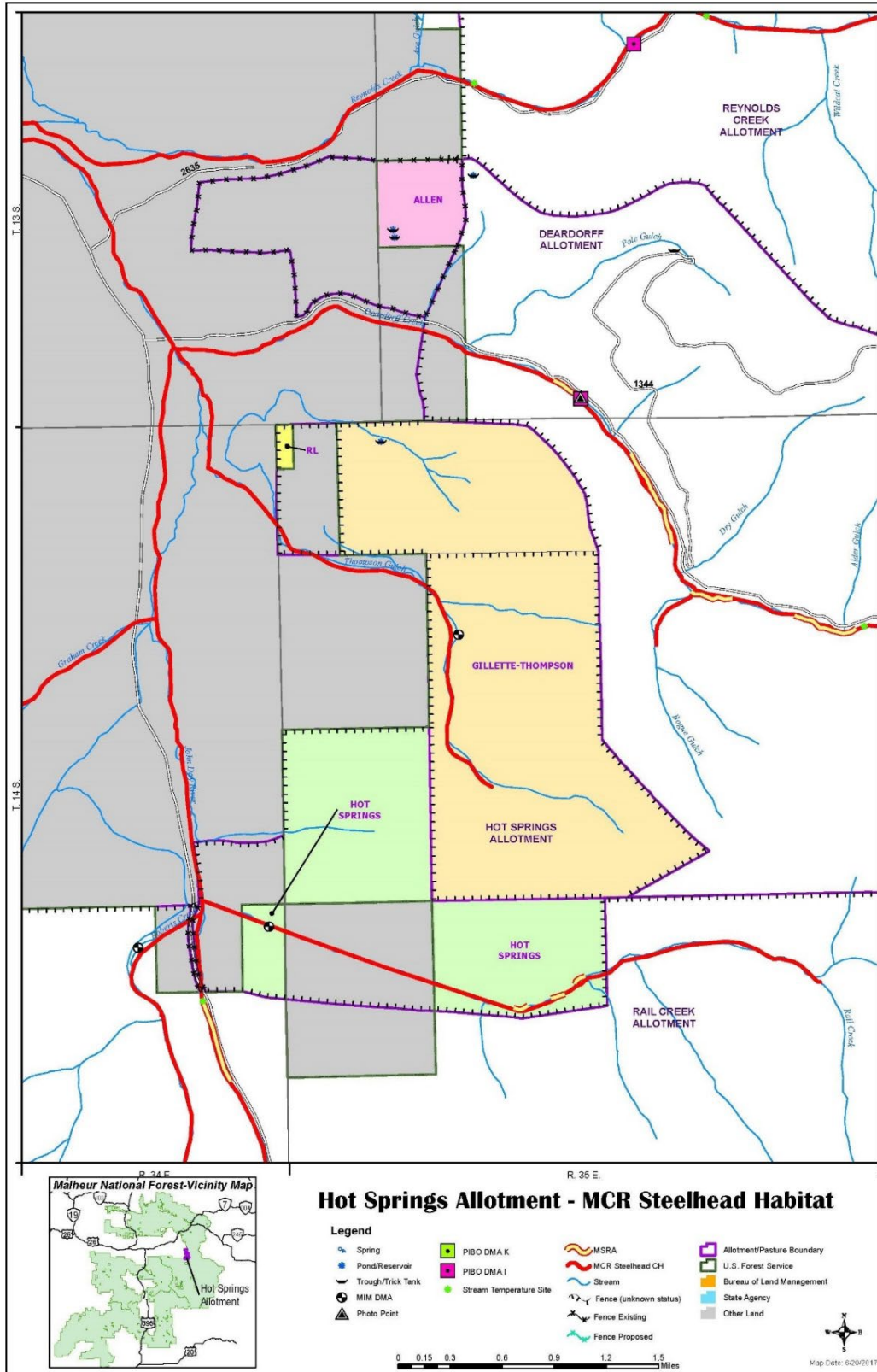


Figure 10. Hot Springs Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

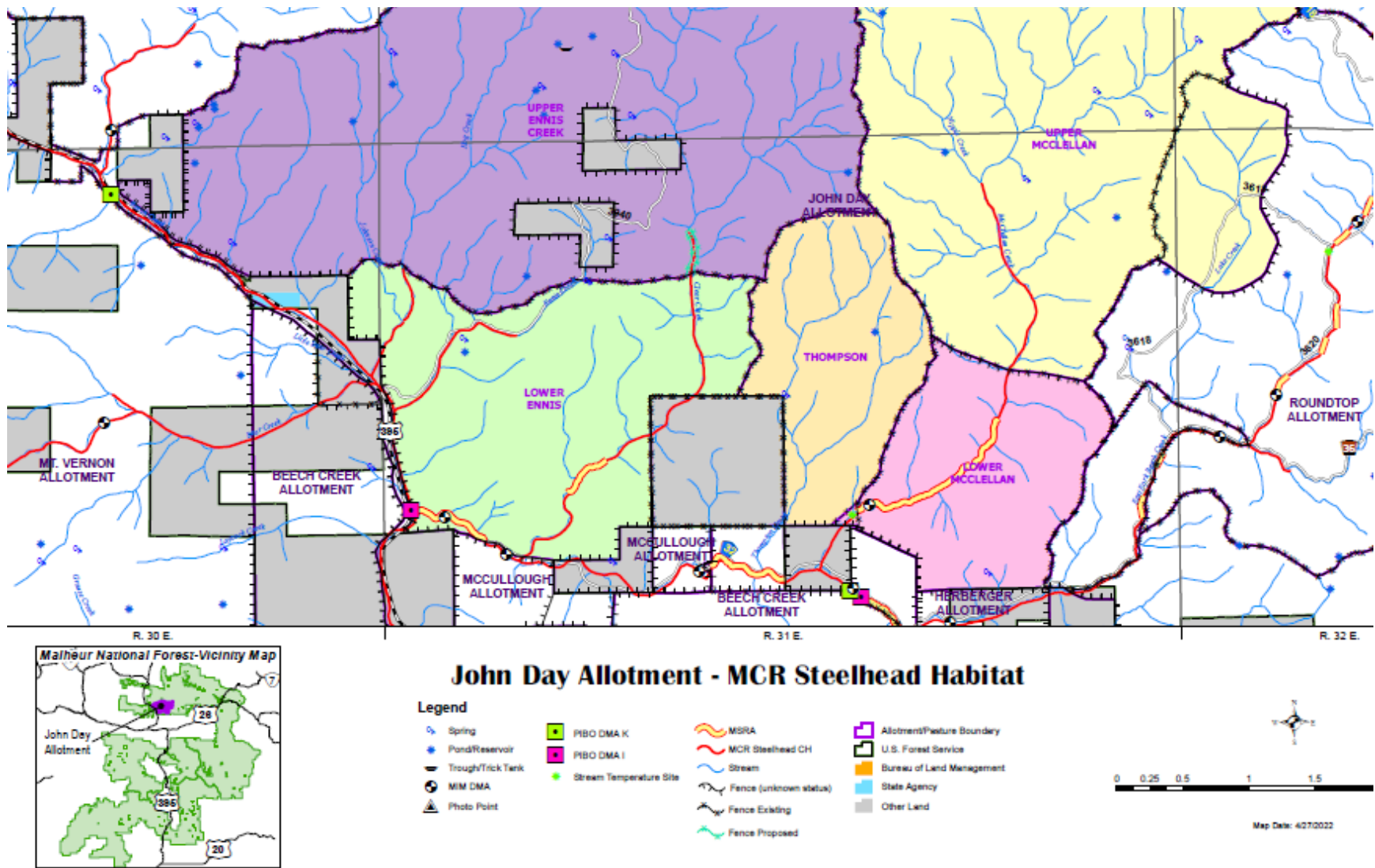


Figure 11. John Day Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

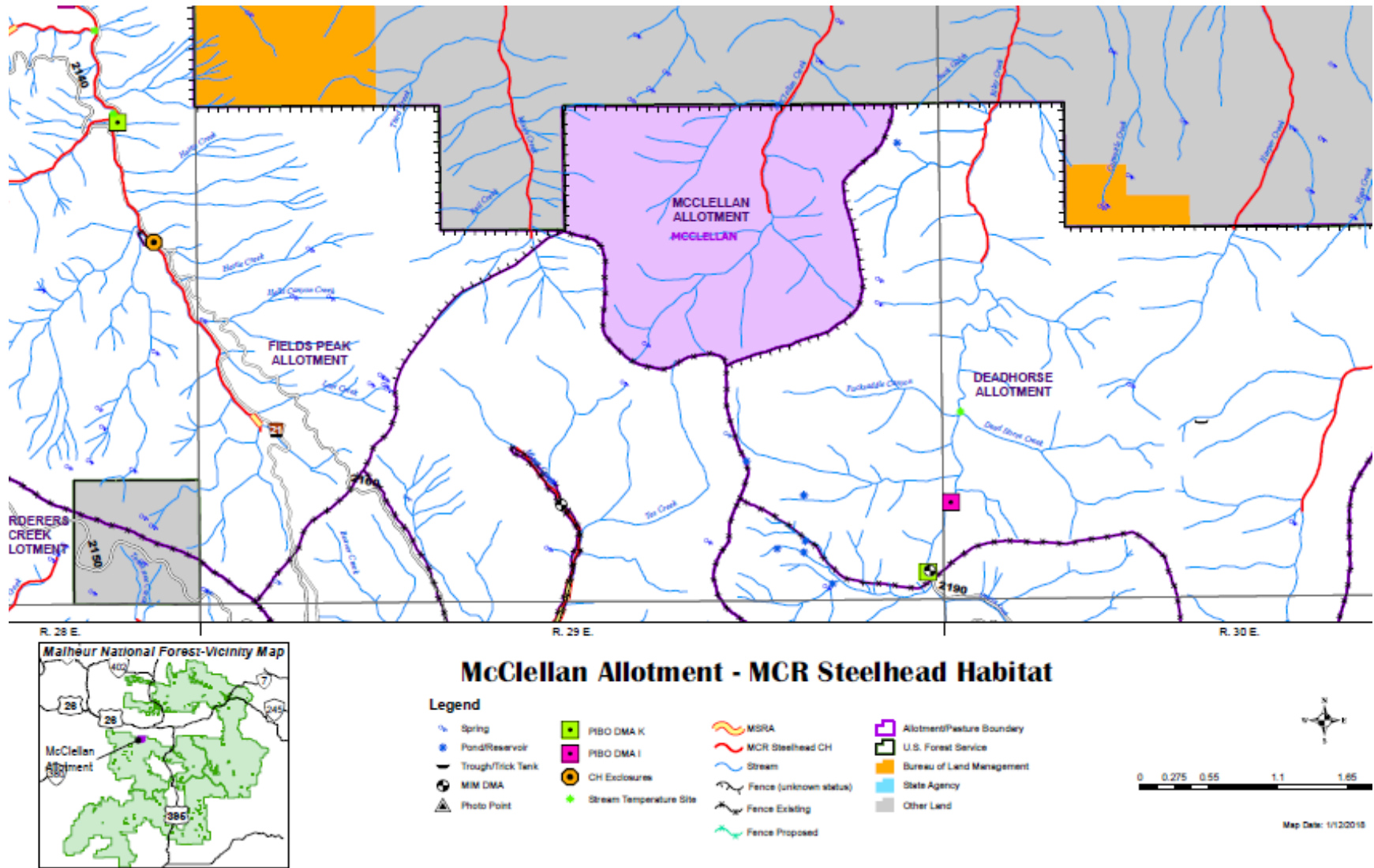


Figure 12. McClellan Livestock Grazing Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

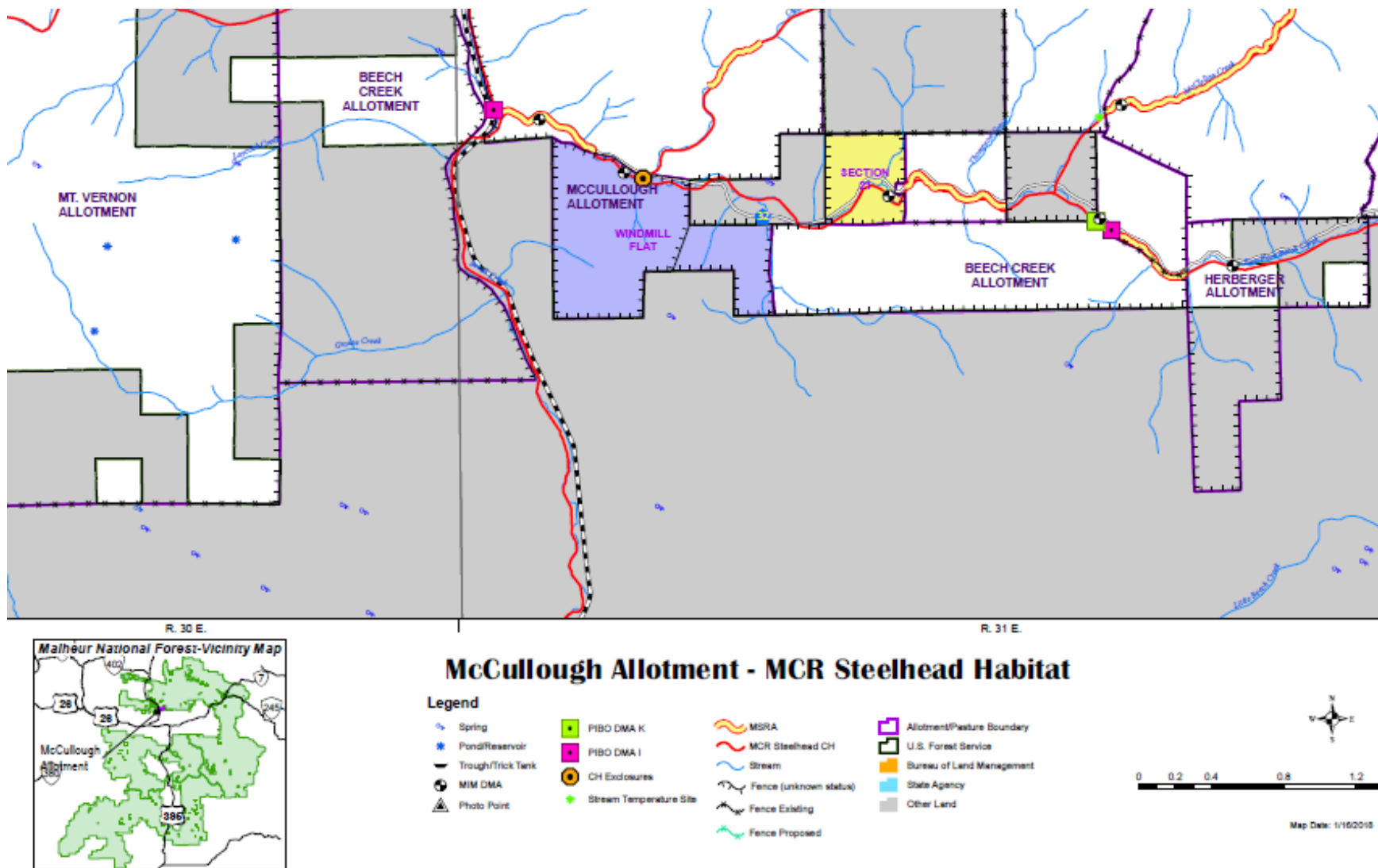


Figure 13. McCullough Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

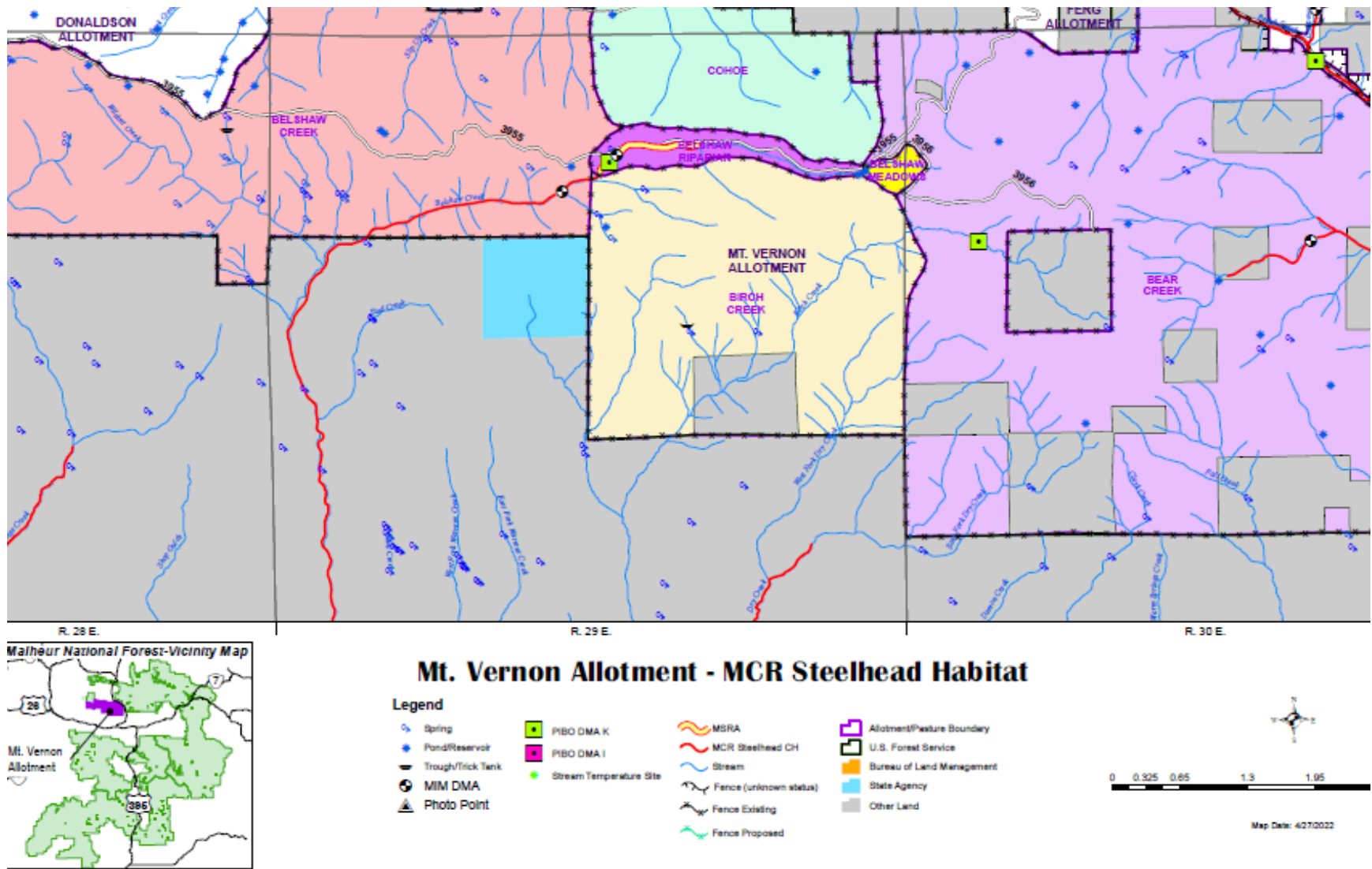


Figure 14. Mt. Vernon Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

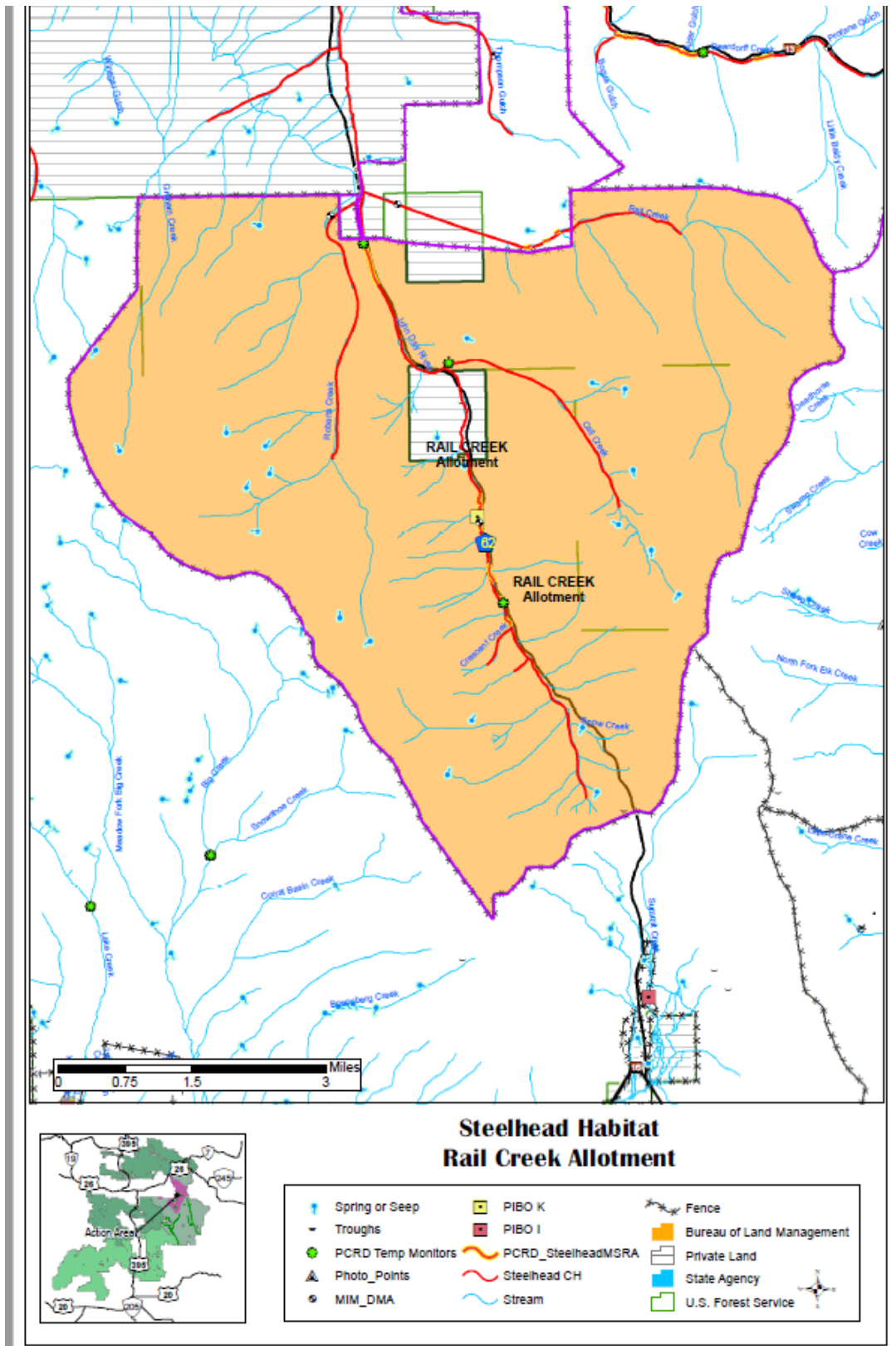


Figure 15. Rail Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

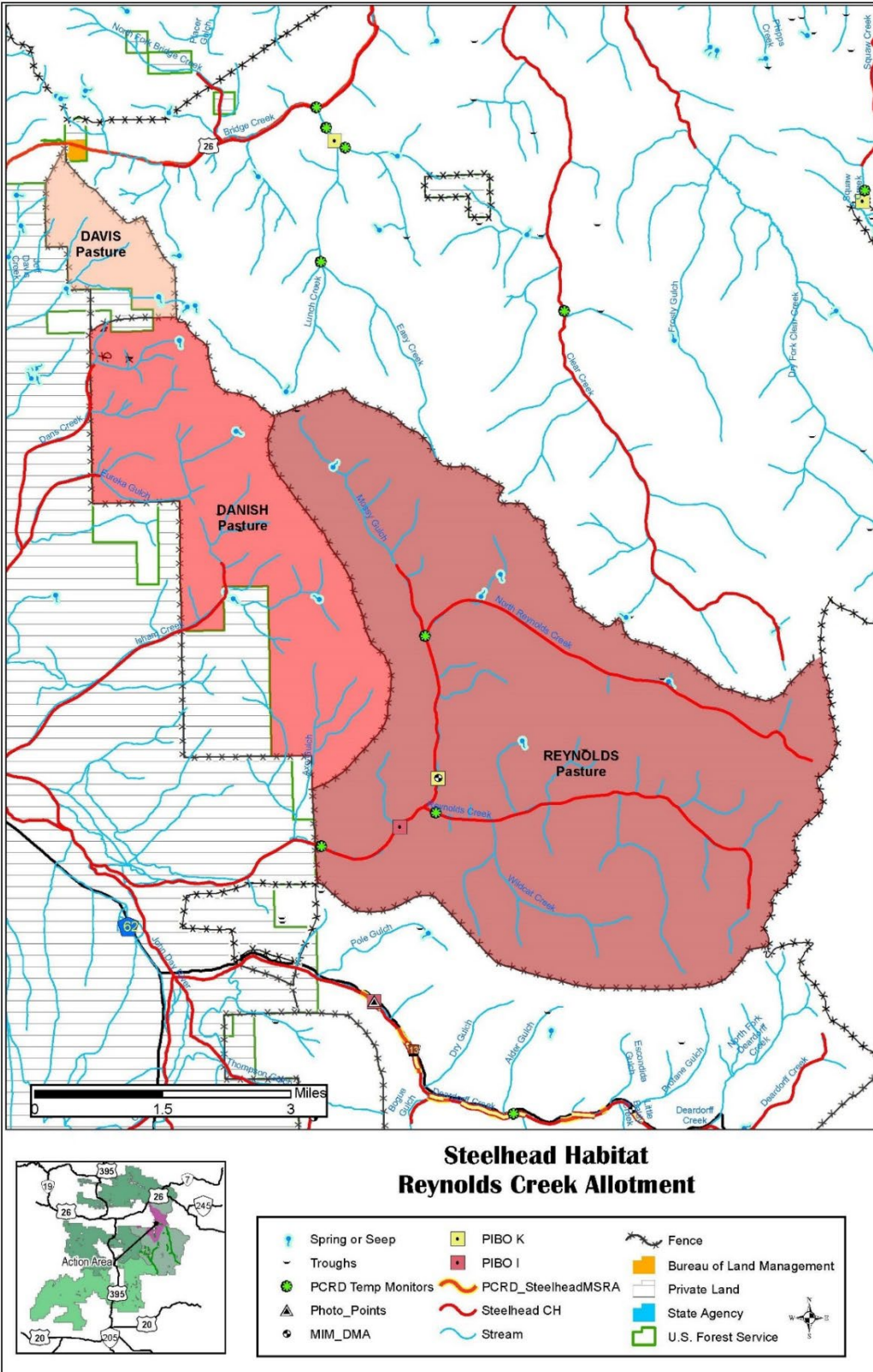


Figure 16. Reynolds Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

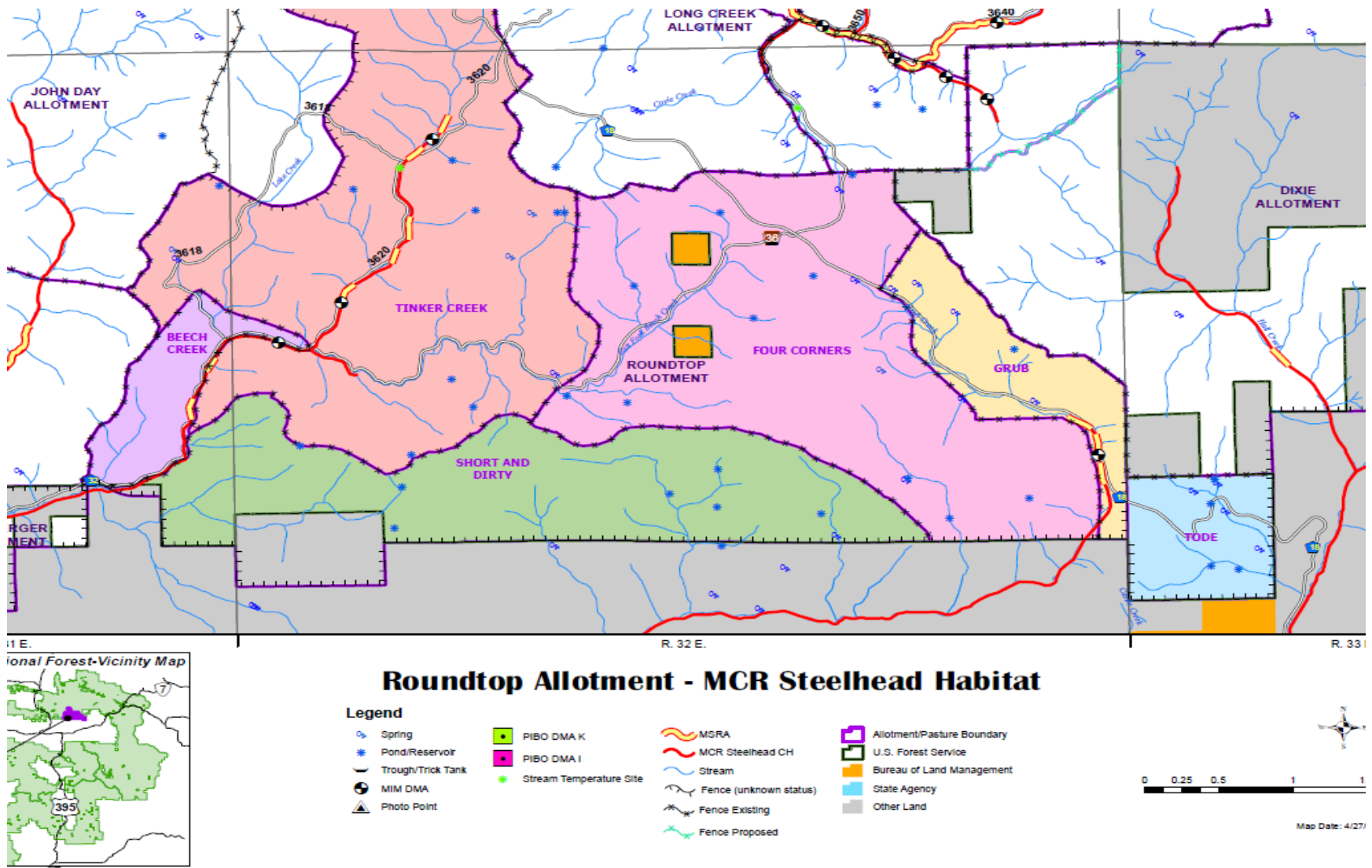


Figure 17. Roundtop Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

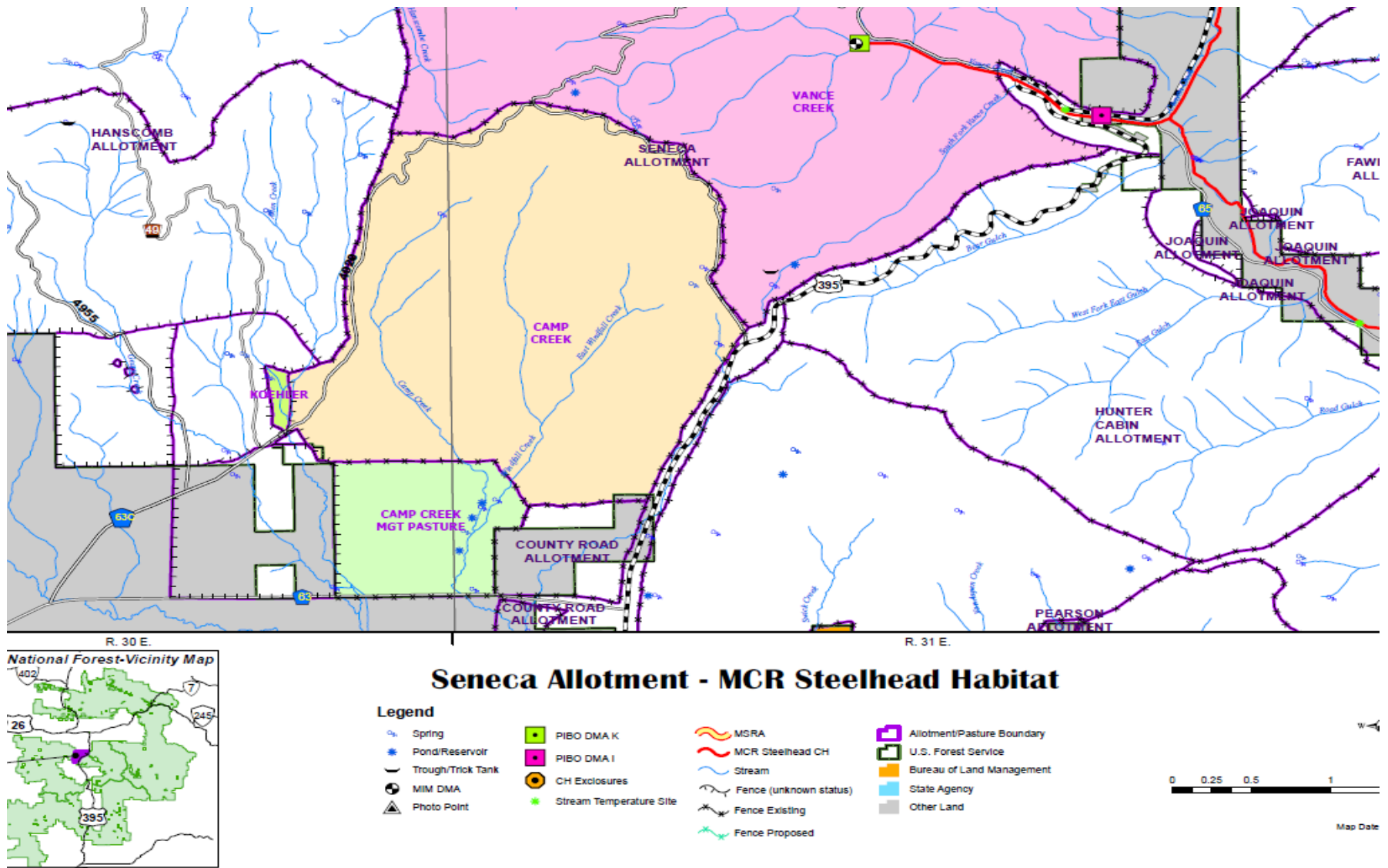


Figure 18. Seneca Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

Figures 19–21 present individual maps of each allotment with pastures, designated CH and identified MSRA displayed, for those allotments found either entirely or are mostly located within the SFJDR population. Action area includes all upland, riparian areas and streams affected from livestock grazing.

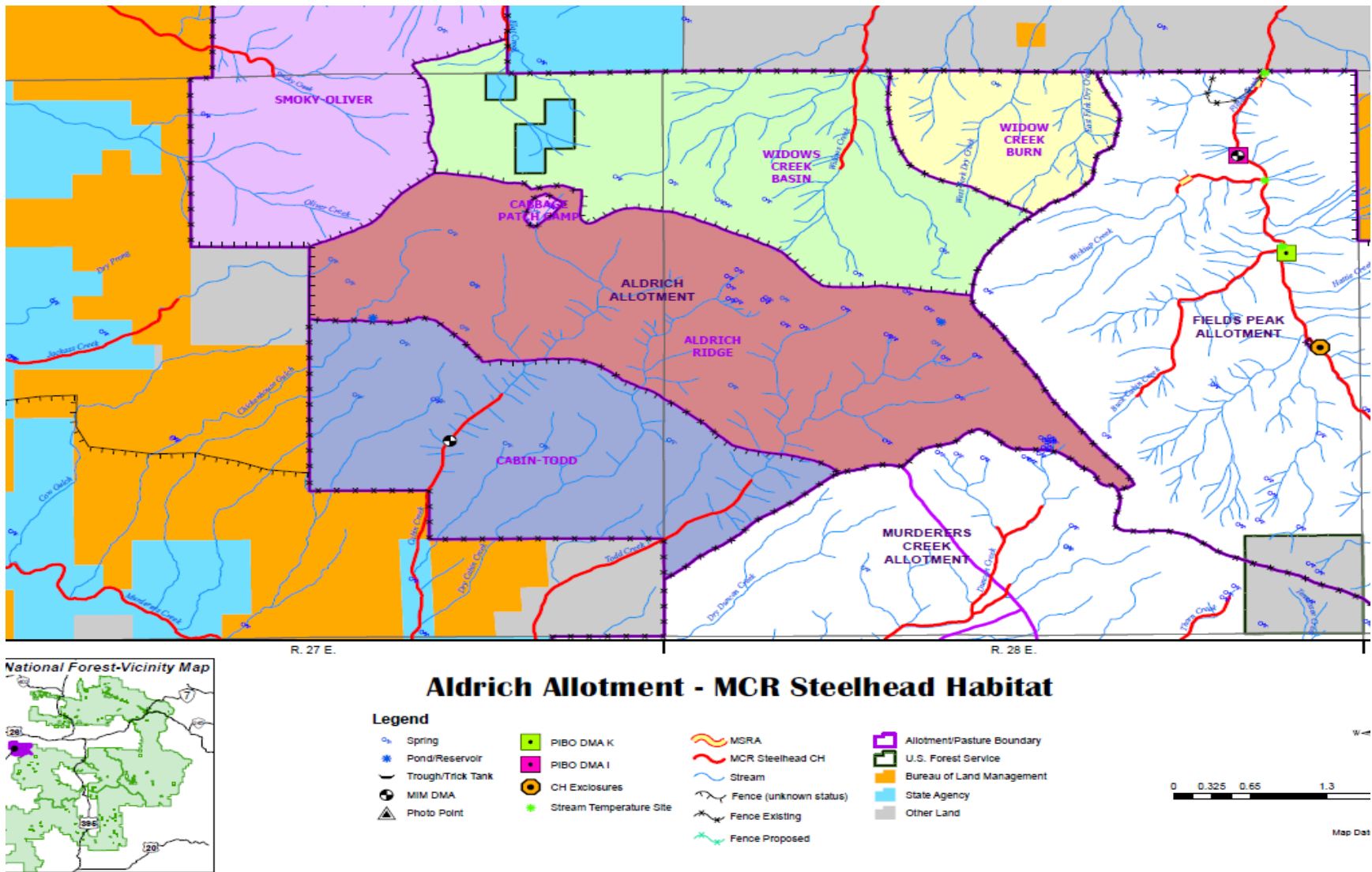


Figure 19. Aldrich Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

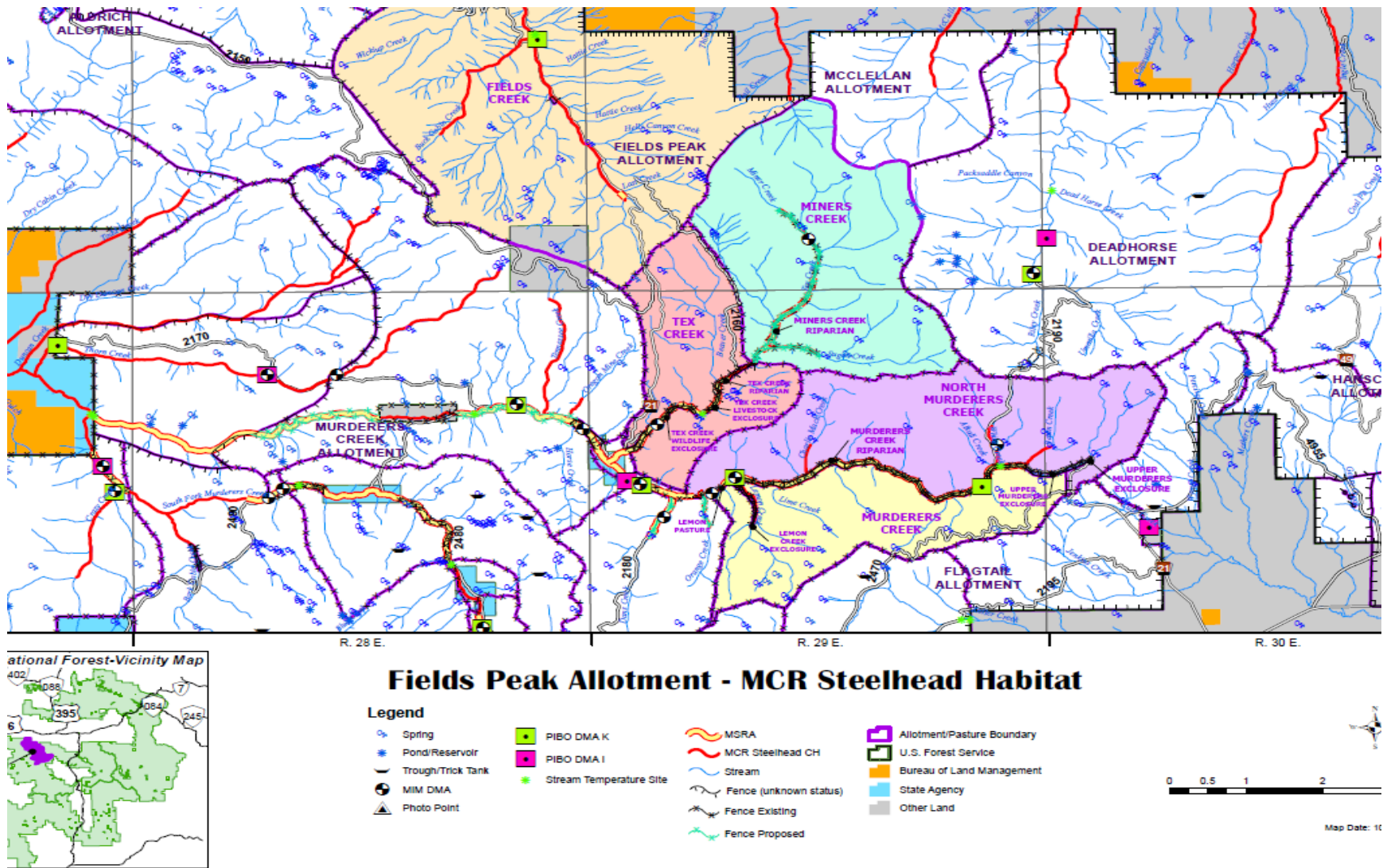


Figure 20. Fields Peak Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

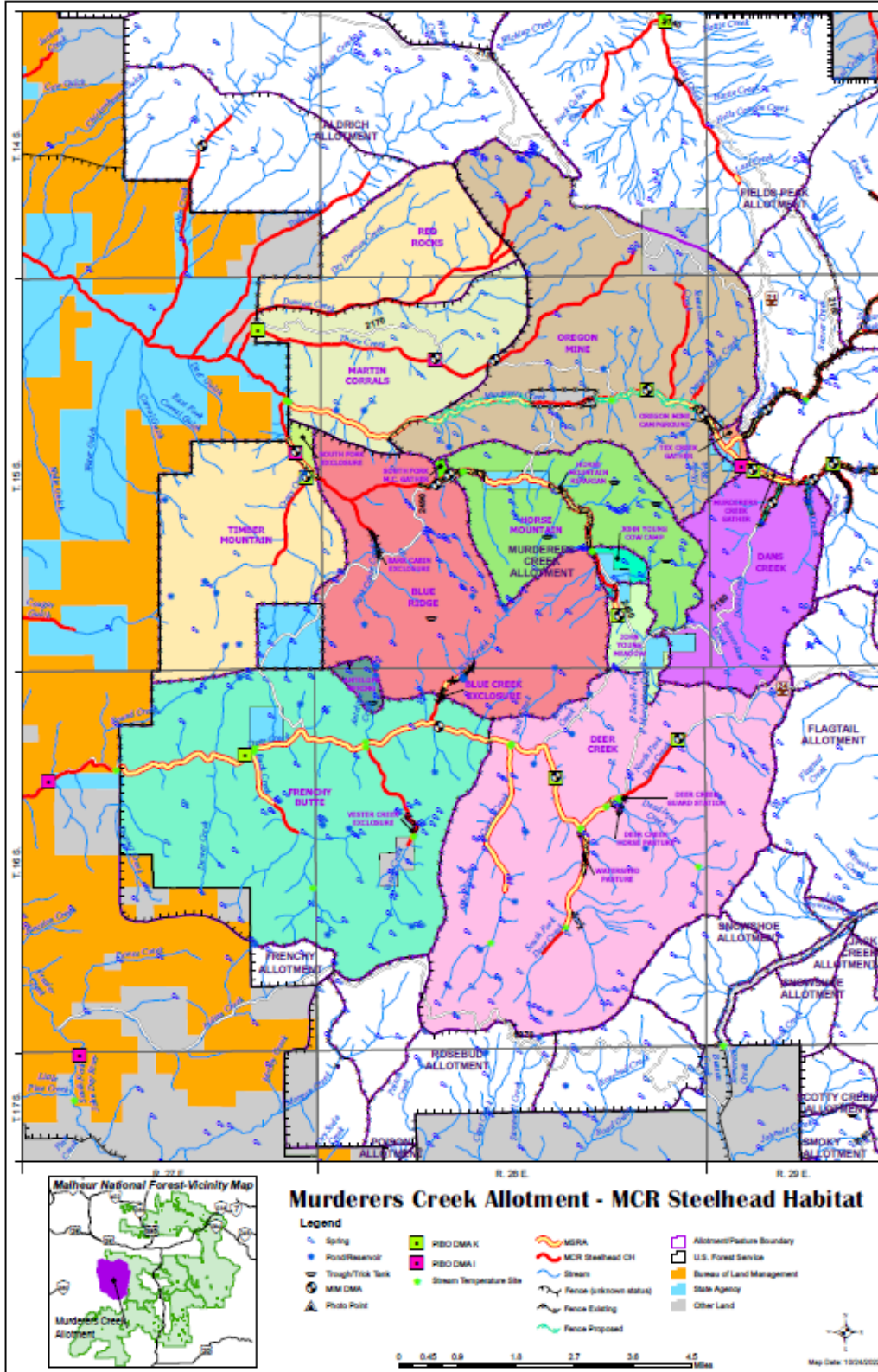


Figure 21. Murderers Creek Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

Figure 22 displays the MFJDR steelhead population with associated CH. Figures 23–29 present individual maps of each allotment with pastures, designated CH and identified MSRA displayed, for those allotments found either entirely or are mostly located within the MFJDR population.

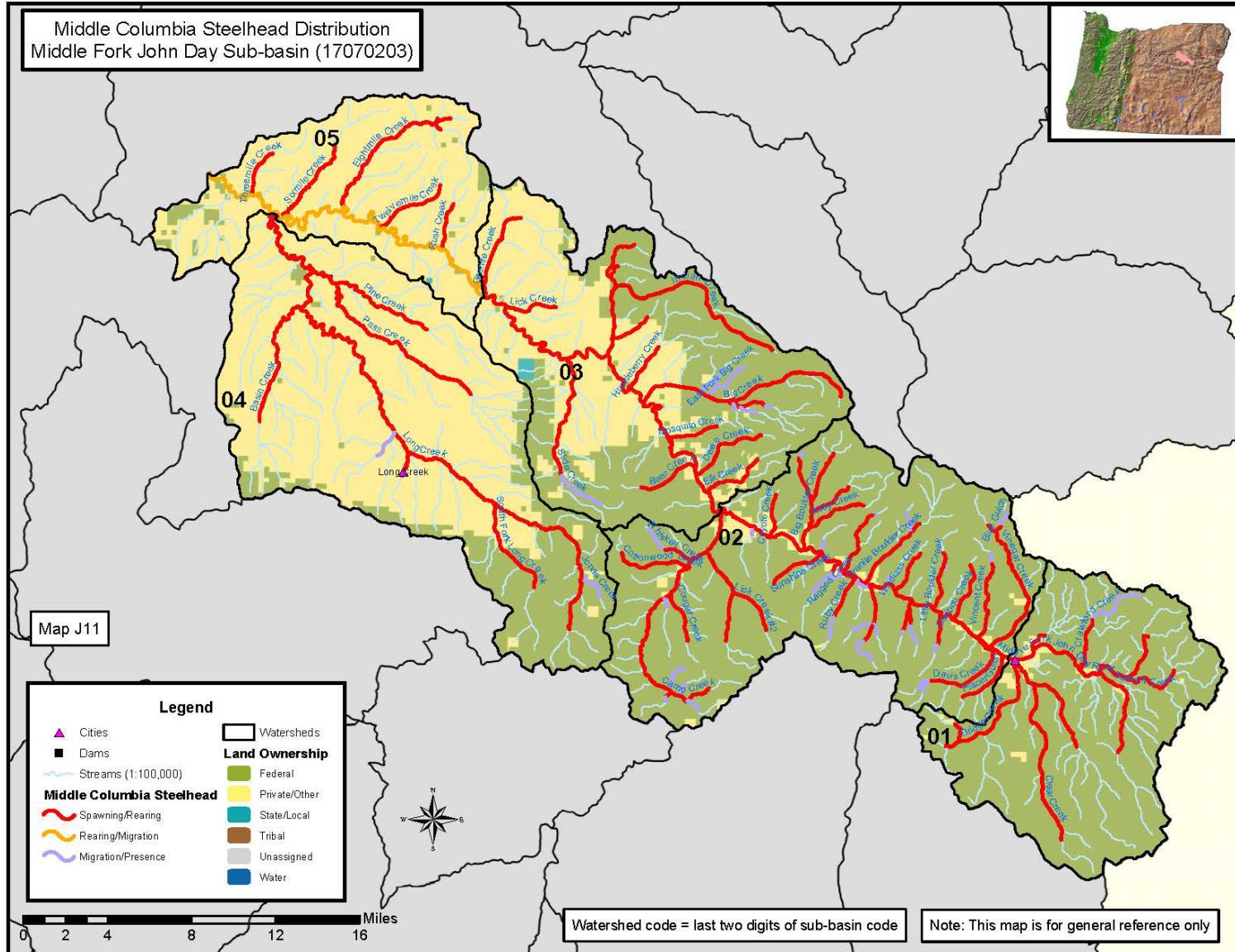


Figure 22. Middle Fork John Day River Population of Middle Columbia River Steelhead with Designated Critical Habitat.

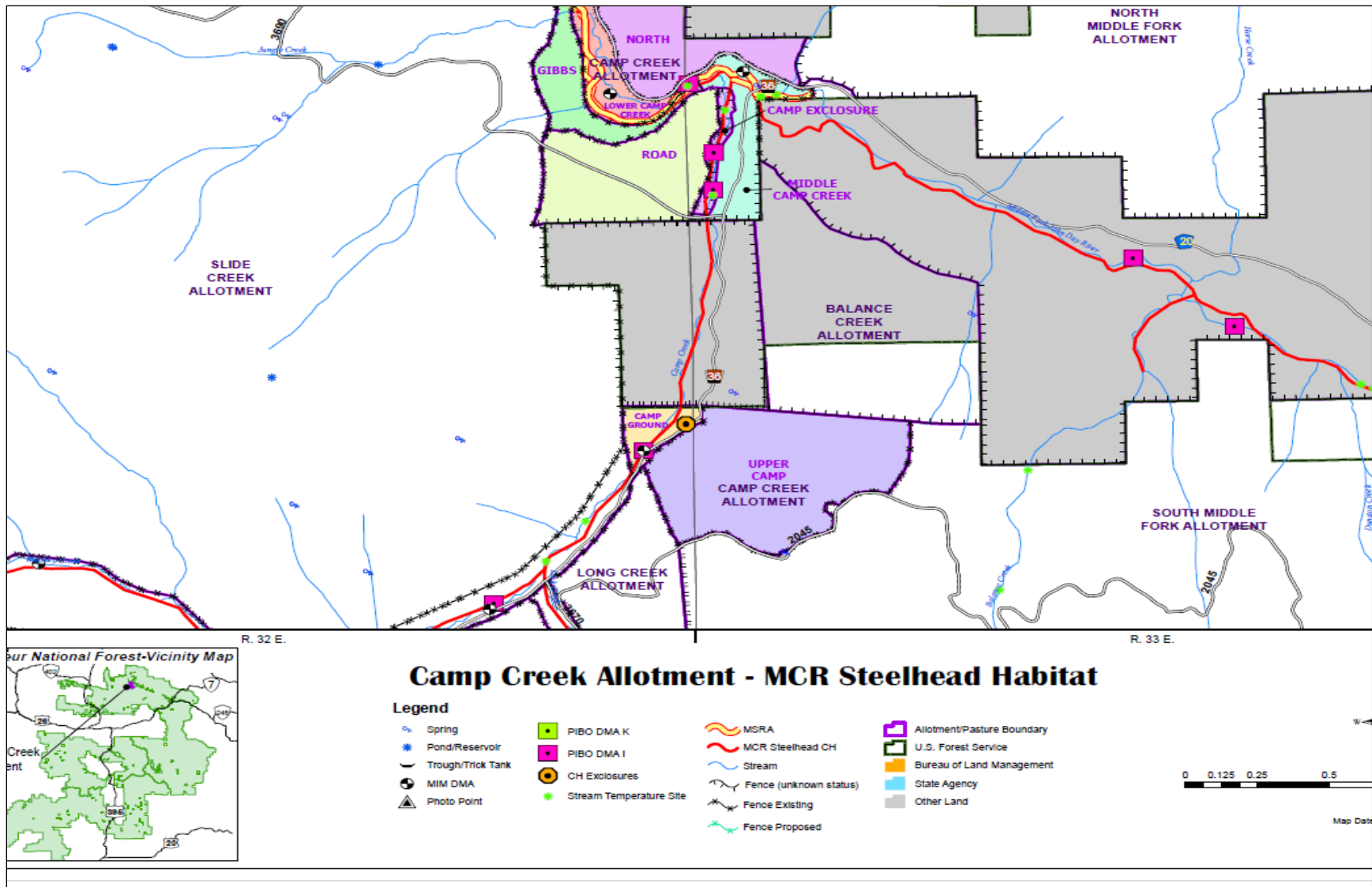


Figure 23. Camp Creek Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

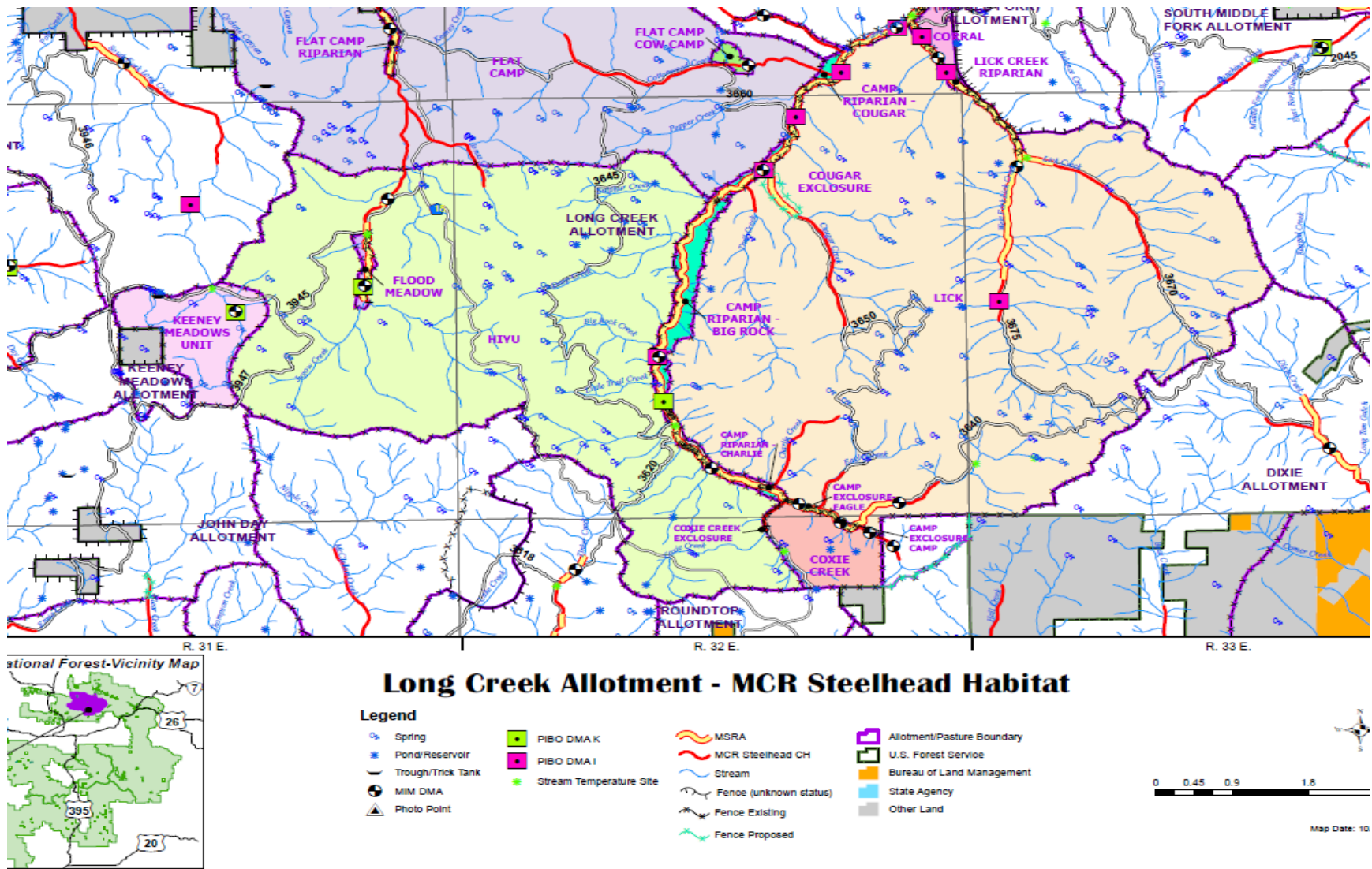


Figure 24. Long Creek Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

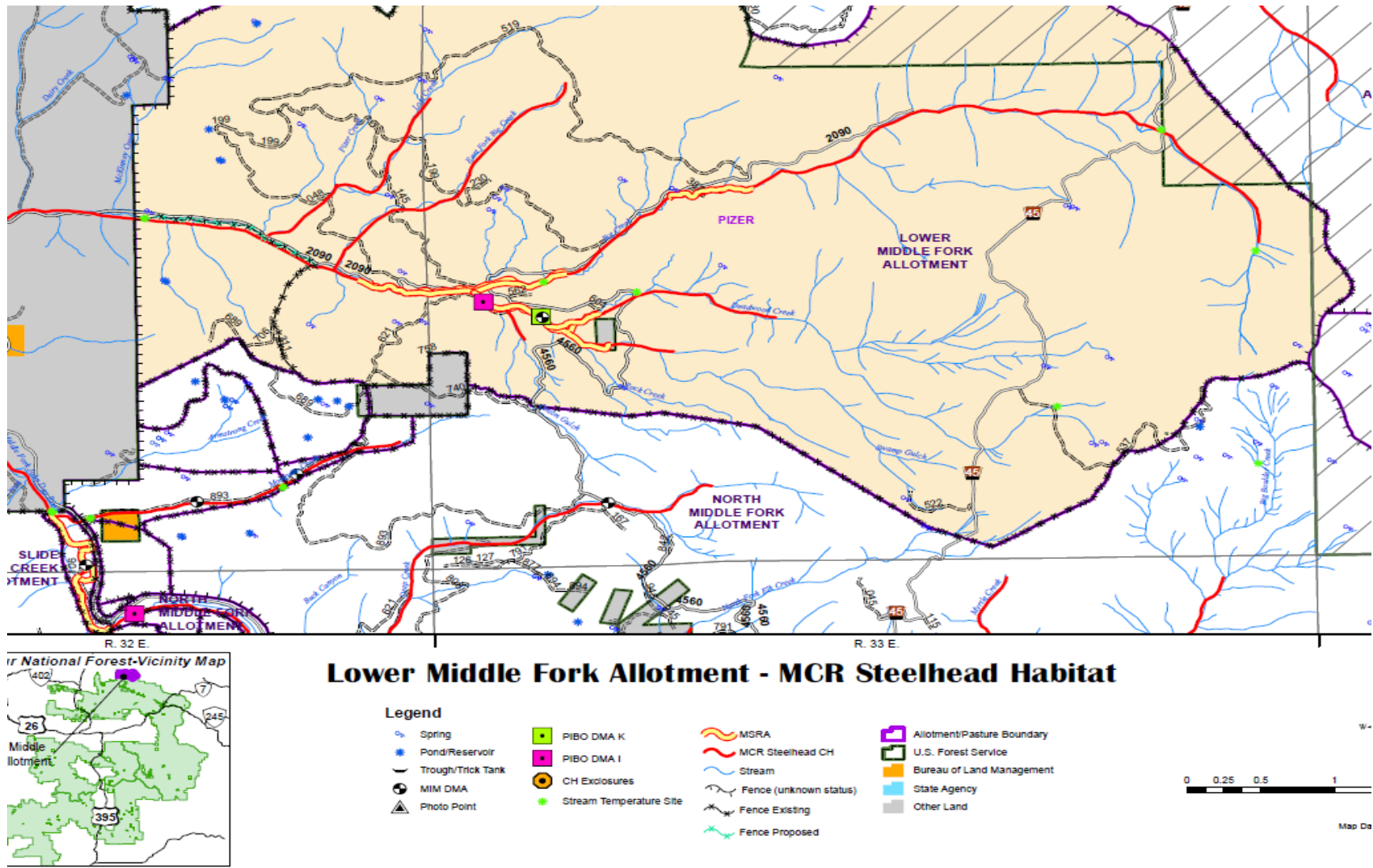


Figure 25. Lower Middle Fork Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

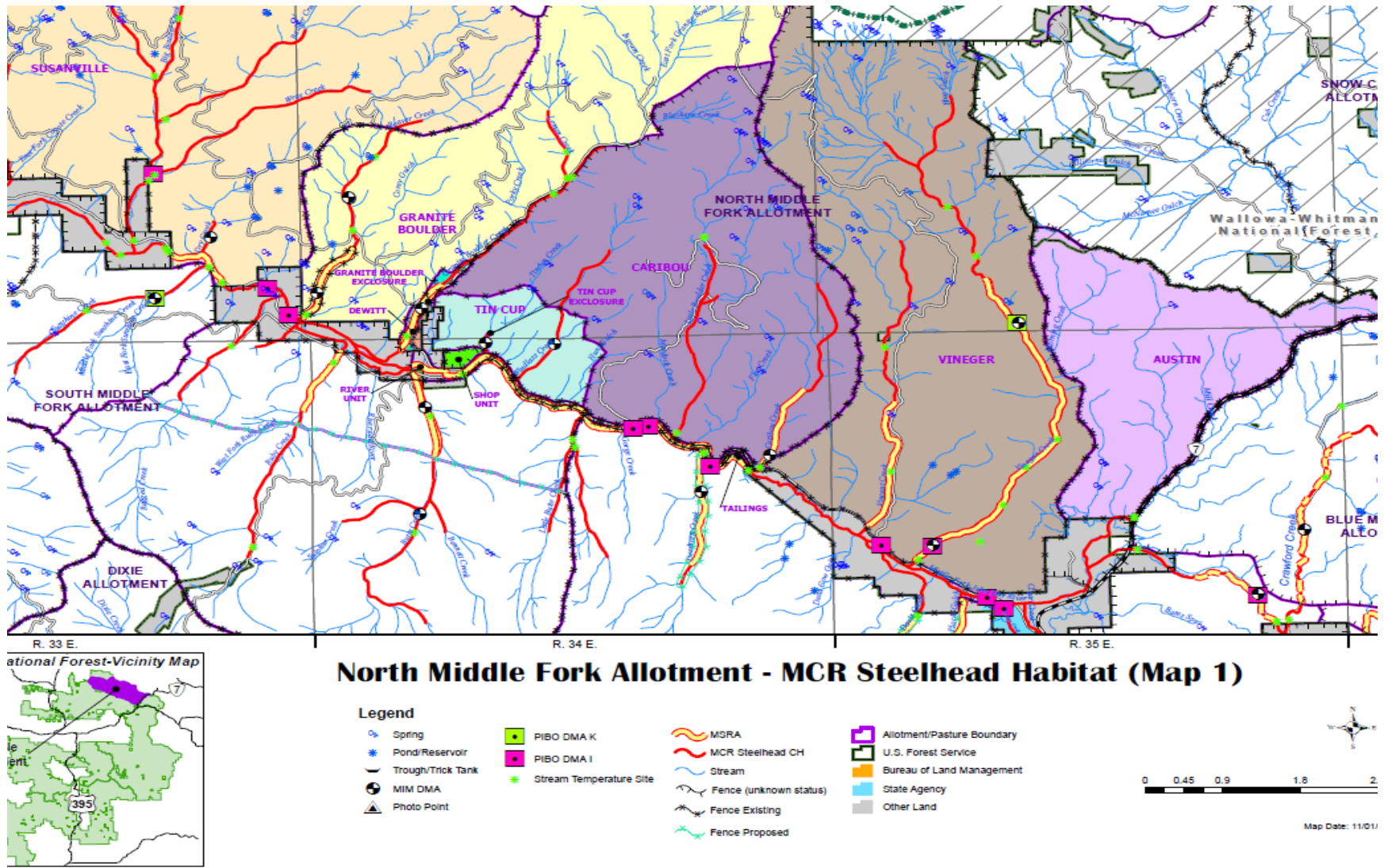


Figure 26. North Middle Fork Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations (Map 1 of 3).

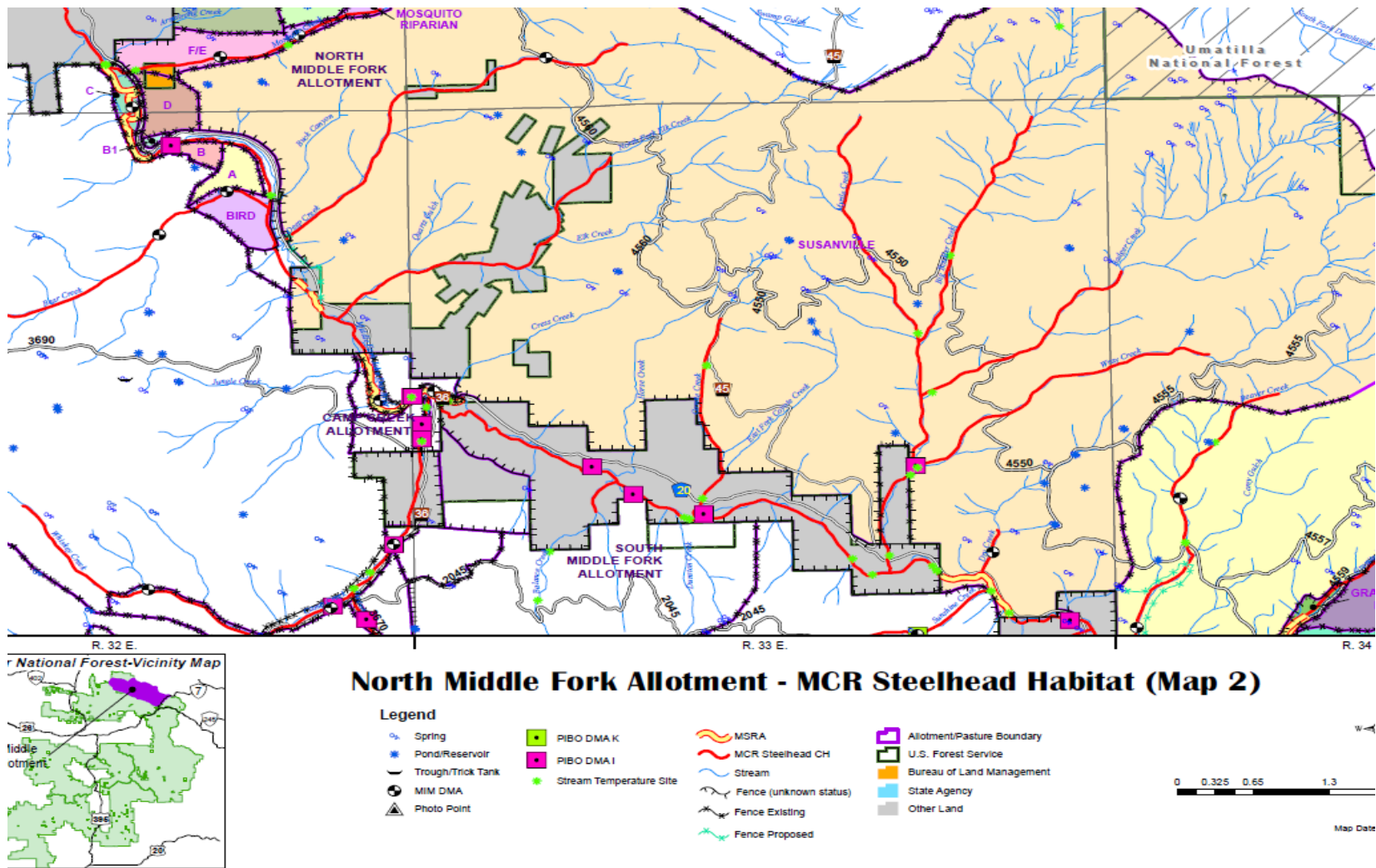


Figure 27. North Middle Fork Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations (Map 2 of 3).

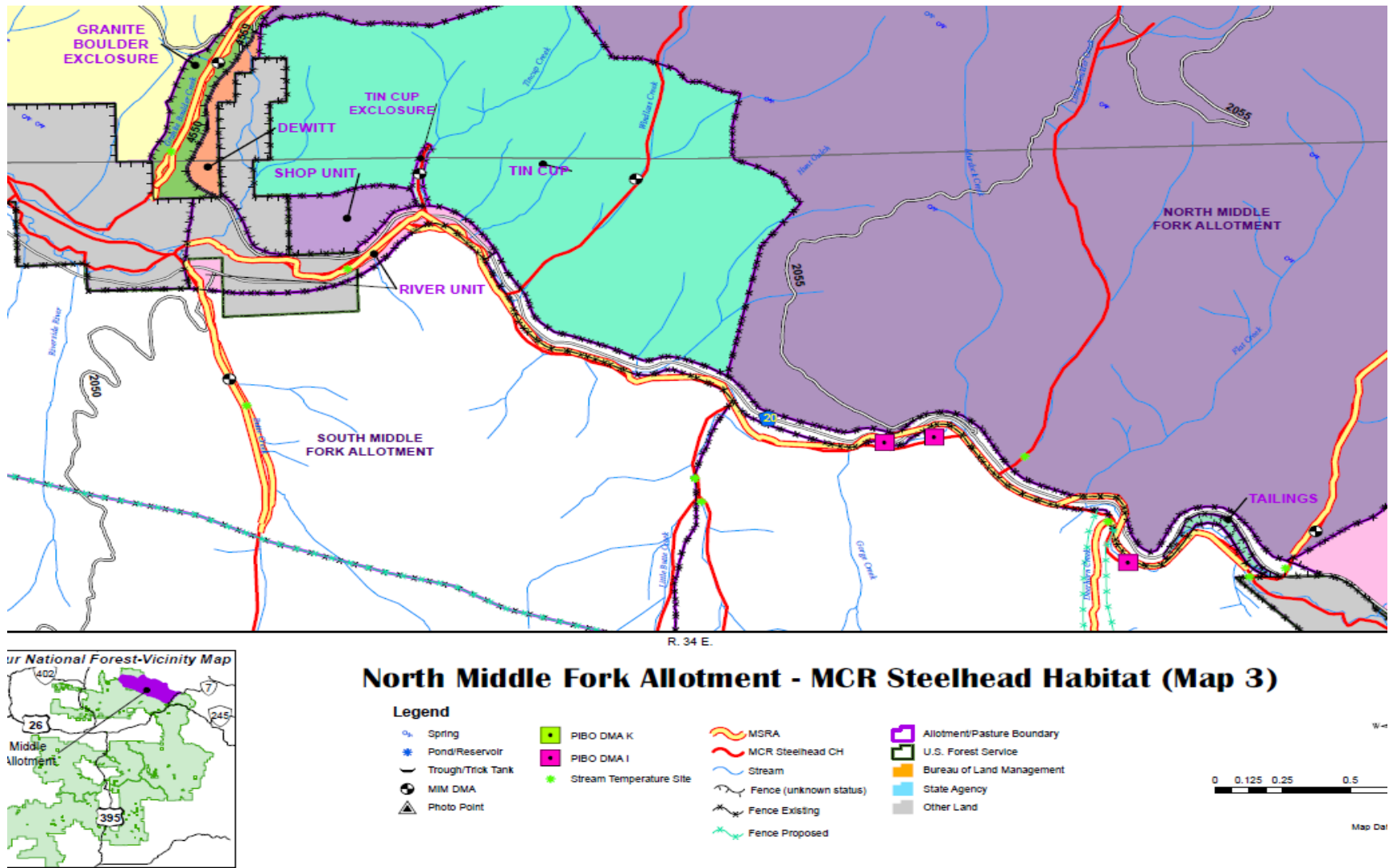


Figure 28. North Middle Fork Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations (Map 3 of 3).

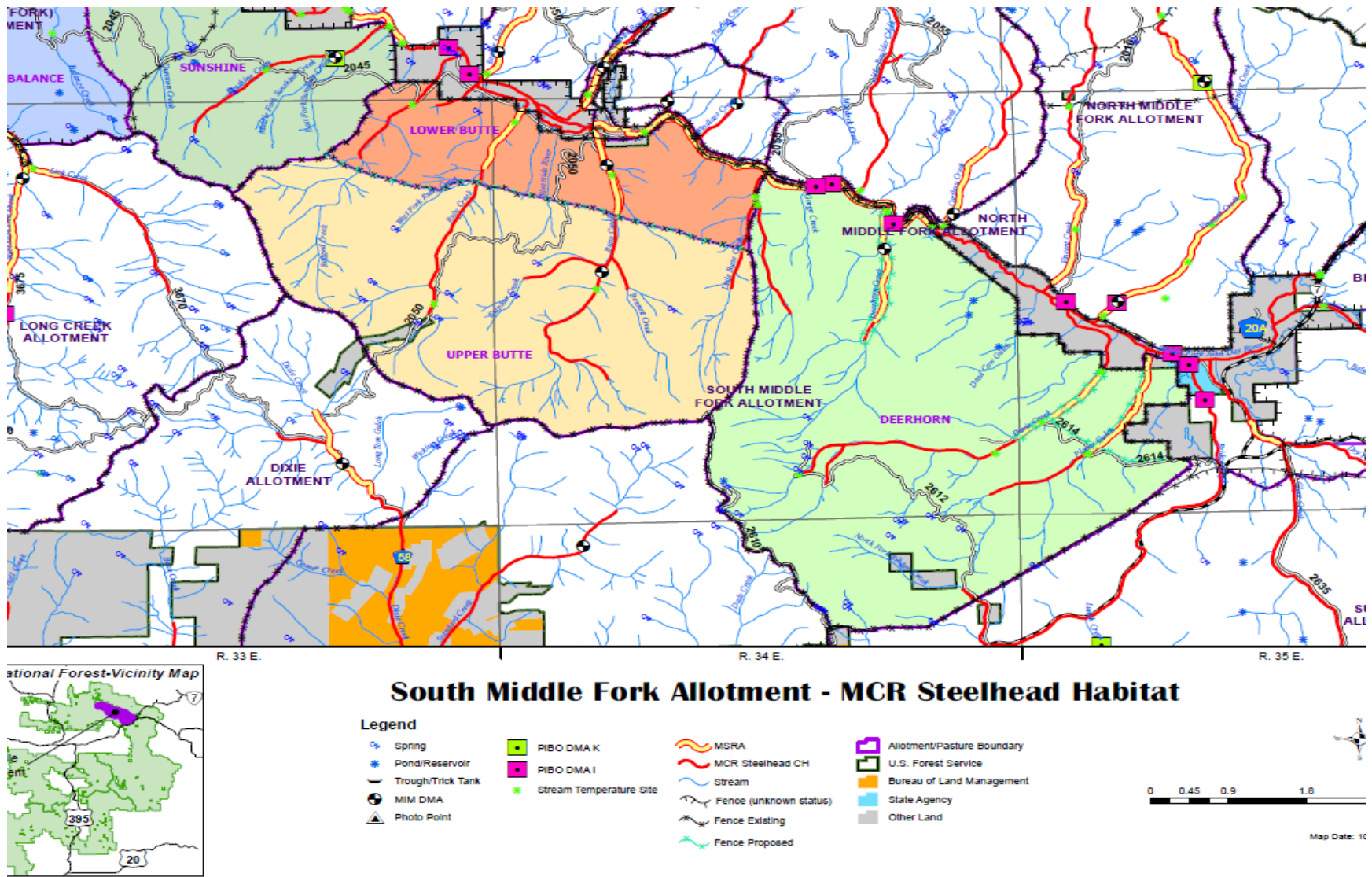


Figure 29. South Middle Fork Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

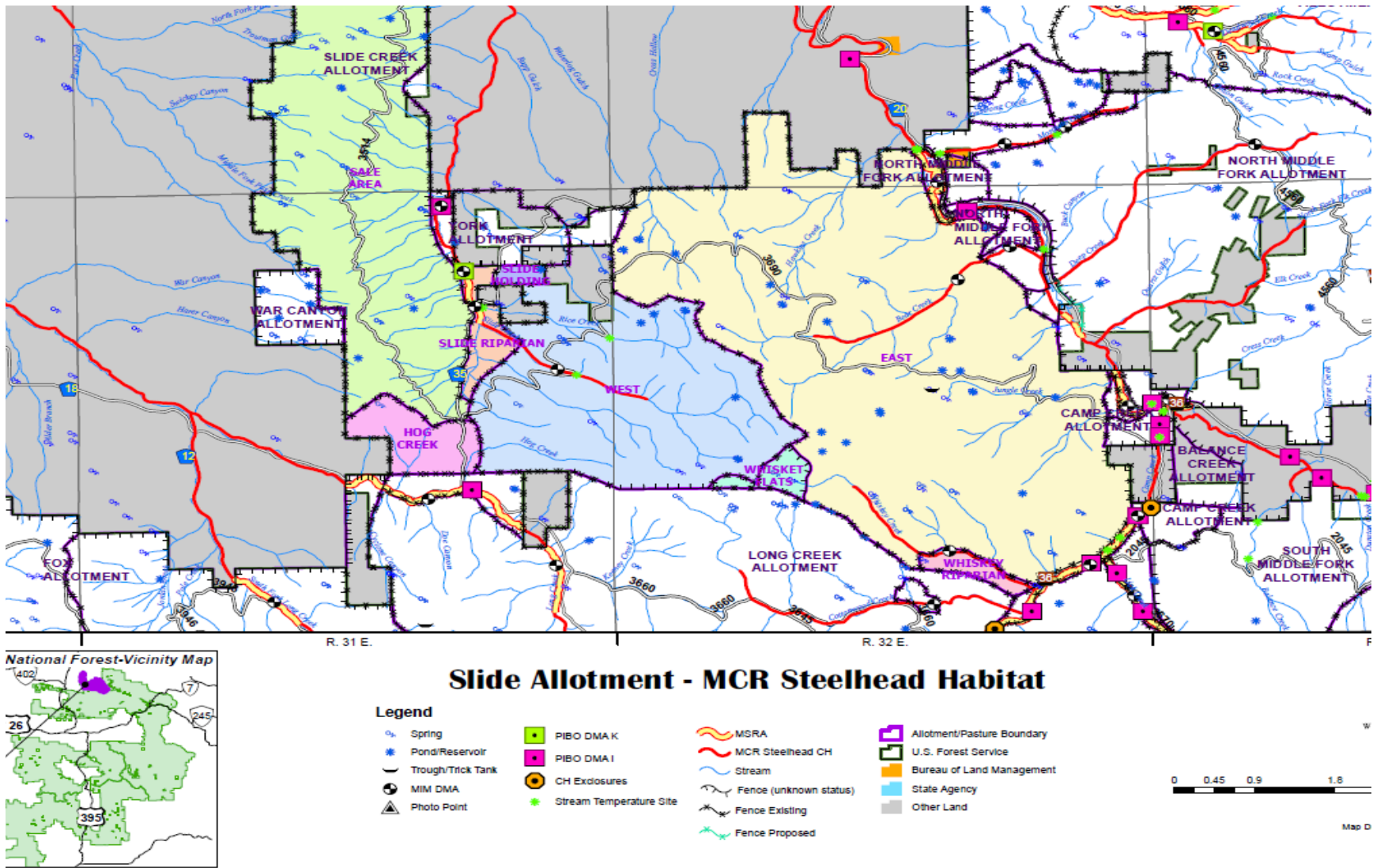


Figure 30. Slide Creek Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

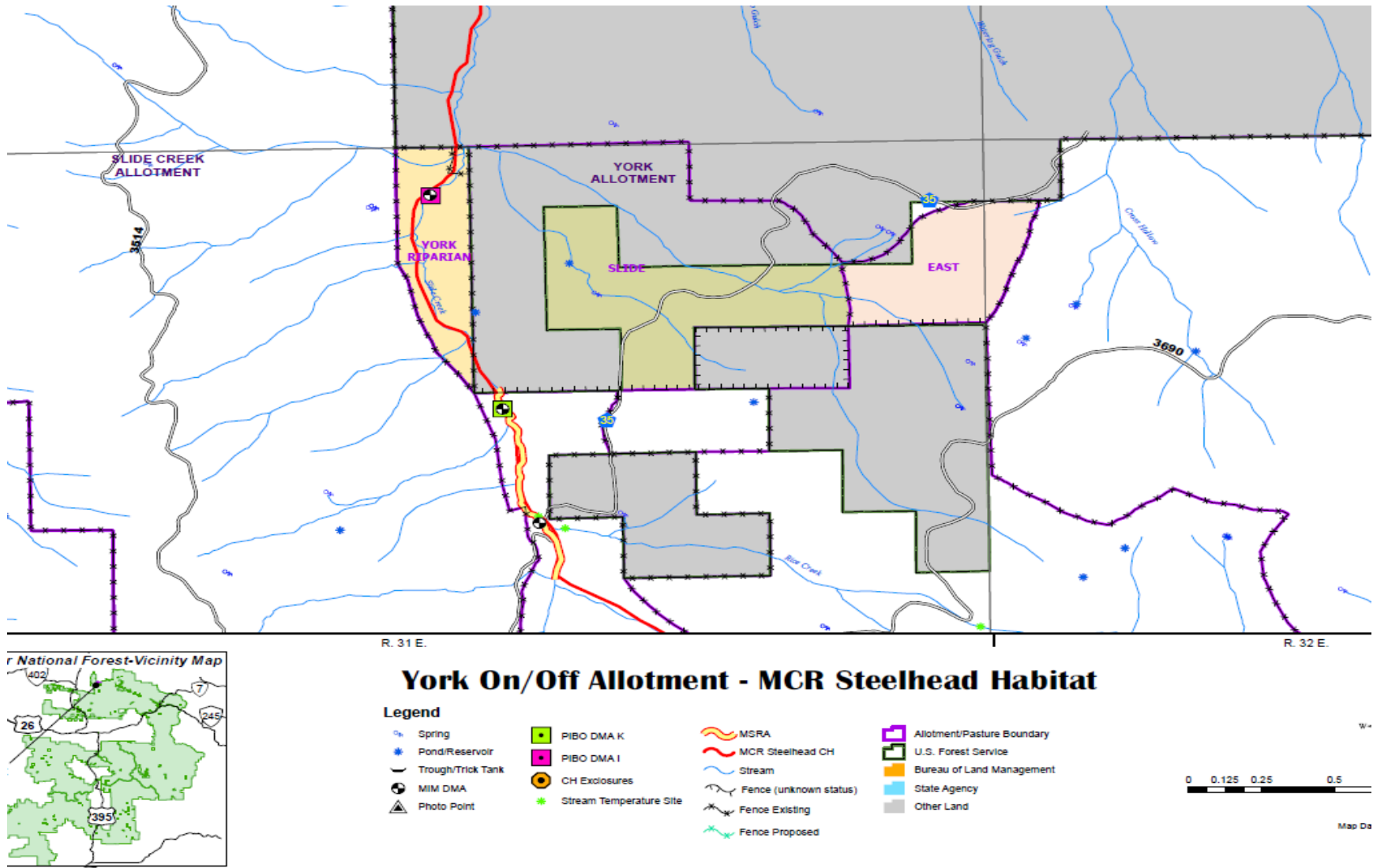


Figure 31. York Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

Figure 30 displays the NFJDR steelhead population with associated CH. Figures 31 and 32 present individual maps of each allotment with pastures, designated CH and identified MSRA displayed, for those allotments found either entirely or are mostly located within the NFJDR population.

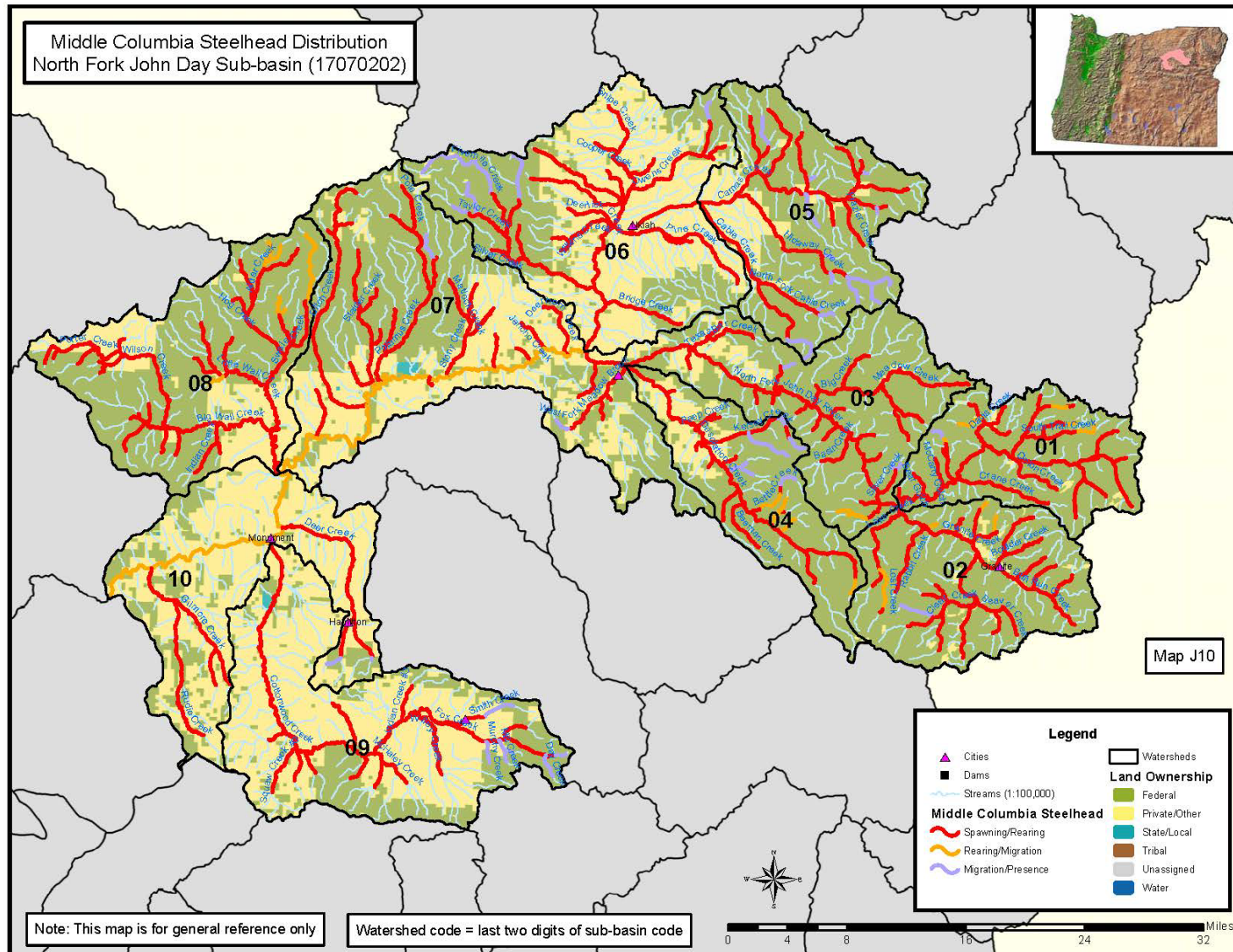


Figure 32. North Fork John Day River Population of Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

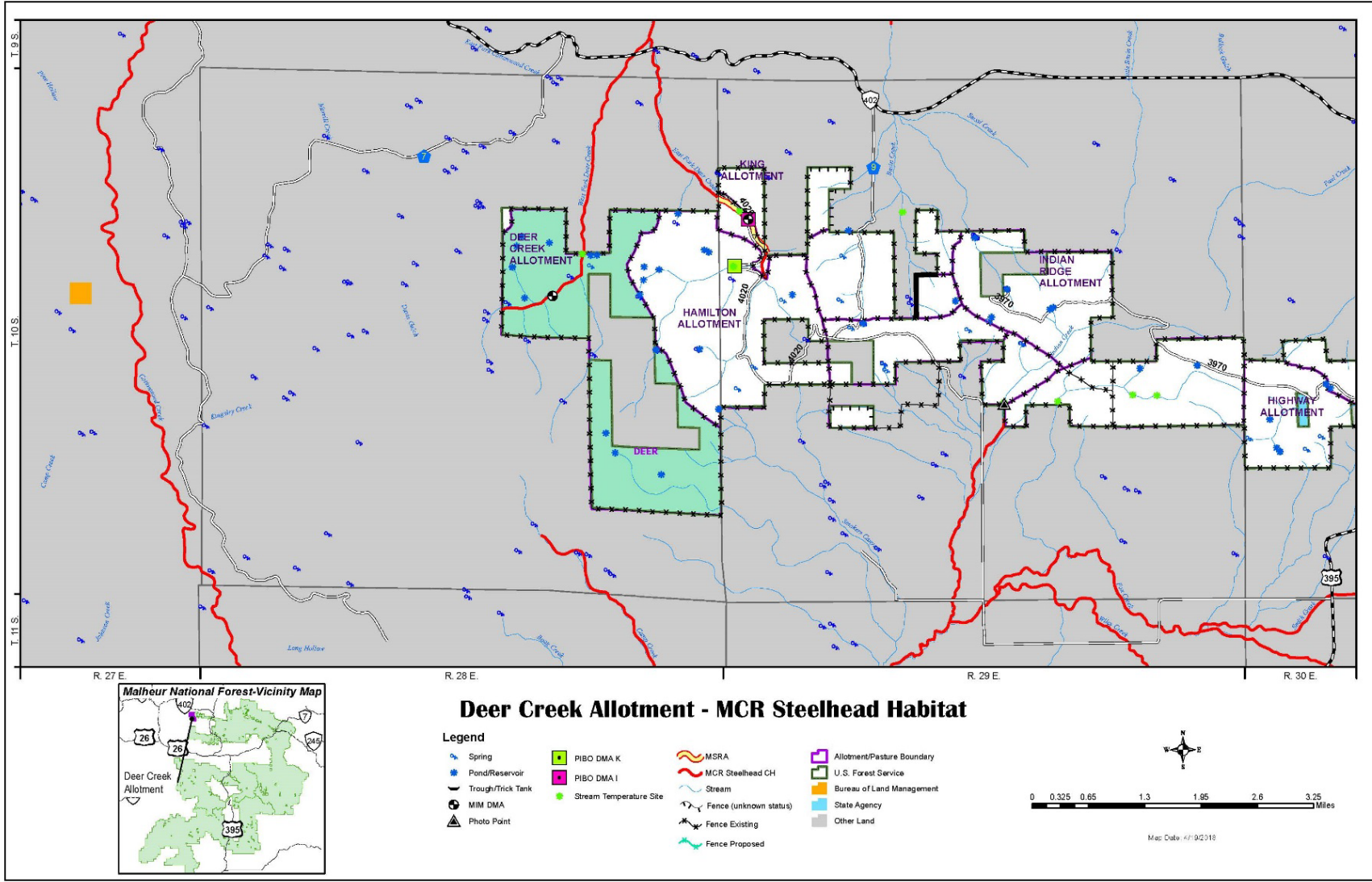


Figure 33. Deer Creek Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

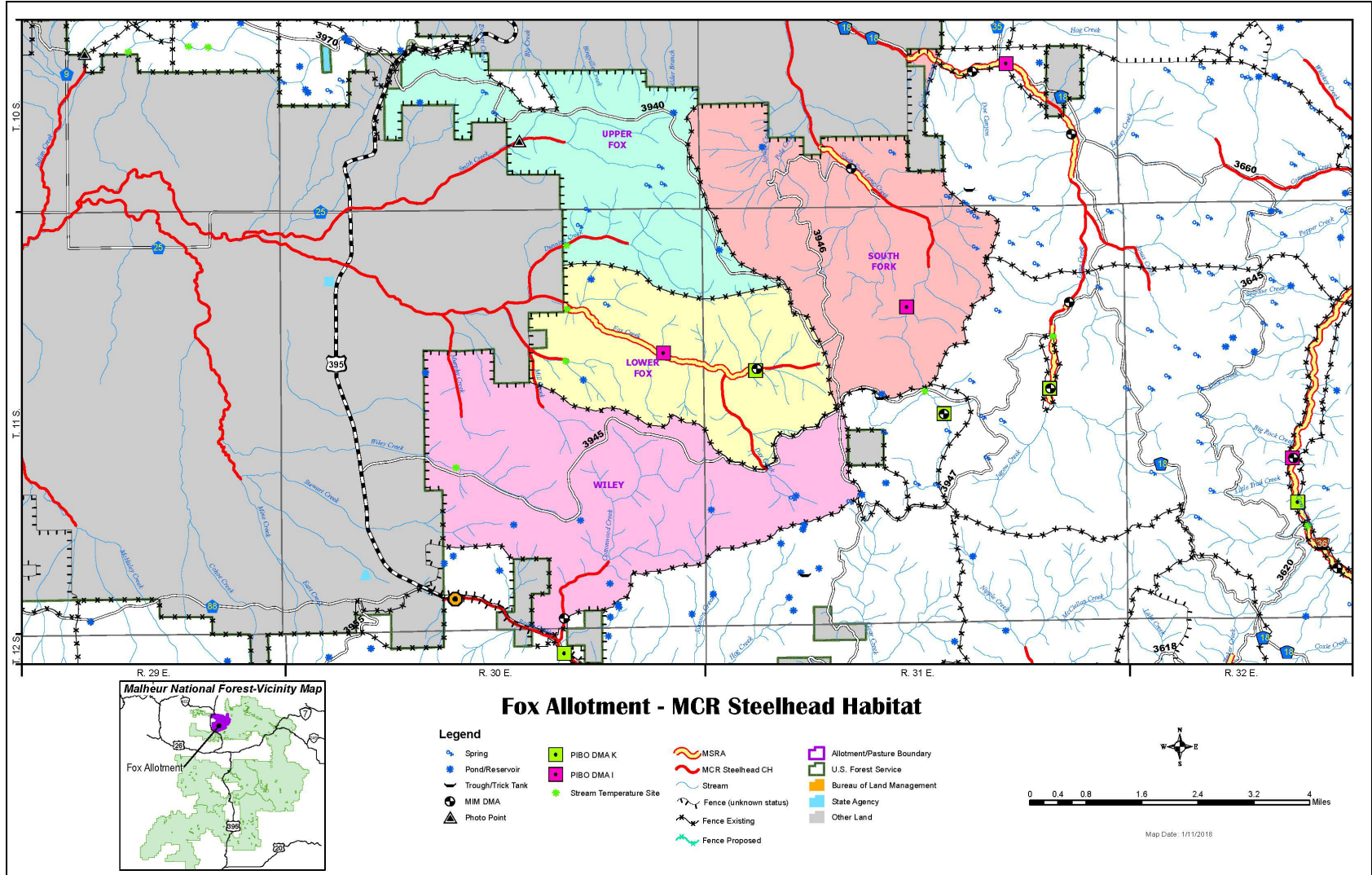


Figure 34. Fox Creek Allotment with Middle Columbia River Steelhead Critical Habitat, Most Sensitive Riparian Areas, and Designated Monitoring Area Locations.

2.4. Environmental Baseline

The “environmental baseline” refers to the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultations, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency’s discretion to modify are part of the environmental baseline (50 CFR 402.02).

2.4.1. Middle Columbia River Steelhead in the Action Area

Four of the five populations of MCR steelhead that compose the John Day River MPG are found in the action area: North Fork John Day (NFJD), Middle Fork John Day (MFJD), South Fork John Day (SFJD), and Upper Mainstem John Day (UJDR).

The MPG is one of the few remaining summer steelhead groups in the Interior Columbia basin that has had no intentional influence from introduced hatchery steelhead and that has recently been classified as strong or healthy (Lee et al. 1997; Huntington et al. 1994). Spawning is widely distributed across tributary and mainstem habitats in the action area.

The NFJD population boundaries include the main stem and tributaries of the North Fork John Day River. The population contains 8 MaSAs (Lower North Fork John Day, Potamus, Big Wall, Big, Upper North Fork John Day, Desolation, Granite, and Owens) and seven (Minor Spawning Areas) MiSAs (Bridge, Meadow Brook, Two Cabins, Fivemile, Meadow and Ditch). The NFJD population size is considered large with a mean minimum abundance threshold of 1,000 natural spawners (10-year geometric mean) and a productivity threshold of 1.26 (NMFS 2009). Currently, the NFJD population is meeting both its abundance and productivity criteria (Table 83) (Ford 2022).

The MFJD population resides in the Middle Fork John Day and all its tributaries. Two MaSAs exist in the Middle Fork John Day River population, including Middle Fork John Day and Long Creek, and no MiSAs. It is considered an Intermediate population with a mean minimum abundance threshold of 1,000 natural spawners (10-year geometric mean) and a productivity threshold of 1.35 (NMFS 2009). Currently, the MFJD population is meeting both its abundance and productivity criteria (Table 83) (Ford 2022).

The SFJD population occupies the South Fork John Day River drainage. Steelhead spawn and rear throughout the lower South Fork John Day up to Izee Falls at RM 28.5 and in Murderers Creek and other South Fork tributaries. The population includes three MaSAs: Upper South Fork, Lower South Fork and Murderers Creek. It is considered a Basic population size, with a mean minimum abundance threshold of 500 natural spawners (10-year geometric mean) and a

productivity threshold of 1.56 (NMFS 2009). Currently, the SFJD population is meeting both its abundance and productivity criteria (Table 83) (Ford 2022).

The UJDR population occupies the mainstem John Day River and tributaries upstream from the South Fork. The population includes five MaSAs, Upper John Day, Upper Middle Mainstem John Day, Laycock, Beech, and Canyon, and no MiSAs. The MaSAs are located primarily in the upper portions of the population boundaries. It is considered an Intermediate population with a mean minimum abundance threshold of 1,000 natural spawners (10-year geometric mean) and a productivity threshold of 1.35 (NMFS 2009). Currently, the UJDR population is not meeting its abundance threshold (Table 83) (Ford 2022).

Table 83. Summary of Middle Columbia River steelhead John Day River MPG viability relative to the ICTRT viability criteria, grouped by MPG. Natural spawning = most-recent 10-yr geometric mean (range). ICTRT productivity = 20-yr geometric mean for parent escapements below 75 percent of population threshold. Current A/P estimates are geometric means. Range in annual abundance, standard error, and number of qualifying estimates for productivities in parentheses.

Abundance/Productivity (A/P) Metrics					Spatial Structure/Diversity (SS/D) Metrics			Overall Risk Rating
MPG	ICTRT Threshold	Natural Spawning	ICTRT Productivity	Integrated A/P risk	Natural Processes	Diversity Risk	Integrated SS/D Risk	
John Day River Lower Mainstem Tributaries	2,250	1,424 (SD 1,026)	2.72 (0.19 12/20)	Moderate	Very Low	Moderate	Moderate	Maintained
North Fork John Day River	1,000	1,852 (SD 1,343)	3.31 (0.16 2/20)	Very Low	Very Low	Low	Low	Highly Viable
Middle Fork John Day River	1,000	3,371 (SD 1,811)	4.49 (0.27 8/20)	Very Low	Low	Moderate	Moderate	Viable
South Fork John Day River	500	943 (SD 552)	2.45 (0.29 10/20)	Very-Low	Very Low	Moderate	Moderate	Viable
John Day River Upper Mainstem	1,000	738 (SD 418)	1.56 (0.16 14/20)	Moderate	Very Low	Moderate	Moderate	Maintained

The Mid-C recovery planning team identified the following limiting factors and threats to the four populations of MCR steelhead in the action area:

- Degraded floodplain connectivity and function
- Degraded channel structure and complexity (key habitat quantity, habitat diversity, channel stability)
- Altered sediment routing
- Water temperature
- Low flows

- Altered hydrology
- Effects of naturally spawning stray hatchery fish on viability
- Current land use practices (riparian disturbance and removal of large trees, stream channelization/diking and relocation, overgrazing, agricultural practices, forest practices, road building, irrigation withdrawals, wetland draining and conversion, mining and dredging, passage barriers)

Recovery Scenarios

To achieve recovery of the MPG, the John Day River Lower Mainstem Tributaries, North Fork John Day River, and either the Middle Fork John Day River or John Day River Upper Mainstem populations should achieve at least “viable” status. The management unit plan also calls for at least one population to be “highly viable,” consistent with ICTRT recommendations. Currently, the NFJD population is highly viable, the MFJD and SFJD populations are viable, and the John Day River Lower Mainstem Tributaries and UJDR populations are maintained (Table 83). The John Day River MPG does not meet viability criteria because the John Day River Lower Mainstem Tributaries population is at moderate risk for abundance and productivity and spatial structure and diversity. Therefore, the John Day River Lower Mainstem Tributaries must improve to viable.

Historically, livestock grazing, timber logging and vegetation management actions, railroad and road building/use, diversions and irrigation withdrawals, agriculture, mining, dredging, wildlife foraging, prescribed and natural fire, noxious weed treatment, and recreation have occurred throughout the action area. These activities have contributed to degraded floodplain conditions and streambank stability, loss of complex channel structure and substrate, altered hydrology and natural river processes, reduced instream flow, reduced riparian vegetation and shade, and elevated stream temperatures. These factors have contributed to degrading the quality of critical habitat conditions needed for recovery of MCR steelhead populations.

2.4.2. Allotment-Specific Habitat Conditions

The submitted BAs contain historic and current information on habitat conditions for each of the 28 allotments. This information is summarized below and is based on surveys, inventories, collected data, and professional knowledge. Condition information includes inventory and measured parameters obtained from: (1) Proper Functioning Condition Assessments, (2) rangeland health inventories, (3) PIBO and AIM DMAs, and (4) photo points. For the individual allotments described below, NMFS has included the available information on past activities and resource conditions. The level of available information varies from allotment to allotment as provided in the BAs and reflected below.

All CH within the allotments in this consultation are presumed to be occupied by MCR steelhead. The miles of designated CH and MSRA reported in the Federal Proposed Action Section may be slightly different from the amounts identified in the submitted BAs. This was expected given the varying data layers contained in MNF mapping databases used in development of BA documents. Some revised miles of designated CH and MSRA were provided by the MNF after submittal of the BAs. NMFS’ effects analysis uses the final numbers provided

and confirmed by MNF to ensure all potential effects were included in our analysis. While there may be some minor differences in reported and actual mileage of designated CH and MSRA, these minor errors do not alter the effects analysis in this opinion.

2.4.3. UJDR Allotments

The environmental baseline for the Upper John Day Basin as defined by the Matrix of Pathway Indicators (MPI) has zero indicators Properly Functioning, four indicators Functioning at Risk (nutrients as identified by a stream segment listed under Clean Water Act 303(d) standards; amount of off-channel habitat, streambank condition, and disturbance history), and 13 indicators Functioning at Unacceptable Risk (temperature, physical barriers, substrate, large woody debris, pool frequency, pool quality, refugia, percent fines, floodplain connectivity, changes in peak/base flows, increases in drainage network, road density and locations, and riparian management areas).

Beech Creek Allotment

The Beech Creek allotment contains streams that are occupied and designated as CH for the UJDR and NFJDR populations of MCR steelhead. The Beech Creek allotment is within the Upper John Day River subbasin and contains pastures in the Upper Beech Creek, East Fork Beech Creek, Lower Beech Creek, and McHaley Creek watersheds. Middle Columbia River steelhead CH is designated on 1.46 miles of East Fork Beech Creek, of which 1.35 is designated as MSRA. A small portion of the allotment including the Timber Pasture (no CH) is in the North Fork John Day subbasin. The allotment has four scattered, non-contiguous, pastures intermingled with private land: Beef, Patterson, Timber, and Grouse Creek. The Patterson pasture contains a 15-foot livestock water gap on East Fork Beech Creek, which is MCR steelhead CH and MSRA. Beef and Patterson (water gap) are the only pastures in Beech Creek allotment that contain MCR steelhead CH.

Activities

Activities that have occurred or continue to occur within these watersheds include: timber harvest and silvicultural treatments, fire suppression, road construction, irrigation diversions, homesteading, livestock grazing and wildfire. Restoration projects occurred on East Fork Big Creek from 2017–2018 including during the Magone Vegetation Project and an AOP culvert replacement. Beaver activity has been observed along restoration reaches. These projects included installing beaver dam analogs, shrubs and habitat features, and 1.6 miles of large-wood additions; and improving passage and access to 3.4 miles of stream.

Resource Conditions, Monitoring, and Compliance

The environmental baseline for the Beech Creek watershed as defined by the MPI has zero indicators Properly Functioning, six indicators Functioning at Risk (nutrients as identified by stream segments listed under Clean Water Act 303(d) standards, amount of off-channel habitat, streambank condition, change in peak/base flows, road density and location, and disturbance history), and 11 indicators Functioning at Unacceptable Risk (temperature, physical barriers, substrate, large woody debris, pool frequency, pool quality, refugia, percent fines, floodplain connectivity, increases in drainage network, and riparian management areas).

The riparian area along East Fork Beech Creek in Beech On/Off pastures (Beef and Patterson) is a mix of grass/forbs in the riparian understory, with a dominant presence of alders and other hardwoods in the middle sections.

Region 6 Level II Stream Surveys were conducted on East Fork Beech Creek in 1993, 2014, and 2019. East Fork Beech Creek runs through portions of the Beech Creek, Herberger, John Day, McCullough, and Roundtop allotments. Overall, East Fork Beech Creek lacks pool habitat and large wood, except where recently added with restoration, and width-to-depth ratios are higher than desired (Table 84). Gravel and cobble dominate all the surveyed reaches except the upper two where fines increase.

Table 84. Degree to which 2019 stream inventory data meets numeric standards or classifications described in Riparian Management Objectives (RMOs), Amendment 29 or the NMFS Matrix of Pathways And Indicators (MPI).

Habitat Feature	RMOs	Amendment 29	NMFS MPI
Pools/mile	Does not meet	Does not meet	NPF
Shade % (densiometer)	NA	Meets	NA
Large Woody Debris (/mile)	Does not meet	Does not meet	NPF
Fine sediment % < 2 mm	NA	NA	PF
Width-to-depth Ratio	Does not meet	Does not meet	NPF
Bank Stability (%)	Meets	Meets	PF

A few redds have been observed on East Fork Beech Creek during spawning surveys conducted 2018–2022 within the Beef and Patterson pastures (Table 85). In 2013, a potential redd was identified during spawning surveys on East Fork Beech Creek, which resulted in delaying turnout into the Beef pasture. Older redd surveys completed by ODFW counted 25 redds in 2015, and 11 redds in 2016 in Beech and East Fork Beech creeks.

Table 85. Spawning Survey Results

Pasture and Use Dates	Stream	# Redds Observed 2018	# Redds Observed 2019	# Redds Observed 2020	# Redds Observed 2021	# Redds Observed 2022
Beef	EF Beech Creek		0	1	2	1
Patterson	EF Beech Creek	0	0	0	0	1

The MIM DMA is on East Fork Beech Creek within the Beef pasture. Two PIBO sites (one PIBO-Integrator (I) site and one DMA (K) site) are located in the Beef Pasture on East Fork Beech Creek. The EOY report provides the MIM data for Beef Pasture for the last 5 years. Although not always collected shortly after livestock removal, all MIM monitoring data collected for stubble height, browse use, and stream alteration, met the required standards during 2018–2022.

Dark Canyon Allotment

The Dark Canyon allotment is located within the Upper John Day and the Silvies subbasins, which include areas occupied by the UJDR MCR steelhead population. The 31,913-acre Dark Canyon allotment is divided into seven pastures: Canyon Creek; 15 Road; North Rock Springs; Wickiup; South Rock Springs; Dark Canyon; and CH. The allotment contains 15.24 miles of steelhead CH and 3.94 miles of MSRA. Two pastures, 15 Road and Canyon Creek, contain MCR steelhead CH. The 15 Road pasture contains approximately 1.95 miles of MCR steelhead CH and 1.17 miles of MSRA. Canyon Creek contains approximately 13.30 miles of MCR steelhead CH and 2.76 miles of MSRA.

The South Rock Springs, Dark Canyon, and CH pastures are within the Silvies subbasin. This watershed does not contain anadromous fish or their habitat—they do not contain MCR steelhead or their CH. Therefore, these pastures will not be discussed further. The North Rock Springs and Wickiup pastures are within the Upper John Day subbasin but do not contain streams with CH or MCR steelhead and therefore will also not be discussed further. Only the Canyon Creek and 15 Road pastures contain anadromous fish and CH and will be discussed further.

Activities

Activities that have occurred or continue to occur within these watersheds include mining, timber harvest, grazing, roads, trails, prescribed and natural fire, noxious weed treatment, and recreation. The Parish Cabin fire of 2012 burned approximately 6,400 acres, primarily within the Dark Canyon pasture. A total of 8.5 miles of fence burned (between 2 allotments) and nine water developments were destroyed within the fire perimeter and Dark Canyon pasture. In 2015, the Canyon Creek Complex Fire burned more than 50 percent of the Dark Canyon allotment. This fire burned approximately 31 miles of fence and 16 water developments. In 2016, improvements on the allotment were assessed and fences rebuilt that were burnt.

Resource Conditions, Monitoring, and Compliance

Overstory vegetation in the allotment consists of ponderosa pine, Douglas fir, western larch, and lodgepole pine. Engelmann spruce can be found in the drainages at higher elevations along Bear Creek. The pastures in the allotment lying west of Canyon Creek and CR 65/FR 15 are dominated by ponderosa pine. Dominant grass species throughout the allotment are bluebunch wheatgrass, Idaho fescue, elk sedge, and pine grass. Riparian overstory vegetation generally consists of a mix of hardwood and conifer species along the stream with alder being the dominant species. Throughout this allotment, livestock have varying levels of access to streams and the associated riparian communities. Shade is provided by grass and grass-like species, riparian hardwood species and conifer species along the stream. Historically, riparian areas were logged by conventional tractor yarding. Railroad logging also occurred in and along many of the streams within the Dark Canyon allotment. Levees from historic railroad grades actively constrain lateral migration stream processes. The combination of logging, insect epidemic, and valley bottom roads has reduced shading from conifer species.

Forest Service Region 6 stream surveys were conducted on streams within the Dark Canyon allotment in 1994, 2006, 2015, 2016, and 2017. Based on these survey, most habitat elements are

“not properly functioning”. Bank stability, however, is consistently “properly functioning”. No new surveys have been completed since 2017 (Table 86).

Table 86. Region 6 Level II Stream Survey Data for the Dark Canyon Allotment.

Stream Name	Survey Year	Pool Frequency (Pools/mi)	Shade % (With Solar Pathfinder)	Large Woody Debris (Pieces/Mile)	Fine Sediment/Embeddedness	Width -to-Depth (W:D) Ratio	Bank Stability (%)
Middle Fork Canyon Creek R1	2006	6.6 (NPF)	-	2.06 (NPF)	2.48% < 2 mm (PF)	26.8 (NPF)	99.3 (PF)
Middle Fork Canyon Creek R2	2006	20.37 (NPF)	-	13.82 (NPF)	0.56% 2< mm (PF)	16.7 (NPF)	-
Bear Creek R5	2015	24.2 (NPF)	25	10.12 (NPF)	45.58% < 2 mm (NPF)	15.2 (NPF)	100 (PF)
Bear Creek R6	2015	17.6 (NPF)	19	16 (NPF)	31.52% < 2 mm (NPF)	17.4 (NPF)	100 (PF)
Bear Creek R7	2015	11.04 (NPF)	19.5	3.04 (NPF)	28.52% < 2 mm (NPF)	26.5 (NPF)	98.4 (PF)
Bear Creek R8	2015	19.89 (NPF)	2	15.59 (NPF)	21.96% < 2 mm (NPF)	47.7 (NPF)	98.8 (PF)
Bear Creek R9	2015	15.9 (NPF)	37	12.54 (NPF)	34.83% < 2 mm (NPF)	24.9 (NPF)	99.5 (PF)
Bear Creek R10	2015	10.86 (NPF)	50.5	90.22 (PF)	34.59% < 2 mm (NPF)	24.2 (NPF)	99.8 (PF)
Bear Creek R11	2016	36.55 (NPF)	62.83	44.67 (PF)	20.03% < 2 mm (NPF)	21.4 (NPF)	99.9 (PF)
Bear Creek R12	2017	56 (NPF)	38.7	35.07 (NPF)	23.7% < 2 mm (NPF)	8 (PF)	99.8 (PF)
Canyon Creek R2	2006	12.55 (NPF)	-	9.41 (NPF)	0% < 2 mm (PF)	14.0 (NPF)	99.6 (PF)
\Canyon Creek R3	2006	10.68 (NPF)	-	6.23 (NPF)	29.25% < 2 mm (NPF)	12.0 (NPF)	99.8 (PF)
Canyon Creek R4	2006	5.41 (NPF)	-	4.05 (NPF)	-	10.9 (AR)	99.7 (PF)
Crazy Creek R1	1994	55.13 (NPF)	-	41.07 (PF)	-	8.7 (PF)	-
Dark Canyon R1	2016	17.94 (NPF)	71.06	6.33 (NPF)	24.41% < 2 mm (NPF)	12.3 (NPF)	96.7 (PF)

Values in **bold font** are meeting fish habitat objectives for Amendment 29, values not bold are not meeting fish habitat objectives. PF = NMFS MPI Properly Functioning, NPF = MPI Not Properly Functioning.

Table 87 displays the degree to which stream habitat features meet the numeric standards or classifications described in RMOs, Amendment 29 or the NMFS MPI. The data for all stream reaches is used when making this judgment call (Table 87). For the most part, habitat features do not meet RMOs, Amendment 29, or NMFS MPI.

Table 87. Degree to Which Stream Survey Data Meets Numeric Standards or Classifications Described in Riparian Management Objectives (RMO)s, Amendment 29 or the NMFS Matrix of Pathways And Indicators (MPI). Acronym are NA (used when there is no standard), PF (properly functioning), AR (at risk), and NPF (not properly functioning).

Habitat Feature	RMOs	Amendment 29	NMFS MPI
Pools/mile	Does not meet	Does not meet	NPF
Shade % (solar pathfinder)	NA	Does not meet for 5 of the 8 reaches	NA
Large Woody Debris (/mile)	Does not meet for 11 of 14 stream reaches.	Does not meet for 13 of 14 stream reaches.	NPF. Does not meet for 11 of 14 stream reaches.
Fine sediment % < 2 mm	NA	NA	NPF
Width-to-depth Ratio	Does not meet for 13 of 14 stream reaches.	Does not meet for 13 of 14 stream reaches.	NPF
Bank Stability (%)	Meets	Meets	PF

Spawning surveys are rarely conducted on streams in the Dark Canyon allotment, as grazing typically does not occur on CH here during the spawning season. The Oregon Department of Fish and Wildlife completed steelhead surveys on Canyon Creek and Middle Fork Canyon Creek between 2000–2018 (Figure 35). Redds were found in Canyon Creek in all years surveyed and in Middle Fork Canyon Creek in 12 of 14 years surveyed.

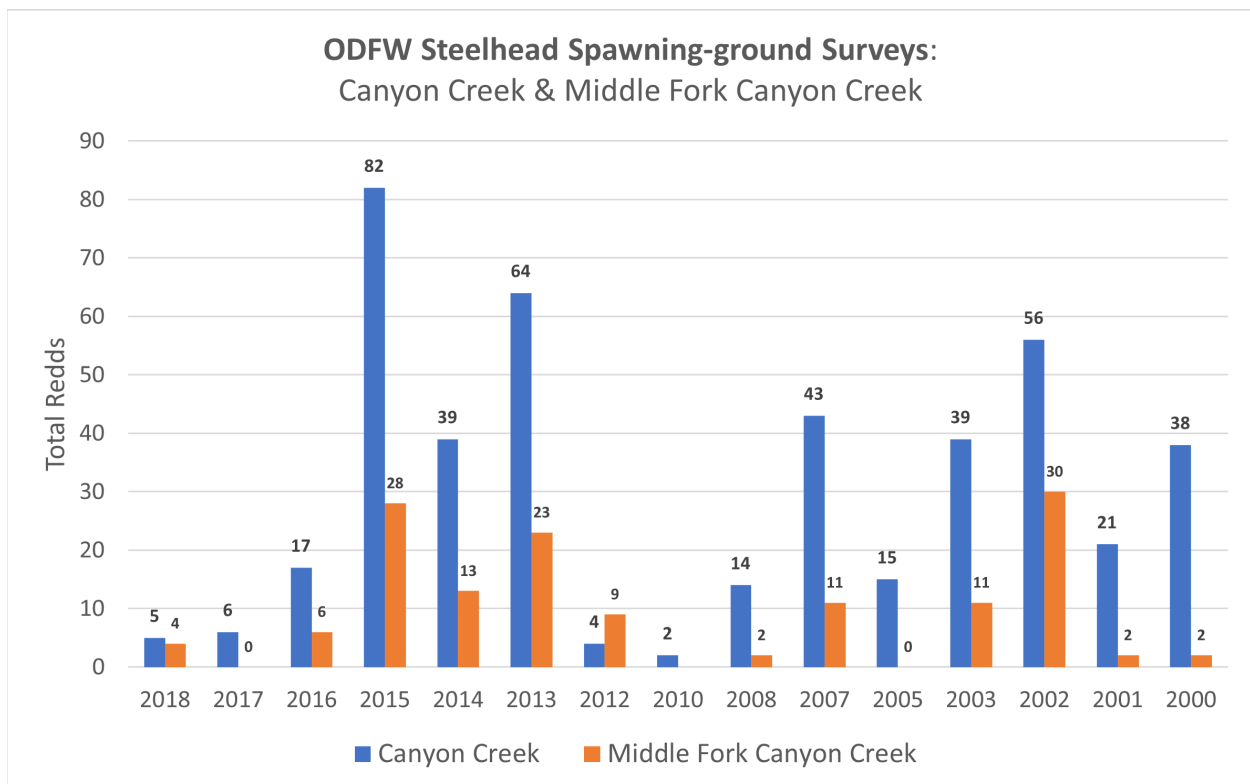


Figure 35. Oregon Department of Fish and Wildlife (ODFW) Steelhead Spawning Surveys on Canyon Creek and Middle Fork Canyon Creek.

There are two PIBO-I and two PIBO-K DMA sites located in Middle Fork Canyon Creek and Bear Creek, with one I and one K site on each stream. MIM end-of-season monitoring data for

2022 has not yet been provided as of the date of this opinion. There were no instances of exceedances of standards during the 2018–2022 period. However, in 2019, MIM monitoring was conducted approximately 2 months after livestock were removed from the allotment. The stubble height end-of-season indicator was met at that time.

Roads and Temperature

Canyon Creek pasture encompasses the Upper Canyon Creek watershed.

The MPI rated the Watershed condition pathway for the Road Density and Location Indicator as “not properly functioning” for the watershed road density containing greater than 3 mi/mi², and as roads occur in many valley drainages.

The state water quality standard for streams with anadromous fish passage and salmonid rearing use was not met for Dark Canyon Creek in 2016. No new water temperature data have been collected since 2016.

Deadhorse Allotment

The Deadhorse allotment is located within the Upper John Day River and Headwaters Silvies River subbasin. The 15,514-acre Deadhorse allotment contains two pastures: North/Riley, Riley Creek Meadow, and Percival. Percival pasture is within the Upper Silvies River and does not contain MCR steelhead, CH or MSRA, and will not be discussed further. North/Riley pasture is within the Upper John Day River, and contains 4.29 miles of MCR steelhead CH and 1.05 miles of MSRA in Riley and Ingle creeks. The North/Riley pasture currently (includes the unfenced Riley Creek Meadow) is very large (13,811 acres), consisting of generally steep (very steep in some areas—with cliffs in the north end of the unit, adjacent to Riley Creek), open hills bisected by narrow drainages. This pasture has no roads and is located in a non-motorized area.

Activities

Activities that have occurred or continue to occur within the Upper John Day River and Headwaters Silvies River watersheds include timber harvest, grazing, road and trail use, water diversions, prescribed and natural fire, noxious weed treatment, and recreation (hiking, hunting, off-road vehicle use, driving for pleasure, camping, cross-country skiing, and horseback riding).

Resource Conditions, Monitoring, and Compliance

There are two major drainages within the Deadhorse allotment; Riley Creek and Ingle Creek. Riley Creek bisects the Aldrich Mountains and flows mostly through a rocky narrow canyon that is inaccessible to cattle. There is a 15-foot-high waterfall approximately 1 mile upstream of the MNF boundary on Riley Creek that blocks access to steelhead. On MNF land, Riley Creek contains steelhead/redband, however livestock access to the stream is limited by steep canyon walls, abundant downed wood, and thick riparian vegetation. This lower mile of Riley Creek is contained within a steep, confined canyon with large cobble and small boulder substrate, mixed in with spawning gravels.

Dominant grass species throughout the allotment are bluebunch wheatgrass, Idaho fescue, elk sedge, and pine grass. Riparian overstory vegetation generally consists of a mix of hardwood and conifer species along the stream with alder being the dominant species. Shade is provided by

grass and grass-like species, riparian hardwood species and conifer species along the stream, as well as topography due in part to significantly incised stream channels on several streams within the allotment. Historically, riparian areas were logged by conventional tractor yarding. The combination of logging, insect epidemic, and valley bottom roads has reduced shading from conifer species.

PIBO Monitoring. There is one PIBO DMA K site and one PIBO-I for Riley Creek. In general, most habitat indicators are very close to, meeting, or exceeding PIBO managed and reference mean values for most years (MNF Final 2022 BA). No water temperature data has been collected since 2013.

MIM Monitoring. Prior to 2018, and since 2019, the MIM DMA has been located in a meadow on Riley Creek in the North Riley pasture. This location represents the most sensitive area and is located above CH. In 2018, the DMA was relocated and monitoring conducted. However, Range staff was not present and the site was determined to be not representative of the stream in the pasture. Therefore, monitoring beginning in 2019 was resumed at the previous DMA site. Table 88 includes MIM monitoring data from 2016–2021. North/Riley and Riley Creek were rested 2011–2013. In 2018, both stubble height and bank alteration standards were exceeded at Riley Creek. However, because the DMA location was considered not representative of the stream in the pasture, a notice of non-compliance was not issued. In 2019, DMA monitoring was completed on August 21, two months prior to livestock removal from the pasture. MIM end-of-season monitoring data for 2022 has not yet been provided as of the date of this opinion. Because the MIM DMA is not currently located in CH, a new DMA location will be identified and installed prior to the 2023 grazing season.

Table 88. Short-term Multiple Indicator Monitoring (MIM) on the Deadhorse Allotment

Pasture and Stream	Livestock End-of-Use Date	Date Monitored	Stubble Height		Browse Use		Streambank Alteration	
			Standard	Measured	Standard	Measured	Standard	Measured
North/Riley	9/1/16	10/6/16	4–6”	11”	40–50%	15% ¹	20%	5%
	10/5/17	2017	6”	NP	40–50%	10%	15%	7%
Riley Creek	10/1/18	10/23/18	6”	3”	40–50%	25%	20%	30%
	10/15/19	8/21/19	6”	14”	40–50%	10%	20%	4%
	9/30/20	10/01/20	6”	9”	40–50%	13%	20%	6%
	9/28/21	10/06/21	6”	8”	40–50%	10%	20%	5%

*Stubble Height Column: NP means "no herbaceous key species"

¹ In prior years, Not Present has been recorded for browse. Not because there were no hardwoods present but because they were recorded unavailable. This year has seen increased hardwood recruitment.

Prior to 2021, there were multiple permit transfers in the Deadhorse Allotment that caused confusion over who was responsible for fence maintenance. In 2021, the final permit transfer took place and fence maintenance responsibility was assigned. The entire boundary fence between Deadhorse and Fields Peak North Murderers pasture was repaired and checked during 2021 by the permittees and BMRD range staff. By spring of 2022, all fences in the allotment were brought up to standard.

Region 6 Level II Stream Surveys. Forest Service Region 6 stream surveys were conducted on Ingle and Riley creeks within the Deadhorse allotment in 1995 and 2005 (Table 89). Stream surveys have not been completed since 2005. Based on these surveys, pool frequency and width-

to-depth ratios are not properly functioning. However, large woody debris standards are mostly being met and properly functioning.

Table 89. Region 6 Level II Stream Survey Data for the Deadhorse Allotment.

Stream name	Survey year	Pool frequency (pools/mi)	Large woody debris (pieces/mile)*	Fine sediment/ embeddedness	Width-to-depth (W:D) ratio	Bank stability %	Shade % (with densitometer)
Ingle Creek R2	1995	27.17 (NPF)	49.78 (PF)	-	20.7675 (NPF)	-	-
Riley Creek R2 ¹	2005	31.34 (NPF)	29.85 (PF)	-	26.494 (NPF)	-	-
Riley Creek R3	2005	45.95 (NPF)	16.22 (NPF)	-	27.7742 (NPF)	-	-
Riley Creek R4	1995	-	-	-	-	-	-
Riley Creek R5	1995	28.95 (NPF)	66.23 (PF)	-	20.5294 (NPF)	-	-
Riley Creek R6	1995	30.14 (NPF)	38.36 (PF)	-	8 (PF)	-	-

¹Overlaps private property

*No ecosystem overstory information for this allotment.

Values in **bold font** are meeting fish habitat objectives for Amendment 29, values not bold are not meeting fish habitat objectives. PF = NMFS MPI Properly Functioning, NPF = MPI Not Properly Functioning.

Spawning Surveys. Spawning surveys were not conducted within this allotment 2011–2017, because grazing was not allowed on CH prior to July 1. Spawning surveys were required 2018–2022 in North Riley pasture because livestock were released to graze prior to July 1. However, MNF did not complete spawning surveys in North Riley pasture 2019–2022 because of the remote location of the pasture (Table 90).

Table 90. Spawning Survey Results.

Pasture and Use Dates	Stream	# Redds Observed 2018	# Redds Observed 2019	# Redds Observed 2020	# Redds Observed 2021	# Redds Observed 2022
North–Riley	Ingle Creek	0	No Survey*	No Survey*	No Survey*	No Survey*

*No survey completed due to remote location.

Temperatures. The state water quality standard of the 7-day mean maximum temperature of 64°F for streams with anadromous fish passage and salmonid rearing use was met, and the Amendment 29 desired future conditions (DFC) for a 7-day mean maximum temperature of 64°F was met in Riley Creek in all three years (2003, 2008, and 2013).

In Riley Creek, mean maximum daily and weekly water temperatures in 2008 and 2013 were in the suitable range (< 13.5°C) for salmonid species present during summer months, which is an improvement over 2003 when mean maximum daily and weekly water temperatures were at, or slightly higher, than 15°C. The Malheur Forest Plan standard for water temperature is for no

measurable increase in maximum water temperature, and the PacFish RMO is for maximum water temperatures below 64°F (18°C) within migration and rearing habitat, and below 60°F (15.6°C) within spawning habitats. The water temperature RMO for migration and rearing habitat was met in 2008 and 2013 for Riley Creek.

Dixie Allotment

The Dixie allotment is located within the Upper John Day and Middle Fork John Day River subbasins, and comprises a total of 26,907 acres. Approximately 7,265 acres of private land, 42 acres of state land, and 2,743 acres of BLM managed lands are intermingled with NFS lands. These lands are unfenced, and management of these lands has not been waived to the Forest Service.

The MCR steelhead in this allotment are part of the UJDR and MFJDR populations. The Dixie Allotment is divided into two pastures: Bear Creek and Standard Creek. Streams containing MCR steelhead CH in the Bear Creek Pasture are: Hall Creek, Bear Creek, Dixie Creek, and East Fork Camp Creek. MSRA is designated on Hall Creek and Dixie Creek. Streams containing MCR steelhead CH in the Standard Pasture are: Dixie Creek and Standard Creek. The Dixie Allotment contains 6.54 miles of steelhead CH (0.39 in the headwaters of East Fork Camp Creek, which is in the Middle Fork John Day River watershed) and 1.08 miles of MSRA. The majority of MSRA is designated on Dixie Creek (0.91 miles) with a small portion (0.17 miles) on Hall Creek in the Bear Creek pasture.

Activities

Activities that have occurred or continue to occur within these watersheds include timber harvest, historic mining, grazing, road and trail use, water diversions, prescribed and natural fire, noxious weed treatment, and recreation (hiking, hunting, off-road vehicle use, driving for pleasure, camping, cross-country skiing, and horseback riding).

The Camp Lick Landscape Restoration Project is an ongoing project proposed to reduce surface and ladder fuels in forested areas; reduce the impacts of roads, legacy structures, and ungulates to riparian areas, improve tree health and vigor; reduce tree stand densities; improve fish and wildlife habitat; improve aspen stand health and resiliency; and improve forage for ungulates in uplands. The project includes construction of a fence that will separate the Upper Dixie Camp pasture (490 acres) from the rest of the Dixie Allotment. The fence will be located on a ridge that separates the Middle Fork John Day subbasin from the Upper John Day subbasin where most of Dixie Allotment is located.

Resource Condition, Monitoring and Compliance

Overstory vegetation varies from dominant ponderosa pine stands with associated species of Douglas fir, western larch, lodgepole pine, to grand fir/western larch and alpine/shrub lands at the highest elevations. Engelmann spruce can also be found in a number of drainages within the allotment. Dominant grass species are Idaho fescue, bluebunch wheatgrass and prairie junegrass in the open pine stands, elk sedge/pine grass in the forested areas, and mixed riparian grasses and sedges along the riparian areas.

Riparian overstory vegetation generally consists of a mix of hardwood and conifer species along the stream. Dominant hardwood species consisting of alder, dogwood and aspen; conifer species are generally Engelmann spruce and Douglas fir with lesser components of lodgepole pine and Pacific yew. Historically, riparian areas were logged by conventional tractor yarding. Dredge mining and railroad logging also occurred in and along many of the streams within the allotment. The combination of logging and valley bottom roads, railroad grades, insect epidemic, and historic livestock grazing has reduced riparian shading from hardwood and conifer species, as well as created deficit instream wood loading conditions. Historical beaver populations were much higher than current conditions.

Monitoring data defining existing conditions within the Dixie allotment are generally limited. The lack of PIBO data, limited stream temperature data, limited stream survey data, and recent incomplete range monitoring data provide little framework to draw conclusions on current management and existing conditions.

The environmental baseline as defined by the MPI has no indicators Properly Functioning, Six indicators Functioning at Risk (Chemical Contaminants or Nutrients, Off Channel Habitat, Streambank Condition, Disturbance History and Disturbance Regime), and fourteen indicators Functioning at Unacceptable Risk (Temperature, Sediment, Physical Barriers, Substrate, Large Woody Debris, Pool Frequency, Pool Quality, Refugia, Width/Depth Ratio, Floodplain Connectivity, Change in Peak/Base Flows, Increase in Drainage Networks, Road Density Location, Riparian Habitat Conservation Areas).

Region 6 Level II Stream Survey. Stream Surveys were conducted on Dixie Creek, East Fork Camp Creek, Hall Creek, Standard Creek, and a small portion of an unnamed tributary to Honeymoon Creek in 1994. The most recent Level II Stream Survey was conducted in July 2016, on the small portion of East Fork Camp Creek in the Dixie allotment. Notable findings during the survey include a possible culvert passage barrier in Reach 2 (the majority of which is located in the Dixie allotment, except the very highest reach which is within a block of private land), and heavy livestock use in Reach 2. Reach 2 was severely entrenched with large amounts of bank degradation. Reach 1 (approximately the upper half in the allotment) had undergone watershed improvement measures, including placement of large wood, which somewhat decreased livestock impacts in the area (Table 91).

Table 91. Region 6 Level II Stream Survey Data for the Dixie Creek Allotment.

Stream name	Survey year	Pool frequency (pools/mi)	Large woody debris (pieces/Mile)	Fine sediment/ embeddedness -No R.M.O standard	Width-to-depth (W:D) ratio	Bank stability (%)	Shade % (with Solar Pathfinder) -No R.M.O standard -No NMFS standard
Bear Creek-Reach 1	1994	20.2 (NPF)	38.77 (PF)	-	18.93 (NPF)	99 (PF)	25.1
Bear Creek-Reach 2	1994	27.9 (NPF)	24.32 (PF)	-	10.95 (AR)	99 (PF)	61
Bear Creek Tributary	1994	7.3 (NPF)	22.43 (PF)	-	14.42 (NPF)	99.5 (PF)	-

Stream name	Survey year	Pool frequency (pools/mi)	Large woody debris (pieces/Mile)	Fine sediment/ embeddedness -No R.M.O standard	Width-to-depth (W:D) ratio	Bank stability (%)	Shade % (with Solar Pathfinder) -No R.M.O standard -No NMFS standard
Dixie Creek-Reach 1 (may be off forest)	1994	47.11 (NPF)	42.15 (PF)	-	10.86 (AR)	-	-
Dixie Creek-Reach 1	1994	84.24	49.46 (PF)	-	19.66 (NPF)	-	-
Dixie Creek-Reach 2	1994	56.63 (NPF)	10.71 (NPF)	-	8.05 (PF)	-	-
East Fork Camp Creek-Reach 11	1994	87.7	103.28 (PF)	-	9.44 (PF)	-	-
East Fork Camp Creek-Reach 11	2016	39.56 (NPF)	30.77 (PF)	92.3% < 2mm (NPF)	14.33 (NPF)	84.1 (PF)	62.9
East Fork Camp Creek-Reach 2	2016	10.48 (NPF)	42.74 (PF)	24.75% < 2mm (NPF)	13.278 (NPF)	75.1 (AR)	58.5
Hall Creek-Reach 1	1994	29.6 (NPF)	70.92 (PF)	-	9.68 (PF)	98 (PF)	-
Hall Creek-Reach 2	1994	13.8 (NPF)	43.41 (PF)	-	6.54 (PF)	98 (PF)	-
Standard Creek- Reach 1	1994	73.73 (NPF)	53.39 (PF)	-	16.61 (NPF)	-	-
Standard Creek- Reach 2	1994	61.58 (NPF)	53.39 (PF)	-	10.94 (AR)	-	-
Unnamed Tributary to Honeymoon	1994	6.25 (NPF)	12.5 (NPF)	-	3.28 (PF)	-	-
Wickiup Creek-Reach 1	1994	40.91 (NPF)	57.57 (PF)	-	9.35 (PF)	-	-

Values in **bold** font are meeting fish habitat objectives for Amendment 29, values not bold are not meeting fish habitat objectives. PF = NMFS MPI Properly Functioning, NPF = MPI Not Properly Functioning.

MIM Monitoring. From 2018–2021, MIM implementation data (stubble height, woody browse, and bank alteration) was annually collected at the end of each grazing season on Dixie Creek in the Bear Creek pasture. MIM end-of-season monitoring data for 2022 has not yet been provided as of the date of this opinion. There were no recorded exceedances (Table 92). The Standard Creek pasture does not have a MIM DMA. However, photo point monitoring location is not considered a DMA monitoring site. However, photo point monitoring occurred in 2021 and 2022. In 2021, photo monitoring indicated that there was more than light use. Photo monitoring conducted in 2022 indicated use was within acceptable levels.

Table 92. Short-term Multiple Indicator Monitoring (MIM) on the Dixie Creek Allotment.

Pasture and Stream	Livestock End-of-Use Date	Date Monitored	Stubble Height		Browse Use		Streambank Alteration	
			Standard	Measured	Standard	Measured	Standard	Measured
Bear Creek	10/15/16	2016	4–6"	Dixie DMA monitored	40–50%	Dixie DMA monitored	15%	Dixie DMA monitored
Camp Creek	Rested	2017	6"	Rested	40–50%	Rested	15%	Rested
Alternate DMA (2011–2016)*	10/9/18	2018	6"	Photo	40–50%	Photo	15%	Photo
Bear Creek	10/15/16	10/3/16	4–6"	9"	40–50%	28%	15%	13%
	Rested	2017	6"	Rested	40–50%	Rested	15%	Rested
Dixie Creek	10/4/18	10/24/18	6"	12"	40–50%	11%	15%	9%
	10/9/19	10/23/19	6"	17"	40–50%	11%	15%	7%
	10/10/20	10/22/20	6"	8"	40–50%	18%	15%	9%
	10/15/21	10/28/21	6"	11"	40–50%	50%	15%	6%
Standard Standard Creek	8/1/16	Not monitored	4–6"	Not monitored	40–50%	Not monitored	20%	NM
	10/1/17	Not monitored	4–6"	Not monitored	40–50%	Not monitored	20%	NM
	8/1/18	Not monitored	4–6"	Photos	40–50%	Photos	20%	Photos
	8/8/19	Not monitored	4–6"	Not monitored	40–50%	Not monitored	20%	NM
	8/11/20	Not monitored	4–6"	Not monitored	40–50%	Not monitored	20%	NM
	8/01/21	9/15/21	4–6"	Photos	40–50%	Photos	20%	Photos

* Alternate DMA used 2011–2016

Spawning Surveys. Standard pasture, which does not have designated MSRA, was the only CH grazed prior to July 1 in 2018–2022. However, snow prevented access to this pasture prior to July 1, and spawning surveys did not occur. The Oregon Department of Fish and Wildlife conducted annual index redd counts on Bear Creek up to the confluence with Hall Creek, approximately 0.5 miles downstream of the allotment boundary, in 2006–2016. The Oregon Department of Fish and Wildlife documented redds in Bear Creek every survey year.

Roads and Temperature. Bear Creek pasture encompasses part of the Dixie Creek watershed. The MPI rated the Watershed condition pathway for the Road Density and Location Indicator as “not properly functioning” for greater than 3 mi/mi², as roads occur in many valley drainages.

Bear Creek exceeds the 7-day mean maximum of 64.4°F and is on the State of Oregon 303(d) list for water temperature.

Fawn Springs Allotment

The MCR steelhead in this allotment are part of the UJDR population located in the Upper John Day watershed. The 6,537-acre Fawn Springs allotment is divided into five pastures: Lake, G-4, L-8, Alder, and Fawn Springs. Lake pasture is the only pasture with critical habitat in this allotment. There are 2.70 miles of MCR steelhead CH and 0.24 miles of MSRA within Lake pasture. East Fork Canyon Creek serves as a boundary separating the Lake and G-4 pastures. This section of East Fork Canyon Creek is partially confined by nearly vertical canyon walls comprised of columnar granite. No other streams are known to be occupied by steelhead on the allotment. Fawn Springs allotment was rested from 2017–2021. There have been no compliance issues in this allotment.

Activities

Activities that have occurred or continue to occur within these watersheds include historic mining, timber harvest, grazing, roads, trails, railroads, prescribed and natural fire, noxious weed treatment, and recreation.

In 2015, three water developments within the allotment were replaced early in the season. Later that year, the Canyon Creek Complex Fire burned 100 percent of the Fawn Springs allotment. Approximately 25 miles of fence and 20 water developments were burned. In 2016 and 2017, the allotment was rested due to the Canyon Creek Complex Fire the previous year. The CH within Lake pasture in the allotment was to be rested through 2021.

Resource Condition, Monitoring and Compliance

The environmental baseline for the Upper John Day Basin (8-digit HUC) as defined by the MPI has zero indicators Properly Functioning, four indicators Functioning at Risk (nutrients as identified by stream segments listed under Clean Water Act 303(d) standards; amount of off-channel habitat, streambank condition, and disturbance history), and 13 indicators Functioning at Unacceptable Risk (temperature, physical barriers, substrate, large woody debris, pool frequency, pool quality, refugia, percent fines, floodplain connectivity, changes in peak/base flows, increases in drainage network, road density and locations, and riparian management areas).

PIBO Monitoring. One Integrator (I) site is located on East Fork Canyon Creek and one DMA (K) PIBO site is located in Wall Creek. The I site has been surveyed 11 times, most recently in 2016. From 2012–2016, the total index rating improved. The percent pools and median particle size increased slightly, while the pool depth, percent fines, and percent undercut banks decreased, suggesting declining habitat conditions. These increases, particularly in sediment, may be attributed to wildfires that occurred within the allotment during this timeframe.

The DMA (K) site has been sampled twice, in 2011 and 2016. From 2011 to 2016, the total index rating, pool percent, vegetation stability, bank angle, and percent undercut banks improved. Percent fines and bankfull width-to-depth ratio increased slightly, potentially a result of wildfires in the watershed. PIBO data are available in the Final MNF BAs.

Within the monitored reaches, the data suggest that some stream attributes are improving, some declining, with variability seen in many attributes over a 15-year period in East Fork Canyon Creek. In summary, there has been little change in overall stream habitat conditions on Federal lands of the MNF within the Fawn Springs Allotment, with the potential exception of increased fine sediments and width-to-depth ratios seen in 2016, which is likely attributable to fires in the allotment the previous season. The Canyon Creek Complex Fire burned most of the allotment in 2015. Some habitat measurements have improved in the Fawn Springs allotment monitoring sites such as percent pools and mean particle size (D50) in East Fork Canyon Creek, while others have declined, remained static, or have varied throughout the monitoring years. There are too few reference sites within the John Day Basin to determine whether similar changes are occurring in unmanaged watersheds. Thus, given the short 5-year timeframe between site visits for monitoring and developing trends, and the analysis of data, MNF staff believe that the evaluated attributes are being maintained.

MIM Monitoring. MIM data was collected from 2012–2016. For the most part, MIM data was not collected from 2018–2022, because the only pasture containing CH was rested during this time. However, photos were taken in 2021 and provided with the MNF 2021 EOY report. All standards were met except browse use (81 percent) in 2013 (Table 93).

Table 93. Short-term Multiple Indicator Monitoring (MIM) on the Fawn Springs Allotment.

Pasture and Stream	Livestock End-of-Use Date	Date Monitored	Stubble Height		Browse Use		Streambank Alteration	
			Standard	Measured	Standard	Measured	Standard	Measured
Lake	Rested	2016	4–6"	13"	40–50%	11%	15%	10%
	Rested	2017	6"	Rested	40–50%	Rested	15%	Rested
	Rested	2018	6"	Rested	40–50%	Rested	15%	Rested
Wall Creek	Rested	2019	6"	Rested	40–50%	Rested	15%	Rested
	Rested	2020	6"	Rested	40–50%	Rested	15%	Rested
	Rested	08/31/21	6"	Photo	40–50%	Photo	15%	Photo

Region 6 Level II Stream Surveys. Level II stream surveys were completed on East Fork Canyon Creek in 2006. Fine sediment and bank stability were rated “properly functioning”. Pool frequency, large wood debris, and width-to-depth ratios were rated as “not properly functioning”. No surveys have been completed since 2006.

Spawning Survey. Spawning surveys were rarely conducted on streams in the Fawn Springs allotment, as grazing typically does not occur on CH during the spawning and incubation season (before July 1). Spawning surveys were conducted on streams in the Lake Pasture in 2019 and 2021, with redds only observed in 2019 (Table 94).

Table 94. Spawning Survey Results.

Pasture and Use Dates	Stream	# Redds Observed 2018	# Redds Observed 2019	# Redds Observed 2020	# Redds Observed 2021	# Redds Observed 2022
Lake	Wall Creek	No Survey*	1	No Survey*	0	No Survey*
Lake	East Fork Canyon Creek	No Survey*	1	No Survey*	0	No Survey*

*No survey needed due to pasture not being grazed prior to July 1.

Roads and Temperature. The Fawn Springs allotment G-4 pasture encompasses part of the East Fork Canyon Creek watershed. The MPI rated the Watershed condition pathway for the Road Density and Location Indicator as “not properly functioning” for greater than 3 mi/mi², as roads occur in many valley drainages.

There are no long-term water temperature monitoring sites within the Fawn Springs allotment.

Hanscomb Allotment

The Hanscomb allotment is located within the UJDR and Silvies subbasin, with pastures located within the Headwaters Silvies River and Laycock Creek–John Day River watersheds. The 9,878-acre Hanscomb allotment is divided into four pastures: Laycock, Upper Geary, Geary Meadows, and Allen Morris. The Laycock pasture contains 2.11 miles of MCR steelhead CH, 1.5 miles on Laycock Creek, and 0.61 miles on Hanscomb Creek. MSRA is designated on approximately 0.26 miles of Laycock Creek. The Upper Geary, Geary Meadows, Allen/Morris pastures are located entirely within the Silvies subbasin, which does not support anadromous fish or their habitat. These three pastures will not be discussed further.

All pastures were rested in 2017. Allen/Morris was also rested in 2018 and 2019. The Laycock pasture was rested 2008–2013 and 2015–2017.

Activities

Activities that have occurred or continue to occur within these watersheds include timber harvest, grazing, road and trail use, water diversions, prescribed and natural fire, noxious weed treatment, and recreation (hiking, hunting, off-road vehicle use, driving for pleasure, camping, cross-country skiing, and horseback riding). Historically, riparian areas were logged by conventional tractor yarding. Railroad logging also occurred in and along many of the streams within the Seneca Allotment. The combination of logging, insect epidemic, and valley bottom roads has reduced shading from conifer species.

Resource Condition, Monitoring and Compliance

The environmental baseline for the Upper John Day Basin (8-digit HUC) as defined by the MPI has zero indicators Properly Functioning, four indicators Functioning at Risk (nutrients as identified by stream segments listed under Clean Water Act 303(d) standards; amount of off-channel habitat, streambank condition, and disturbance history), and 13 indicators Functioning at Unacceptable Risk (temperature, physical barriers, substrate, large woody debris, pool frequency, pool quality, refugia, percent fines, floodplain connectivity, changes in peak/base flows, increases in drainage network, road density and locations, and riparian management areas).

Elevations in the Laycock pasture vary from approximately 4,500 feet to approximately 6,700 feet. The Laycock Creek pasture consists of steep slopes covered with relatively dense timber on the upper two thirds of the unit, grading into pine/juniper and sagebrush on the lower slopes. Dominant grass species are bluebunch wheatgrass, Idaho fescue, elk sedge, and pine grass.

Riparian overstory vegetation generally consists of a mix of hardwood and conifer species along the streams with alder being the dominant species.

Neither PIBO DMA K or I MIM DMA sites are located within the Hanscomb allotment. The only MIM DMA data available for this pasture were collected in 2014, two months following the end-of-use date for the Laycock pasture.

MIM Monitoring. The MIM DMA in the Laycock Creek pasture on Laycock Creek was converted to a photo point in 2015. Photo monitoring, which occurred at this location in 2018, 2019, and 2021, showed little to no livestock use. Although part of the proposed action in the 2018 opinion, monitoring did not occur in 2020. The proposed action in the 2018 opinion also included the establishment of a DMA, which has not occurred. The MNF will establish a DMA in 2023.

The Laycock pasture was not grazed from 2008–2013 and was rested again in 2015–2017. But unauthorized grazing use occurred in 2016, and some end-of-season grazing standard violations occurred 2012–2017. There were no standards exceeded, or instances of non-compliance, during the most recent 2018–2022 grazing consultation timeframe.

Region 6 Level II Stream Surveys. Level II Stream surveys were conducted in Laycock Creek in 1995, and have not been repeated since.

Spawning Surveys. Spawning surveys were last conducted in 2014 on Laycock Creek, and redds were not observed. Spawning surveys were not conducted 2014–2022, because grazing did not occur in CH during spawning season (prior to July 1).

Roads and Temperature. The MPI rated the Watershed condition pathway for the Road Density and Location Indicator as “not properly functioning” for the watershed road density containing greater than 3 mi/mi², and as roads occur in many valley drainages.

There are no known long-term water temperature monitoring sites within the Hanscomb allotment.

Herberger Allotment

The Herberger allotment is located within the NFJD and UJDR subbasins in the Beech Creek watershed, and consists of one pasture. This allotment is comprised of 155 acres of NFS lands and approximately 408 acres of private land. East Fork Beech Creek is the only stream within the allotment containing MCR steelhead CH. The allotment contains 0.50 miles of steelhead CH on East Fork Beech Creek, and 0 miles of MSRA.

This allotment was not grazed from 2011–2017. A MIM DMA was established on East Fork Beech Creek in 2017, and grazing occurred 2018–2022.

Activities

Activities that have occurred or continue to occur within the Laycock watershed include timber harvest, grazing, road and trail use, water diversions, prescribed and natural fire, noxious weed treatment, and recreation (hiking, hunting, off-road vehicle use, driving for pleasure, camping, cross-country skiing, and horseback riding). There have also been a number of aquatic restoration activities completed in the Beech Creek Watershed including multiple culverts replaced and removed, large wood placement, and invasive weeds treatment.

Resource Condition, Monitoring and Compliance

The environmental baseline for the Beech Creek watershed (10-digit HUC), which includes the Herberger and McCullough allotments, as defined by the MPI, has zero indicators Properly Functioning, six indicators Functioning at Risk (nutrients as identified by stream segments listed under Clean Water Act 303(d) standards, amount of off-channel habitat, streambank condition, change in peak/base flows, road density and location, and disturbance history), and 11 indicators Functioning at Unacceptable Risk (temperature, physical barriers, substrate, large woody debris, pool frequency, pool quality, refugia, percent fines, floodplain connectivity, increases in drainage network, and riparian management areas).

Livestock have not been turned out prior to July 1, in the Herberger allotment. Therefore, redd surveys have not been conducted on East Fork Beech Creek.

PIBO Monitoring. There are no PIBO sites within the Herberger allotment. Data from two PIBO sites located on East Fork Beech Creek in the Beef pasture of the Beech Creek allotment was analyzed and presented in the BA. These two PIBO sites are located less than 0.5 miles downstream from the Herberger Allotment.

Monitoring occurred four times at the PIBO-I between 2001 and 2016. Overall, total index score, width-to-depth ratio, and percent pools improved from 2001–2016 at the PIBO-I site. A small increase in the percent fines, with a decrease in median particle size, was also seen over this 15-year period. The remainder of the indicators (bank stability, rating, residual pool depth) did not change.

Monitoring occurred two times, in 2011 and 2016, at the PIBO-K site. Within this monitored reach, the bankfull width-to-depth ratio, percent pools, bank stability, bank angle, and undercut banks improved during the monitoring period. Similar to the nearby PIBO-I site, there was an increase in the percent fines, with a corresponding decrease in median particle size.

MIM Monitoring. In 2017, the IDT established a MIM DMA on East Fork Beech Creek in the Herberger pasture. In 2018, 2019, and 2020 MIM monitoring did not occur. However, photo documentation occurred. In all years, Herberger pasture was used minimally (8 c/c pairs for approximately 7–10 days) and very little use was observed. End-of-season MIM data were collected in 2021, and all standards were met with little to no use measured.

Region 6 Level II Stream Surveys occurred in East Fork Beech Creek in 1993, 2014, and 2019. East Fork Beech Creek runs through portions of the Beech Creek, Herberger, John Day, McCullough, and Roundtop allotments. Seven primary habitat elements from 2019 Region 6

stream surveys for streams on public land within and upstream of the two allotments are illustrated (Table 95).

Table 95. Region 6 Level II Stream Survey Data for the Herberger Allotment.

Stream, Reach, and Survey Year	Length (mile) and gradient	Pools per mile and Residual Depth (ft)	Shade (%) in July	Fine sediment < 2 mm (percent)	Gravel substrate (percent)	Width-to-depth ratio (Bankfull)	Average Percent unstable banks	Large wood per mile
East Fork Beech Cr. R1 2019	1.6/1.9%	24/mi. 1.6 ft.	34	21	66	24	3	44
East Fork Beech Cr. R3 2019	1.8/1.5%	44/mi. 1.9 ft.	55	18	46	22	0.4	76
East Fork Beech Cr. R5 2019	1.2/2.6%	36/mi. 1.5 ft.	54	18	49	12	0	54

Values in **bold font** are meeting fish habitat objectives for Amendment 29, values not bold are not meeting fish habitat objectives. PF = NMFS MPI Properly Functioning, NPF = MPI Not Properly Functioning.

Overall, East Fork Beech Creek still lacks pool habitat and large wood, except where recently added with restoration within the allotment. Width-to-depth ratios are higher than desired. Gravel and cobble dominate all the surveyed reaches except the upper two where fines increase. Redds are observed in low numbers in most years in surveyed portions of East Fork Beech Creek.

Roads and Temperature. Water temperature data was collected by the PIBO team in East Fork Beech Pasture at the I site from July 15 to August 31 in 2002, 2006, and 2016. The weekly maximum temperature for each of those years was 19.8°C (68°F), 23.5°C (74°F), and 18.7°C (66°F), respectively. Mean maximum water temperatures are above the suitable range for salmonid species present during summer months in East Fork Beech Creek. There are no additional long-term water temperature monitoring sites within the McCullough and Herberger on/off allotments.

The MPI rated Upper John Day Watershed condition pathway for the Upper John Day Road Density and Location Indicator as “not properly functioning” for greater than 3 mi/mi², as roads occur in many valley drainages.

McCullough Allotment

The McCullough allotment contains streams that provide MCR steelhead CH for the UJDR population. The allotment is operated in conjunction with the Herberger allotment (see description of Herberger allotment, above). The 625-acre McCullough allotment has two pastures: Windmill Flat and Section 21. The allotment is within the UJDR subbasin and in the Beech Creek watershed. The pastures are within the East Fork Beech Creek subwatershed. East Fork Beech Creek contains 1.24 miles of steelhead CH and 0 miles of MSRA within the allotment. Both pastures contain CH on East Fork Beech Creek. This allotment was rested for 6 years, 2012–2017. A MIM DMA was established in both pastures in 2017 on East Fork Beech Creek.

Activities

Activities that have occurred or continue to occur within the Beech Creek watershed include timber harvest, grazing, road and trail use, water diversions, prescribed and natural fire, noxious weed treatment, and recreation (hiking, hunting, off-road vehicle use, driving for pleasure, camping, cross-country skiing, and horseback riding). There have also been a number of aquatic restoration activities completed in the watershed, including multiple culverts replaced and removed, large wood placement, and invasive weeds treatment.

Resource Condition, Monitoring and Compliance

PIBO and MIM Monitoring. There are no PIBO sites within the McCullough allotment. Data from two PIBO sites located on East Fork Beech Creek in the Beef pasture of the Beech Creek allotment was analyzed and presented in the BA, and is discussed above in the Herberger allotment. These two PIBO sites are located 0.75 miles upstream of the McCullough Allotment.

MIM implementation monitoring occurred in Station 21, 2018–2021. All standards were met. Photo monitoring occurred in Windmill Flats in 2019 and 2020, and quantitative MIM monitoring occurred in 2021. Photo monitoring showed light to no use. All MIM grazing indicators were met in 2021; 2022 MIM data had not be provided as of the date of preparation of this document.

Region 6 Level II Stream Surveys. Stream Surveys occurred in East Fork Beech Creek in 1993, 2014, and 2019. East Fork Beech Creek runs through portions of the Beech Creek, Herberger, John Day, McCullough, and Roundtop allotments. Seven primary habitat elements from 2019 Region 6 stream surveys for streams on public land within and upstream of the two allotments are illustrated above in the Herberger allotment description (Table 96). Table 96 details the 2014 stream inventory for the both the Herberger and McCullough allotments and how standards were met for RMOs and Amendment 29, or the Properly Functioning classification of the NMFS MPI. Overall, East Fork Beech Creek still lacks pool habitat and large wood, except where recently added with restoration within the allotment.

Table 96. Degree to which 2014 stream inventory data meets numeric standards or classifications described in Riparian Management Objectives (RMOs), Amendment 29, or the NMFS Matrix of Pathway Indicators (MPI).

Standards or Classifications	RMOs	Amendment 29	NMFS MPI
Pools/mile	Does not meet	Does not meet	NPF
Shade % (solar pathfinder)	NA	Meets 1	NA
Large Woody Debris (/mile)	Does not meet	Does not meet (Reach 9 exception)	NPF
Fine sediment % < 2 mm	NA	NA	NPF
Width-to-depth Ratio	Does not meet	Does not meet	NPF
Bank Stability (%)	Meets	Meets	PF

Overall, East Fork Beech Creek still lacks pool habitat and large wood, except where recently added with restoration. Width-to-depth ratios are higher than desired. Gravel and cobble dominate all the surveyed reaches except the upper two where fines increase. Redds are observed in low numbers in most years in surveyed portions of East Fork Beech Creek.

Spawning Surveys. Spawning surveys were completed on East Fork Beech Creek from 2018–2022 in the Windmill pasture, and in Section 21 pasture in 2018 and 2020. All CH within the pastures was surveyed. Spawning surveys were not completed in Section 21 pasture in 2019, 2021, and 2022, because grazing did not occur prior to July 1. A total of three redds were observed in Windmill Flat and four in Section 21 (Table 97). All observed redds were protected successfully by construction of fencing exclosures or delaying grazing until after July 1. There were no trampled redds identified in 2018–2022.

Table 97. Spawning Surveys

Pasture and Use Dates	Stream	# Redds Observed 2018	# Redds Observed 2019	# Redds Observed 2020	# Redds Observed 2021	# Redds Observed 2022
Windmill Flat	East Fork Beech Creek	0	0	0	1	2
Section 21	East Fork Beech Creek	3	No Survey*	1	No Survey*	No Survey*
Herberger	East Fork Beech Creek	No Survey*	No Survey*	No Survey*	No Survey*	No Survey*

*No survey due to pasture not grazed until July 1.

Roads and Temperature. Stream temperature data collected July 15 to August 31 in 2002, 2006, and 2016 at the PIBO-I site were 23.5°C (74°F), 19.8°C (68°F), and 18.7°C (65°F), respectively. This decreasing temperature may reflect the narrowing and deepening of the stream as indicated by the improving (lowering) of the width-to-depth ratio and increased greenline woody cover. Mean maximum water temperatures are above the suitable range for salmonid species present during summer months in East Fork Beech Creek.

The MPI rated the Watershed condition pathway for the Road Density and Location Indicator as “not properly functioning” for the watershed road density containing greater than 3 mi/mi², and as roads occur in many valley drainages.

Hot Springs Allotment

The Hot Springs allotment is composed of approximately 4,600 acres (2,900 acres of NFS lands and 1,670 of private land). The Hot Springs allotment contains streams that provide CH for MCR steelhead in the UJDR population. The allotment is in Reynolds Creek watershed, and contains streams in the headwater John Day River subwatershed and in the Isham Creek–John Day River subwatershed. The Hot Springs allotment has four pastures: RL, Allen, Gillette–Thompson, and Hot Springs. The RL and Allen pastures are predominately private property. The Gillette–Thompson pasture is all public land and includes Thompson Gulch which is identified as CH for steelhead. The Hot Springs pasture is approximately an 80/20 split between public and private lands. The Hot Springs pasture includes Rail Creek. There is a total of approximately 2.66 miles of steelhead CH located on the John Day River mainstem, Thompson Gulch, and Rail Creek. There is 0.31 miles of MSRA located on Rail Creek. Gillette–Thompson, Hot Springs, and RL pastures contain designated CH on public lands.

Activities

Activities that have occurred or continue to occur within the Reynolds Creek watershed include timber harvest, grazing, road and trail use, water diversions, prescribed and natural fire, noxious weed treatment, and recreation (hiking, hunting, off-road vehicle use, driving for pleasure, camping, cross country skiing, and horseback riding).

Resource Condition, Monitoring and Compliance

Overstory vegetation in the allotment varies from dominant ponderosa pine stands with associated species of Douglas fir, western larch, and lodgepole pine. Dominant grass species are bluebunch wheatgrass/Idaho fescue and Sandberg bluegrass in the grasslands, elk sedge/pine grass in the forested areas and mixed riparian grasses and sedges along the riparian areas. Riparian overstory vegetation generally consists of a mix of hardwood and conifer species along the stream. Dominant hardwood species generally consist of alder and dogwood. Conifer species are generally grand fir and Douglas fir with lesser components of lodgepole pine.

The environmental baseline as defined by the MPI for the Upper John Day subbasin has zero indicators Properly Functioning, four indicators Functioning at Risk (chemical contaminants or nutrients, off channel habitat, streambank condition, and disturbance history) and the remaining 14 indicators Not Properly Functioning.

Monitoring. The Hot Springs Allotment does not have PIBO sites.

MIM data were not collected in these allotments from 2017–2021. Photo monitoring was conducted sporadically. The Gillette–Thompson pasture was rested 2015–2022. Photos were taken on Rail Creek in the Hot Springs Pasture in 2017, 2018, and 2021. Livestock use of Rail Creek is limited by steep topography in the far upper reaches. In addition, the John Day River in the Gillette–Thompson pasture has been rested all years.

Region 6 Level II Stream Surveys. Stream Surveys were last conducted in 2015. In general, standards are met for percent shade, large wood in one of two reaches, fine sediment, and bank stability, and not met for pools per mile or width-to-depth ratio (Table 98).

Table 98. Region 6 Level II Stream Survey Data for the Hot Springs Allotment.

Stream Name	Survey Year	Pool Frequency (Pools/mi)	Shade % (With Solar Pathfinder)	Large Woody Debris (Pieces/Mile)	Fine Sediment/Embeddedness	Width-to-Depth (W:D) Ratio	Bank Stability (%)
Rail Cr. R1	2015	7.41	75	3.7	13.03% <2 mm (AR)	11.1762 (AR)	100
Rail Cr. R2	2015	6.44	77	23.71	14.64% <2 mm (AR)	10.1215 (AR)	100

Values in **bold font** are meeting fish habitat objectives for Amendment 29, values not bold are not meeting fish habitat objectives. PF = NMFS MPI Properly Functioning, NPF = MPI Not Properly Functioning.

Spawning Surveys. Because livestock use did not occur prior to July 1, the MNF did not conduct spawning surveys for steelhead.

Roads and Temperature.

The MPI rated the Watershed condition pathway for the Road Density and Location Indicator as “not properly functioning” for the watershed road density containing greater than 3 mi/mi², and as roads occur in many valley drainages.

Rail Creek Allotment

The Rail Creek allotment is comprised of one pasture (Rail Creek pasture) that is 27,640 acres (26,352 acres of National Forest Service lands and 288 acres of private land). The Rail Creek allotment contains streams with CH for MCR steelhead in the UJDR population, and is located within the UJDR subbasin in the Reynolds Creek subwatershed. The allotment contains approximately 13.84 miles of designated MCR Steelhead CH on the mainstem John Day River, Roberts Creek, Rail Creek, and Call Creek, and 1.0 mile of MSRA. The majority of MSRA miles are on the John Day River.

Activities

Activities that have occurred or continue to occur within the UJDR subbasin include timber harvest, grazing, road and trail use, water diversions, prescribed and natural fire, noxious weed treatment, and recreation (hiking, hunting, off-road vehicle use, driving for pleasure, camping, cross country skiing, and horseback riding).

Instream restoration projects have occurred within the Rail Creek allotment since 2008. From 2008–2016, several aquatic organism passage (AOP) culvert replacements were completed on the John Day River in the action area. The AOP culvert replacements improved passage up to the headwaters of each stream in 2008, 2015, and 2016. Several road closures on tributaries to the John Day River were completed in 2019. The most recent accomplishment includes a rotenone treatment of non-native brook trout, by the ODFW in 2022. Further details are included in the 2022 Final BA (USDA FS 2022).

Resource Condition, Monitoring and Compliance

Riparian vegetation along the mainstem John Day River, Roberts Creek, Rail Creek, and Call Creek varies within the allotment. There are long stretches that are covered with jack-strawed lodgepole and fir debris, and thick alder/willow communities in the upper reaches of Call Creek, Rail Creek and Roberts Creek, with small riparian terraces and stringer meadows interspaced that allow livestock access to the stream. The Upper John Day River is open in nature, with the largest meadow community at Little Meadows off of NFS Road 62. Shade is provided by grass and grass-like species, riparian hardwood species, and conifer species along the stream. Historically, riparian areas in the allotment were logged. The combination of logging, valley bottom roads and railroad grades, insect epidemic, and historic livestock grazing has reduced floodplain interaction and riparian shading from hardwood and conifer species.

Monitoring from 2018–2022 on streams in these allotments has been sporadic and limited to photos, because permitted livestock access to CH is severely limited by topography or vegetation. No permitted livestock have been observed on Roberts Creek or the John Day River for the last ten years. However, unauthorized use from an adjacent permittee (Summit Prairie Allotment) consistently occurred in the Rail Creek allotment from 2018–2021.

PIBO monitoring. Two PIBO sites are located in the Rail Creek allotment on the John Day River in the Rail pasture. Monitoring occurred at these sites between 2003 and 2019, and is available in the 2022 Final BA (USDA FS 2022). Based on a cursory examination of data from these sites, the MNF determined that this portion of the John Day River is near desired/reference values (and often at or near PIBO reference mean values) for all eight comparable habitat metrics: bankfull width-to-depth, mean particle size, % pools, residual pool depth, % fines, bank stability, bank angle, and undercut banks. Also, all of the habitat indicators appear to be showing a static to slight upward trend, maintaining the high-quality habitat that exists in this portion of the John Day River.

MIM Monitoring. MIM DMAs are located on Roberts Creek and the John Day River. From 2011 to 2021, MIM data (stubble height, woody browse, and bank alteration) was rarely collected on Roberts Creek and the John Day River. All three standards were only measured once, at the John Day River DMA in 2016; all standards were met. No long-term trend MIM monitoring has been completed to date. Photographs were taken in three to four of the last six years (2016–2021). Monitoring in 2016–2021 was limited to photos because permitted livestock do not readily access CH in these pastures. MIM data from 2022 were not available as of the date of preparation of this document.

Compliance (2018–2022) In 2018, a damaged cattle guard was determined to be the access point for neighboring livestock onto the allotment. Temporary panels were placed but did not prevent access in 2019 or 2020. A permanent cattle guard was installed in 2020. In 2021, excess use from the neighboring Summit Prairie allotment occurred once more, and a notice of non-compliance and a Notice of Permit Action was issued to the Summit Prairie allotment permittee after failing to remove the cattle within 72 hours from the Rail Creek allotment. MNF issued a temporary suspension of 25 percent permitted time for a period of two years for failure to remedy the non-compliance activities in the Rail Creek allotment.

The unauthorized livestock were documented along County Road 62 in 2018, 2019, 2020, and 2021. In 2020, they were also documented in the Little Meadows Area of the John Day River. However, ocular estimates determined that standards were not exceeded (photos are available in the 2022 Final BA (USDA FS 2022) and the 2021 EOY report (MNF 2022)). In 2022, no unauthorized livestock were documented on the allotment.

Region 6 Level II Stream Surveys. Stream surveys were conducted for six primary habitat elements, from 1991–2020, for streams within the Rail Creek allotment. Available data from 2015–2020 is displayed in Table 99. Data collected prior to 2015 for Crescent, Graham, and Roberts Creeks is available in the Final BA (USDA FS 2022). No new survey data have been collected within this allotment since 2020. Generally, percent shade, bank stability, and large woody debris are properly functioning; pools per mile is not properly functioning; and percent fine sediment and width-to-depth ratios are at risk.

Table 99. Region 6 Level II Stream Survey Data for the Rail Creek Allotment.

Stream Name	Survey Year	Pool Frequency (Pools/mi)	Shade % (With Solar Pathfinder)	Large Woody Debris (Pieces/Mile)	Fine Sediment/Embeddedness	Width-to-Depth (W:D) Ratio	Bank Stability (%)
Call Creek R1	2015	9.8	83	19.6	13.03% <2 mm	11.18	100
Call Creek R2	2015	18.49	74	33.61	14.64% <2 mm	10.12	100
Call Creek R3	2015	5.66	70.25	45.29	29.66% <2 mm	13.73	100
Call Creek R4	2015	6.25	-	25	33.33% <2 mm	14.72	100
Crescent Cr. R1	2020	14.29 (NPF)	91.25	14.28	48.5% <2 mm (NPF)	7.68	100
John Day River R7	2020	39.39 (NPF)	69.19	15.15 (NPF)	42.7% <2 mm (NPF)	12.35 (NPF)	99.57
John Day River R8	2020	24.55 (NPF)	77.02	28.18 (NPF)	44.65% <2 mm (NPF)	12.56 (NPF)	98.15
Rail Cr. R2	2015	6.44	77	23.71	7.93% <2 mm	14.65	99.8
Rail Cr. R3	2015	15.63	72.5	92.19	-	9.01	100

Values in **bold font** are meeting fish habitat objectives for Amendment 29, values not bold are not meeting fish habitat objectives. PF = NMFS MPI Properly Functioning, NPF = MPI Not Properly Functioning.

Livestock turnout in the allotment has been after July 15 every year. Therefore, steelhead spawning surveys have not been conducted within the Rail Creek allotment.

Roads and Temperature. Water temperature data collected for Call Creek, John Day River Crescent Creek, and John Day River from 2003–2016 ranged from 50.49°F to 58.64°F. Mean maximum water temperatures were within the suitable range for salmonid species present during summer months in Call Creek and John Day River, and were considered properly functioning.

The MPI rated the Watershed condition pathway for the Road Density and Location Indicator as “not properly functioning” for the watershed road density containing greater than 3 mi/mi², and as roads occur in many valley drainages.

Reynolds Allotment

The Reynolds allotment is composed of approximately 24,028 acres with 21,288 under the NFS, and 2,740 acres of private in holdings. Reynolds Creek allotment is found in the Reynolds Creek watershed, and is made up of three pastures: Danish, Davis, and Reynolds. There are approximately 10.25 miles of MCR steelhead CH on the Reynolds Creek allotment and 0 miles of MSRA. Most CH is within the larger Reynolds pasture (9.6 miles) with 0.65 miles in the Danish pasture within Isham Creek. The Reynolds pasture has been rested for the last six years. The Danish pasture contains the headwaters of Dans Creek, Eureka Gulch and Isham Creek, and several intermittent streams. The Davis pasture does not contain MCR steelhead CH or fish presence.

Activities

Activities that have occurred or continue to occur within these watersheds include timber harvest, grazing, road and trail use, water diversions, prescribed and natural fire, noxious weed treatment, and recreation (hiking, hunting, off-road vehicle use, driving for pleasure, camping, cross country skiing, and horseback riding).

Resource Condition, Monitoring and Compliance

Past timber harvest has been focused in the North Reynolds subwatershed with more recent activity noted in the northern part of Reynolds Creek. These areas have a mixture of old harvest units (clear-cuts, shelterwood cuts, and thinning units) that are in various stages of regeneration, as well as more recent harvest activities associated with the Mossy Timber Sale. Accessible areas to livestock along North Reynolds Creek are limited to small open meadows and benches. Access along North Reynolds Creek and Mossy Gulch is readily available due to the NFS roads.

By contrast, most of the Reynolds Creek subwatershed has not had any logging activity in over 30 years, and is currently designated as a Wildlife Emphasis Area. Accessible areas to livestock along Reynolds Creek are larger meadows ranging in size from 1 to 2 acres. Livestock use is most noticeable along the NFS Road 2635 where it parallels lower Reynolds Creek. Upper Reynolds Creek and its associated tributaries are only accessible by the Reynolds Creek trail and some limited upper ridge roads. In all of these streams, blow-down timber, dense canopy, and lack of palatable forage limits most use in the allotment to the open riparian areas.

Field visits to Danish pasture in 2017 to Eureka Gulch, Dans Creek, and Isham Creek documented that CH in Eureka Gulch and Dans Creek was intermittent, as they were dry or nearly dry by June 17 in a good snowpack year. Critical Habitat in these areas also had minimal facultative wet riparian plant species indicating that the streams are dry for the majority of most years. Isham Creek was dry in the uppermost CH in the pasture but perennial in the lowermost (approximately 1 mile) with abundant springs and seeps. Riparian vegetation consisted of heavy alder and dogwood communities and sedges. Field observation suggested Isham Creek riparian vegetation was functioning properly, as no evidence of livestock damage was found from previous years. Livestock have limited access to this area of stream. Spring and seep areas were well vegetated and did not indicate evidence of livestock trampling or loafing.

The MNF will schedule property surveys to determine if Isham Spring is located on public land or on private lands in the future. If located on public lands, it is recommended that an interdisciplinary team should develop a plan to exclude the spring from grazing. A DMA monitoring site still needs to be established along Isham Creek along with the determination of appropriate indicators to be monitored. Dans Creek needs to be assessed to determine if identified CH is on public land.

PIBO Monitoring. Two PIBO sites are also located in the Reynolds Creek allotment, one on Reynolds Creek and one on North Fork Reynolds Creek, both in the Reynolds pasture. Monitoring occurred at these sites between 2006 and 2019.

Monitoring of Reynolds Creek suggest in this location it is similar or better than managed mean values, with facultative wet and woody cover over 50 percent. Monitoring data also indicated that all of the habitat indicators appear to be showing a static to slight upward trend.

Monitoring of North Fork Reynolds Creek also suggested that in this location it is similar or better than the managed mean values, with facultative wet and woody cover about 11 percent. Monitoring data in this reach also indicated that most of the habitat indicators appear to be

showing an overall static trend, with a few habitat indicators showing a slight upward or downward trend.

MIM Monitoring. MIM DMAs are located on Reynolds Creek in the Reynolds pasture, Isham Creek in the Danish pasture, and Dans Creek in the Davis pasture. The Reynolds Creek Pasture and Danish Pastures are the only pastures that contain CH. The Reynolds Creek Pasture was rested 2018–2022. Livestock access to CH in Danish Pasture is limited. Therefore, MIM data were not collected during the past consultation period (2018–2022).

Region 6 Level II Stream Surveys. Stream surveys were conducted in 1991 and 2008 in the Reynolds Creek allotment. No new survey data has been collected since 2008 within this allotment. In general, pools per mile and width-to-depth ratios are not properly functioning, and large woody debris, percent fine sediment, and bank stability are properly functioning (Table 100).

Table 100. Region 6 Level II Stream Survey Data for the Reynolds Allotment.

Stream Name	Survey Year	Pool Frequency (Pools/mi)	Shade % (With Solar Pathfinder)	Large Woody Debris (Pieces/Mile)	Fine Sediment/Embeddedness	Width-to-Depth (W:D) Ratio	Bank Stability (%)
Rail Cr. R1	2015	7.41	75	3.7	13.03% <2 mm (AR)	11.1762 (AR)	100

Values in **bold font** are meeting fish habitat objectives for Amendment 29, values not bold are not meeting fish habitat objectives. PF = NMFS MPI Properly Functioning, NPF = MPI Not Properly Functioning.

Spawning Surveys. The Reynolds pasture has been rested for the last 6 years, and the MNF has not conducted spawning surveys. However, the ODFW did conduct surveys in this stream/pasture up until 2018. Steelhead redds were found in eight of ten years surveyed, with a maximum of 16 redds observed in 2010, and one redd observed in 2018, the last year of surveys (Table 101).

Table 101. Spawning survey results in streams within the Reynolds Allotment from 2009 to 2018.

Year	Pasture	# Redds Observed	Stream	Survey Reach (miles)
2009	Reynolds	3	Reynolds Creek	1.5 miles
2010	Reynolds	16	Reynolds Creek	1.5 miles
2011	Reynolds	-	Reynolds Creek	1.5 miles
2012	Reynolds	4	Reynolds Creek	1.5 miles
2013	Reynolds	3	Reynolds Creek	1.5 miles
2014	Reynolds	8	Reynolds Creek	1.5 miles
2015	Reynolds	15	Reynolds Creek	1.5 miles
2016	Reynolds	6	Reynolds Creek	1.5 miles
2017	Reynolds	0	Reynolds Creek	2 miles
2018	Reynolds	1	Reynolds Creek	1.6 miles

Roads and Temperature. PIBO water temperature monitoring was conducted at three sites (NF Reynolds Creek, Upper Reynolds Creek and Lower Reynolds Creek) from 2003–2016. Mean 7-

day maximum temperatures in North Fork Reynolds, Upper Reynolds, and Lower Reynolds creeks ranged from 62.24 °F (2006) to 48.88 °F (2016). Collected data indicated stream temperature and shade objectives were met within most of the allotment. No temperature data have been collected since 2016 by the PIBO team.

John Day Allotment

The John Day allotment contains streams that provide CH for the UJDR population of MCR steelhead. The allotment is located within UJDR subbasin, the Beech Creek watershed, and the Upper Beech Creek and East Fork Beech Creek subwatersheds. The John Day allotment is divided into four pastures: Thompson, Lower Ennis, Upper Ennis, and Lower/Upper McClellan. The Thompson pasture does not contain CH. MSRA is designated in the Lower Ennis and (Lower) McClellan pastures.

The John Day allotment contains 9.19 miles of MCR steelhead CH, of which 2.6 miles is MSRA. Streams in in the Lower Ennis Creek pasture containing CH are: Beech Creek, East Fork Beech Creek, Clear Creek, Johnson Creek, Hog Creek, and Ennis Creek. MSRA is designated on Clear Creek and East Fork Beech Creek. Within the Lower McClellan pasture, McClellan Creek contains 3.55 miles of MCR steelhead CH and MSRA. McClellan Creek is the only stream containing steelhead CH within the McClellan pasture. McClellan pasture also contains the most MSRA among the allotment pastures (1.52 miles). Upper Ennis Creek pasture contains 0.4 miles of MCR steelhead CH. The section of CH in Clear Creek has been scheduled to be fenced within a livestock enclosure. However, it has not been completed as of 2022. No other streams are known to have MCR steelhead in the allotment.

Activities

The watersheds encompassing the John Day allotment support a mix of NFS and private lands. Activities that have occurred or continue to occur within these watersheds include historic mining, timber harvest, grazing, roads, trails, water diversions, prescribed and natural fire, noxious weed treatment, and recreation.

Resource Condition, Monitoring and Compliance

Past grazing management practices (prior to the 1990 Malheur Forest Plan) impacted existing aquatic habitat and water quality due to reductions in: shade, bank-stabilizing wetland vegetation, and riparian hardwood communities, along with streambank alterations, increases in width-to-depth ratios and increased fine sediment levels. These impacts were exacerbated within areas that had been disturbed by logging. Improved management practices, on both private and Forest Service land, have resulted in some upward trends in aquatic conditions post 1990; however, riparian hardwood vegetation, stream channel morphology, and large woody debris are still in a degraded condition within the action area. Deer and elk also have impacted the shrub communities through browse use in some portion of riparian areas.

There are a variety of potential fish passage barriers in Lower Ennis pasture streams. A series of log weirs in reach 1 of Clear Creek and reach 1 of East Fork Beech Creek may be barriers for juvenile steelhead passage at certain flows. A culvert in reach 1 of Hog Creek prevents all fish

passage upstream, and a culvert in reach 1 of Ennis Creek is a juvenile fish passage barrier. There is also one unscreened diversion in this reach on Johnson Creek.

The environmental baseline as defined by the MPI for the Upper John Day subbasin has zero indicators Properly Functioning, four indicators Functioning at Risk (nutrients/303(d) designations, off-channel habitat, streambank condition, and disturbance history), and 14 indicators Not Properly Functioning (temperature, sediment, physical barriers, substrate, large woody debris, pool frequency, pool quality, refugia, width-to-depth, floodplain connectivity, change in peak/base flow, increase in drainage network, and riparian management areas).

PIBO Monitoring. Two Integrator (PIBO-I) and two DMA (PIBO-K) sites are located in East Fork Beech Creek and Beech Creek, with one I and one K site on each stream. The East Fork Beech Creek PIBO-I and -K sites are not within the allotment but just upstream of McClellan Creek and the McClellan pasture. The Beech Creek PIBO-I site is at the edge of the Ennis Pasture. The Beech Creek PIBO-K site is below a culvert crossing state Highway 395, just downstream of the allotment boundary. Monitoring occurred at both I sites four times between 2001 and 2016. The K sites have been sampled two times since 2011 (neither within the allotment, but one near Upper Ennis Creek Pasture in Beech Creek).

In general, the PIBO-I data suggest a slight improvement in total index rating, bankfull width-to-depth, bank angle, undercut banks, and percent pools. The bank angle and undercut banks remained essentially stable during the sampling period, with a small increase in the percent fines, and a corresponding decrease in median particle size seen in East Fork Beech Creek.

The Beech Creek site adjacent to Lower Ennis pasture also had a decreasing width-to-depth in the same period, but with most other indicators being static. Overall, these data indicate that trends in indicators readily impacted by grazing have a static or slow upward improvement for some metrics. PIBO-K site data suggest similar trends. Bankfull width-to-depth ratio, percent pools, bank stability, bank angle, and undercut banks have improved upstream of the John Day Allotment during the monitoring period in East Fork Beech Creek. Similar to the nearby I site in East Fork Beech Creek, there was an increase in the percent fines, with a corresponding decrease in median particle size. At the Beech Creek site, there was improvement in the bankfull width-to-depth ratio, percent fines less than 6 mm, percent undercut banks, and bank angle. It should be noted this site is influenced by numerous upstream disturbances not associated with this allotment, including the State highway, and the overall total index for the site decreased.

MIM Monitoring. From 2018–2021, endpoint indicator monitoring occurred in Lower Ennis (East Fork Beech Creek), Upper Ennis (Clear Creek), and McClellan (McClellan Creek) pastures. There were no exceedances of the three endpoint indicators in any year (Table 102). However, only photo monitoring occurred on Clear Creek (Upper Ennis Pasture) in 2019, 2020, and 2021, because the DMA in this pasture is on a reach of Clear Creek that makes conducting MIM difficult. An ID team determined that the limited herbaceous growth creates a “lack of greenline” event when conducting MIM. However, the MNF has noted the need for an ID team to visit the DMA to determine if it is located in the appropriate monitoring location and whether or not the critical habitat actually needs to be fenced. If CH is not excluded from fencing, the DMA will be monitored or a new DMA established prior to the 2023 grazing season.

Table 102. Short-term Multiple Indicator Monitoring (MIM) on the John Day Allotment

Pasture and Stream	Livestock End-of-Use Date	Date Monitored	Stubble Height		Browse Use		Streambank Alteration	
			Standard	Measured	Standard	Measured	Standard	Measured
Beef East Fork Beech Creek	~	2011	4-6"	10"	40-50%	<40%	10%	6%
	6/27/12	2012	4-6"	10"	40-50%	44%	15%	3%
	7/1/13	10/31/13	4-6"	13"	40-50%	33%	15%	7%
	6/23/14	10/7/14	4-6"	19"	40-50%	14%	15%	5%
	10/5/15	10/5/15	4-6"	12"	40-50%	21%	15%	11%
	8/20/16	8/30/16	4-6"	9"	40-50%	17%	15%	11%
	Rested	2017	6"	Rested	40-50%	Rested	15%	Rested
	6/26/18	7/10/18	6"	12"	40-50%	10%	15%	11%
	9/24/19	9/24/19	6"	10"	40-50%	32%	15%	9%
	10/30/20	11/06/20	6"	8"	40-50%	25%	15%	6%
10/25/21	11/03/21	6"	8"	40-50%	30%	15%	8%	

Region 6 Level II Stream Surveys. Stream surveys occurred in 2017 (Ennis Creek) and 2018 (Beech Creek, East Fork Beech Creek, and Hog Creek). Numeric standards are not met for pools for mile, large woody debris, fine sediment, and width-to-depth ratios, and each of these is considered Not Properly Functioning. Bank stability does meet standards and is considered Properly Functioning (Table 103).

Table 103. Region 6 Level II Stream Survey Data for the John Day Allotment.

Stream, Reach, and Survey Year	Length (mile) and gradient	Pools per mile and Residual Depth (ft)	Shade (%) in July	Fine sediment < 2 mm (percent)	Gravel substrate (percent)	Width-to-depth ratio (Bankfull)	Average Percent unstable banks	Large wood per mile
Beech Cr. R2 2018	1.1/2.7%	38/mi 1.5 ft.	55	25	43	15	0	1
Beech Cr. R4 2018	1.9/3.1%	21/mi. 1.0 ft.	76	16	55	9	2	13
Beech Cr. R6 2018	1.5/3.7%	4/mi 1.0 ft.	80	25	50	11	0	12
Beech Cr. R8 2018	.45/7.9%	7/mi 0.8 ft.	73	80	11	10	0	18
Beech Cr. R9 2018	.97/9.3%	0 0	70	65	20	8	0	35
East Fork Beech Cr. R1 2019	1.6/1.9%	24/mi. 1.6 ft.	34	21	66	24	3	44
East Fork Beech	1.8/1.5%	44/mi. 1.9 ft.	55	18	46	22	0.4	76

Stream, Reach, and Survey Year	Length (mile) and gradient	Pools per mile and Residual Depth (ft)	Shade (%) in July	Fine sediment < 2 mm (percent)	Gravel substrate (percent)	Width-to-depth ratio (Bankfull)	Average Percent unstable banks	Large wood per mile
Cr. R3 2019								
East Fork Beech Cr. R5 2019	1.2/2.6%	36/mi. 1.5 ft.	54	18	49	12	0	54
East Fork Beech Cr. R7 2019	1.6/2.8%	37/mi. 1.2 ft.	70	16	51	11	0.1	1.3
East Fork Beech Cr. R8 2019	0.7/3.1%	31/mi. 0.9 ft.	81	32	36	15	0	7.4
East Fork Beech Cr. R9 2019	4.9/3.3%	4/mi. 1.2 ft.	62	26	53	18	5.7	14.5
Ennis Creek R1 2017	1.2/5.9%	24/mi. 0.7 ft.	54	40	35	10	1.0	8
Ennis Creek R2 2017	1.3/7.7%	18/mi. 0.8 ft.	49	29	51	6	1.3	18
Hog Creek R1 2018	3.4/9.2%	46/mi. 0.7 ft.	77	46	29	29	1.8	33

Values in **bold font** are meeting fish habitat objectives for Amendment 29, values not bold are not meeting fish habitat objectives. PF = NMFS MPI Properly Functioning, NPF = MPI Not Properly Functioning.

Spawning Surveys. Only pastures with CH grazed before July 1 are surveyed for redds. John Day Allotment has not had any pastures with CH grazed prior to July 1 during the last consultation period (2018–2022). However, spawning surveys did occur in 2019 in McClellan Pasture on East Fork Beech Creek, and no redds were found. Although not found in 2019, steelhead redds have consistently been identified in McClellan Creek according to the Final BA (USDA FS 2022). The Oregon Department of Fish and Wildlife completed steelhead redds counts 1962–2017 on East Fork Beech Creek index reaches within the project area (Figure 36). Steelhead redds have consistently been identified in East Fork Beech Creek, including two in 2017, 11 in 2016, and 25 in 2015.

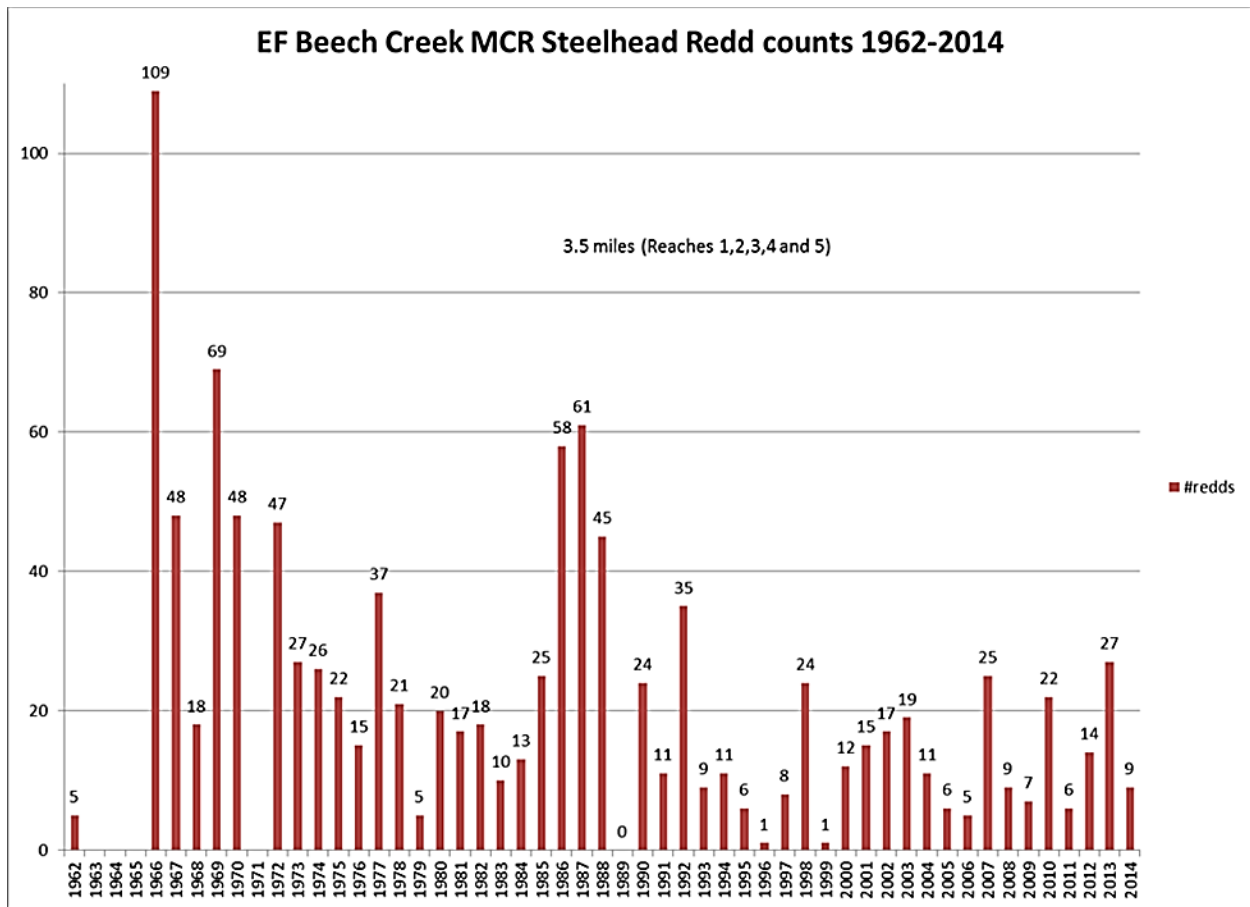


Figure 36. Oregon Department of Fish and Wildlife (ODFW) completed Middle Columbia River (MCR) steelhead redds counts 1962–2014 on East Fork Beech Creek.

Roads and Temperature. The John Day allotment and Upper and Lower Ennis pastures encompass the entirety of the Clear Creek watershed. The MPI rated the Watershed condition pathway for the Road Density and Location Indicator as “not properly functioning” for the watershed road density containing greater than 3 mi/mi², and as roads occur in many valley drainages.

None of the tributary streams in the John Day allotment are on the State of Oregon 303(d) list for temperature. Water temperatures were recorded July 15 to August 31 at the two PIBO-I sites (East Fork Beech and Beech Creek) during PIBO monitoring years. The Maximum Weekly Maximum Temperatures (MWMT) ranged from 65.3°F to 74.3°F and did not meet fish habitat objectives.

McClellan Allotment

The MCR steelhead in the McClellan allotment are part of the UJDR population. The McClellan allotment is fully within the UJDR subbasin and the Laycock–John Day River watershed. The allotment consists of one pasture (McClellan pasture). There are 0.94 miles of steelhead CH on McClellan Creek in the McClellan pasture and 0 miles of MSRA. There is no MIM DMA.

Activities

Activities that have occurred or continue to occur within these watersheds include historic mining, timber harvest, grazing, roads, trails, and prescribed and natural fire.

Resource Condition, Monitoring and Compliance

Fencing around the allotment is limited to the border between NFS and private land and drift fences between natural rock bluff barriers. Throughout the summer, McClellan Creek is diverted to an irrigation pipe that irrigates hay fields on private lands, causing intermittent stream flow downstream of the pipe during irrigation season. Downstream of the allotment on private lands, the creek flows into an irrigation ditch system which connects with a diversion off of the John Day River to the north. This extensive irrigation system limits steelhead access to CH within the McClellan allotment in most years.

The McClellan allotment has little to no available information describing the existing conditions of the riparian and aquatic habitat, and as a result, little if any information on the potential for impacts from grazing to steelhead CH within the pasture. Only upland monitoring has been completed, although there is a photo point on McClellan Creek. No PIBO sites exist within the McClellan allotment, so there are no PIBO data available. A comparison between existing conditions on McClellan allotment and PIBO managed and reference sites cannot be made. No Region 6 Level II stream surveys have been conducted in streams within the McClellan allotment. The McClellan allotment does not have a MIM DMA established due, in part, to a potential waterfall fish barriers providing inaccessibility to steelhead. Spawning surveys were not conducted in the McClellan allotment streams during the last consultation period (2018–2022) because CH was not grazed prior to July 1.

Mt. Vernon Allotment

The MCR steelhead in the Mt. Vernon allotment are part of both the UJDR and NFJD populations, with a slight majority of the allotment associated with the UJDR population. The Mt. Vernon allotment is located within the NFJD and UJDR subbasins, in the Beech Creek, Laycock Creek–John Day River, Fields Creek–John Day, River and Cottonwood Creek watersheds.

The Mt. Vernon allotment is divided into six pastures; Belshaw Creek, Belshaw Riparian, Cohoe, Belshaw Meadows, Birch Creek, and Bear Creek. There is 5.05 miles of MCR steelhead CH within the Belshaw, Belshaw Riparian, and Bear Creek pastures within the UJDR. The Belshaw Riparian Pasture contains MCR steelhead CH in Belshaw Creek, of which 1.1 miles is identified as MSRA. Bear Creek pasture contains MCR steelhead CH in Bear Creek, an unnamed tributary to Bear Creek, and Beech Creek. The MIM DMAs for Belshaw Creek and Belshaw Riparian pastures are located on Belshaw Creek, and for Bear Creek pasture located on Bear Creek. Birch Creek has a very small portion of CH in the northwest corner where Belshaw Creek cuts across the pasture. The Cohoe and Belshaw Meadow pastures do not contain any fish-bearing streams.

Activities

Activities that have occurred or continue to occur within these watersheds include timber harvest, grazing, road and trail use, water diversions, prescribed and natural fire, noxious weed treatment, and recreation (hiking, hunting, off-road vehicle use, driving for pleasure, camping, cross-country skiing, and horseback riding).

In 2022, the Beech Creek Fire burned 155 acres in the Beech Creek watershed. Approximately 75 acres of the fire was in Bear Pasture of the Mt. Vernon Allotment. The fire perimeter includes approximately 0.77 miles of Beech Creek, which flows along Highway 395.

During the 2018 to 2022 consultation period, multiple fish passage and restoration improvement projects were implemented including AOP improvements, culvert removals, large wood placements, and invasive species treatments in Tinker Creek, East Fork Beech Creek and Beech Creek.

Resource Condition, Monitoring and Compliance

PIBO Monitoring. Three PIBO DMA K monitoring sites are located within the Mt. Vernon allotment. The K sites are located on Belshaw Creek within the Belshaw Riparian pasture, Birch Creek within the Bear Creek pasture, and Beech Creek on the east border of the Bear Creek pasture. The Belshaw Creek and Birch Creek sites were monitored in 2013 and 2018. From 2013 to 2018, percent total fines improved in Belshaw Creek. However, the total index score site declined. The total index score for Birch Creek declined substantially (26.4 to 2.4), mostly the result of large increase in percent fines, from approximately 30 percent to 80 percent.

The Beech Creek site was monitored in 2011, 2016, and for Belshaw Creek in 2018. Between 2011 and 2016 at the Beech Creek site, there was improvement in the bankfull width-to-depth ratio, percent fines <6 mm, percent undercut banks, and bank angle. However, the total index score for the Beech Creek site declined. Width-to-depth remains relatively high at that site, even with the decrease between 2011 and 2016. It should be noted that sites that have been monitored twice may not show statistically significant results.

MIM Monitoring. MIM monitoring occurred in Belshaw Riparian, Bear Creek, and Belshaw pastures from 2018 to 2022. Most standards were met. However, the stubble height standard was not met in 2018 in Belshaw pasture, and in 2021 the bank alteration standard was not met (the bank alteration exceedance was within 1 percent of the standard) in Belshaw Riparian. In 2022, bank alteration was exceeded in Belshaw pasture. The MNF sent notice of non-compliance letters to the permittee in 2018, 2021, and 2022. As a result of the 2022 non-compliance, the Belshaw pasture will be rested in 2023 with a reduction from 1,618 AUM (1,227 HM) to 1,102 AUM (920 HM) for 2024.

Region 6 Level II Stream Survey. Forest Service Region 6 Level II stream survey of Beech Creek and Bear Creek occurred in 1991, 1993, 2018, and 2019. In general, the shade and percent unstable bank standards are met; pools per mile and percent gravel substrate standards are not met; and percent fine sediment and large wood per mile standards are mostly not met in the allotment (Table 104).

Table 104. Region 6 Level II Stream Survey for the Mt. Vernon Allotment.

Stream, Reach, and Survey Year	Length (mile) and gradient	Pools per mile and Residual Depth (ft)	Shade (%) in July	Fine sediment < 2 mm (percent)	Gravel substrate (percent)	Width-to-depth ratio (Bankfull)	Average Percent unstable banks	Large wood per mile
Beech Cr. R2 2018	1.1/2.7%	38/mi 1.5 ft.	55	25	43	15	0	1
Beech Cr. R4 2018	1.9/3.1%	21/mi. 1.0 ft.	76	16	55	9	2	13
Beech Cr. R6 2018	1.5/3.7%	4/mi 1.0 ft.	80	25	50	11	0	12
Beech Cr. R8 2018	0.45/7.9%	7/mi 0.8 ft.	73	80	11	10	0	18
Beech Cr. R9 2018	0.97/9.3%	0 0	70	65	20	8	0	35
Bear Creek R2 2019	1.1/6.6%	33/mi. 0.8 ft.	89	6.5	87	20	0.6	4
Bear Creek R4 2019	0.7/8.7%	8/mi. 0.6 ft.	91	66	34	13	0.3	26

Values in **bold font** are meeting fish habitat objectives for Amendment 29, values not bold are not meeting fish habitat objectives. PF = NMFS MPI Properly Functioning, NPF = MPI Not Properly Functioning.

Spawning Surveys. Spawning surveys occurred 2018–2022 on Bear Creek and in 2018, 2019, and 2022 on Belshaw Creek. There are no redds observed on Bear Creek or Belshaw Creek.

Roads and Temperature. The Mt. Vernon allotment’s Belshaw Creek and Belshaw Riparian pastures encompass much of the upper Belshaw Creek watershed. The MPI rated the Watershed condition pathway for the Road Density and Location Indicator as “not properly functioning” for the watershed road density containing greater than 3 mi/mi², and as roads occur in many valley drainages.

None of the streams in the Mt. Vernon allotment are on the State of Oregon 303(d) list for water temperature. There are no long-term water temperature monitoring sites within the Mt. Vernon allotment. Temperature data were collected at the Beech Creek PIBO site, which is located approximately 1.5 miles downstream from where Bear Creek and Little Bear Creek enter Beech Creek, July 15 to August 31 in 2002, 2011, and 2016. Maximum weekly temperatures were 72°F (2002), 65°F (2011), and 70°F (2016), indicating that Beech Creek downstream of the Mt. Vernon Allotment is not meeting the state water quality standard or the NMFS MPI of 64°F for migration and rearing of anadromous fish.

Roundtop Allotment

The Roundtop allotment is located within the UJDR subbasin, and contains CH for the UJDR population of MCR steelhead. The pastures comprising the Roundtop allotment are within the Grub Creek–John Day River and Beech Creek watersheds.

The Roundtop allotment is divided into six pastures: Tinker, Beech, Grub, Tode, Four Corners, and Short-and-Dirty. In the allotment there are 4.77 miles of steelhead CH and 1.62 miles of MSRA. Streams containing MCR steelhead CH in the Tinker Creek pasture are Tinker Creek and East Fork Beech Creek. MSRA is designated on Tinker Creek. In Grub pasture, Grub Creek contains MCR steelhead CH and MSRA. East Fork Beech Creek contains MCR steelhead CH and MSRA.

Tode, Four Corners, and Short-and-Dirty pastures do not contain MCR steelhead CH or MSRA. No other streams are known to have MCR steelhead in the allotment.

Activities

Historically, riparian areas of this area were logged by conventional tractor yarding. Mining and railroad logging also occurred in and along many of the streams within the Roundtop allotment. The combination of logging, insect epidemic, and valley bottom roads has reduced stream shade from conifer species. Activities that have occurred or continue to occur within these watersheds include; legacy mining, timber harvest, livestock grazing, roads, trails, prescribed and natural fire, noxious weed treatment, and recreation.

All of the pastures in the Roundtop allotment occur on the edge of or within the Magone planning area. A separate consultation was completed for the Magone Project in 2017, which is a much larger area entirely within the Upper John Day subbasin. The primary proposed activities of the Magone Project are silviculture treatments on 13,378 acres, including: 7,184 acres of commercial timber harvest; 5,918 acres of commercial and non-commercial thinning to create strategic fuel breaks; re-designation of stands on 223 acres for replacement Old-Growth; post and pole removal in 292 acres; and construction of 13 miles of temporary road. There will be no timber felling or silviculture treatments within RHCA's. Fuel treatments within burn blocks will take place over the next 20 years.

From 2018–2020, several fish passage projects were implemented on Tinker Creek and East Fork Beech Creek, and invasive species treatments were completed on East Fork Beech Creek.

In 2021, aquatic restoration activities took place on Tinker Creek. The Forest Service placed large wood throughout the floodplain to help dissuade cattle from using the riparian area. The Forest Service and the ODFW worked together to build approximately 29 beaver dam analogs, replaced culverts and a gaging station, and placed large wood in approximately 0.75 mile of Tinker Creek and throughout its floodplain.

Resource Condition, Monitoring and Compliance

The environmental baseline as defined by the MPI for the two 10-digit HUC watersheds (Beech Creek and Grub Creek–John Day River) has zero indicators Properly Functioning, four indicators Functioning at Risk (Nutrients, Off Channel Habitat, Streambank Condition, and Disturbance History), and 14 indicators Not Properly Functioning (Temperature, Sediment, Physical Barriers, Substrate, Large Woody Debris, Pool Frequency, Pool Quality, Refugia, Width/Depth, Floodplain Connectivity, Change in Peak/Base Flows, Increase in Drainage Network, Road Density and Location, and Riparian Management Areas).

Region 6 Level II Stream Surveys. Stream Surveys were completed in East Fork Beech Creek in 1993, 2014, and most recently in 2019 (Table 105). The stream runs through portions of the Beech Creek, Herberger, John Day, McCullough, and Roundtop allotments. Reaches 7, 8, and 9 are within the Roundtop Allotment. Overall within the allotment, East Fork Beech Creek still lacks pool habitat and large wood, except where recently added with restoration. Width-to-depth ratios are higher than desired. Gravel and cobble dominate all the surveyed reaches, except the upper two, which are outside the allotment, where fines increase.

Table 105. Region 6 Level II Stream Survey Data for the Roundtop Allotment.

Stream, Reach, and Survey Year	Length (mile) and gradient	Pools per mile and Residual Depth (ft)	Shade (%) in July	Fine sediment < 2 mm (percent)	Gravel substrate (percent)	Width-to-depth ratio (Bankfull)	Average Percent unstable banks	Large wood per mile
East Fork Beech Cr. R7 2019	1.6/2.8%	37/mi. 1.2 ft.	70	16	51	11	0.1	1.3
East Fork Beech Cr. R8 2019	0.7/3.1%	31/mi. 0.9 ft.	81	32	36	15	0	7.4
East Fork Beech Cr. R9 2019	4.9/3.3%	4/mi. 1.2 ft.	62	26	53	18	5.7	14.5

Values in **bold font** are meeting fish habitat objectives for Amendment 29, values not bold are not meeting fish habitat objectives. PF = NMFS MPI Properly Functioning, NPF = MPI Not Properly Functioning.

PIBO Monitoring. PIBO data were collected in 2016 in Beech Creek pasture (East Fork Beech Creek). This special study site is not part of the PIBO long-term monitoring program. Values for two of the eight stream attributes considered to be potentially affected by livestock grazing, bank stability and percent fines less than 6 mm, were better than PIBO managed and reference mean values. Four stream attributes (bankfull width-to-depth ratios, D50, residual pool depth, bank angle, and undercut banks), were worse than managed and reference mean values. The value for pool percentage is approximately the same as the managed mean value and just under the reference mean value. With the bankfull width-to-depth ratio at the PIBO site in the Roundtop Allotment being potentially out of balance with the landscape setting, the stream may not be functioning properly and potentially susceptible to degradation.

MIM Monitoring. The MIM DMAs are on Grub, Tinker, and East Fork Beech Creek. Grub pasture was rested 2017–2020. Beech Creek pasture was rested in 2018 and 2019. MIM data have been collected in most years, 2011–2021. From 2018 to 2021, MIM data were collected on three pastures of the Roundtop allotment at MIM DMAs (Table 106).

Table 106. Short-term Multiple Indicator Monitoring (MIM) on the Roundtop Allotment.

Pasture and Stream	Livestock End-of-Use Date	Date Monitored	Stubble Height		Browse Use		Streambank Alteration	
			Standard	Measured	Standard	Measured	Standard	Measured
Tinker	Rested	2011	4–6"	Rested	40–50%	Rested	15%	Rested
	Rested	2012	4–6"	Rested"	40–50%	Rested	15%	Rested
Tinker Creek	8/14/13	11/6/13	4–6'	11"	40–50%	60%	15%	12%
	7/19/14	10/8/14	4–6"	13"	40–50%	24%	15%	15%
	9/15/15	10/5/15	4–6"	7"	40–50%	39%	15%	18%

Pasture and Stream	Livestock End-of-Use Date	Date Monitored	Stubble Height		Browse Use		Streambank Alteration	
			Standard	Measured	Standard	Measured	Standard	Measured
			7/12/16	9/27/16	4–6"	7"	40–50%	52%
7/29/17	8/11/17	6"	20"	40–50%	10%	15%	7%	

Compliance. Bank alteration was exceeded in the Tinker pasture in 2018, and the MNF sent a Notice of Non-Compliance to the permittee. The pasture was rested the following year. The DMA location was relocated in 2020 to account for upstream critical habitat that was being e-fenced to dissuade cattle use. In 2021, large wood and beaver dam analogs were also installed in the upper reach of Tinker Creek where the original DMA was located. Large wood was placed throughout the floodplain to help keep cattle from accessing the stream. All grazing standards were met in 2020 and 2021.

Over the years, the Roundtop allotment has had instances of unauthorized cattle entering into pastures from adjacent allotments. MNF and permittees continue to monitor to prevent excessive livestock use of riparian areas.

Spawning surveys. In most areas, grazing did not occur on CH during the spawning season, and spawning surveys were not conducted. Spawning surveys did occur on Tinker Creek in Tinker Pasture in 2018 and Grub Creek in Grub Pasture in 2022. No redds were observed in either creek.

Roads and Temperature. The Roundtop allotment Grub pasture encompasses part of the Grub Creek watershed.

The MPI rated the Watershed condition pathway for the Road Density and Location Indicator as “not properly functioning” for the watershed road density containing greater than 3 mi/mi², and as roads occur in many valley drainages. The Beech Creek Pasture encompasses part of the East Fork Beech Creek watershed and this watershed also received an “extreme road risk” rating in the MNF road report.

The 7-day mean maximum water temperatures for Grub Creek exceeds 64.4°F and is on the State of Oregon 303(d) list for water temperature. In 2014, the 7 day mean maximum water temperature for East Fork Beech Creek, Tinker Creek and Grub Creek ranged from 74.3°F to 77.1°F, above management objectives for migration, rearing, and spawning habitats.

Seneca Allotment

The Seneca allotment contains streams that provide CH for the UJDR population, and is located within the UJDR subbasin and the Headwaters Silvies River subbasin, with the latter being outside the range of anadromous fish. The pastures comprising the Seneca allotment lie within the Canyon Creek and Laycock Creek–John Day River watersheds, and the Headwaters Silvies River watershed, which is outside of the ESA action area.

The allotment is divided into four pastures: Vance Creek, Camp Creek, Camp Creek Management, and Koehler. The Vance Creek pasture is located within the UJDR subbasin. Middle Columbia River Steelhead CH is located on 1.03 miles of Vance Creek and Hanscomb

Creek in the Vance Creek pasture with no streams identified as MSRA. The MIM DMA site is at the upper extent of CH on Vance Creek of Vance Creek pasture. Camp Creek, Camp Creek Management, and Koehler pastures are within the Headwaters Silves River system and do not contain CH.

Activities

Activities that have occurred or continue to occur within these watersheds include; legacy mining, timber harvest, livestock grazing, roads, trails, prescribed and natural fire, noxious weed treatment, and recreation. Portions of the Seneca allotment were burned by the 2015 Canyon Creek Complex Fire.

Resource Condition, Monitoring and Compliance

The Seneca allotment was significantly impacted by the 2015 Canyon Creek Complex Fire, which entered the Vance Creek Pasture and burned approximately 40 percent of the Seneca allotment.

Livestock were evacuated from the entire allotment 1 week after entering, as a precaution from the spreading fire. As a result of the Canyon Creek Complex Fire, the MNF determined that the Vance Creek pasture was burned too severely to allow cattle grazing in 2016.

Vance Creek pasture was rested for most years between 2011 to 2021, and so little MIM short-term monitoring data was collected. Vance Creek pasture was grazed in 2020, and rested again in 2021. Photo monitoring was conducted in 2020 and 2021.

PIBO Monitoring. Two PIBO monitoring locations are on Vance Creek; one PIBO DMA K site and one PIBO-I site. There is also one MIM DMA site. PIBO data for the three sites were collected 2001, 2006, 2011, and 2016. Habitat indicators are most often not meeting PIBO managed and reference mean values. The 2015 Canyon Creek Complex Fire impacts to the allotment could explain some of the changes in habitat conditions. However, the habitat conditions for many of the indicators have not met PIBO managed and reference mean values since 2001, long before the Canyon Creek Complex Fire. A summary of the PIBO monitoring is included below, and a full discussion of the results are available in the 2022 Final BA (USDA FS 2022). No new data have been collected since 2016. Only photo monitoring was done in 2020 and 2021.

Overall at the PIBO-K site, percent pools, D50, residual pool depth, percent fines <6 mm, and bank angle did not meet PIBO managed and reference mean values. Only bankfull width-to-depth ratio, and bank stability, exceeded PIBO managed and reference mean values. Overall at the PIBO-I site, percent pool habitat was up and down each year, however in 2016, it exceeded PIBO managed and reference mean values. Only bankfull width-to-depth and bank stability have exceeded PIBO managed and reference mean values in all four years. Residual pool depth, D50, percent fines <6 mm, bank angle, and percent undercut banks did not meet PIBO managed and reference mean values in most years, including in 2016. In addition, Vance Creek PIBO sites did not meet Malheur Forest Plan standards for percent fines < 6 mm, bank angle and percent undercut banks. However, they did meet Malheur Forest Plan standards, Amendment 29 DFCs,

and PacFish Riparian management objectives for percent bank stability (except for the 2006 I site) and bankfull width-to-depth.

Spawning Surveys. Vance pasture was not grazed before July 1 during 2018–2021, therefore, spawning surveys were not completed. A spawning survey was completed in 2022, and zero redds were observed.

Region 6 Level II Stream Survey. The most recent Regional 6 Forest Service Level II stream survey data was collected on Vance and South Vance Creek in 1993. No surveys have been completed since 1993.

Roads and Temperature. The MPI rated the Watershed condition pathway for the Road Density and Location Indicator as “not properly functioning” for greater than 3 mi/mi, as roads occur in many valley drainages.

There are no long-term water temperature monitoring sites within the Seneca allotment. However, PIBO water temperature data was collected at the PIBO-I site in the middle reach of Vance Creek in 2002, 2006, 2011, and 2016. The 7-day mean max water temperatures ranged from 51.62°F to 65.84°F, exceeding management objectives for migration, rearing, and spawning habitats in 2016 only.

2.4.4. SFJDR Population Allotments

Aldrich Allotment

The Aldrich 20,577-acre allotment contains streams with CH for the SFJD and UJDR populations of MCR steelhead. Spawning and juvenile rearing habitat are present in many streams in the Aldrich allotment. The Aldrich allotment is within the Upper John Day River subbasin. The pastures comprising the Aldrich allotment lie within the Lower South Fork John Day River, Fields Creek–John Day River, and Murderers Creek subwatersheds.

The allotment is separated into six pastures: Widows Creek Burn, Widows Creek Basin, Smokey–Oliver, Cabin–Todd, Aldrich Ridge, and Cabbage Patch Camp. This allotment has two fenced pastures: Widows Creek Burn and Cabbage Patch Camp.

The unfenced areas in the allotment are divided into four geographic use areas: Widows Creek Basin, Smokey–Oliver, Cabin–Todd, and Aldrich Ridge, which are managed collectively as one pasture.

The Aldrich allotment contains 4.45 miles of MCR steelhead CH in Cabin Creek, Todd Creek, Smokey Creek, Flat Creek, and Widows Creek, with 0 miles of MSRA. Cabin–Todd and Widows Creek Basin pastures, both with MCR steelhead CH, are used after July 1.

Activities

The Aldrich allotment was in non-use (except for the Widows Creek Burn pasture) from 1987–2001. The allotment was not consulted on during the 2012–2016 consultation. From 2018 to 2022, all pastures were rested, except the Widows Creek Burn pasture that does not contain CH.

Activities that have occurred or continue to occur within the Lower South Fork John Day River, Fields Creek–John Day River, and Murderers Creek subwatersheds include historic mining, timber harvest, grazing, roads, trails, and prescribed and natural fire, including the 2014 South Fork Fire.

Resource Condition, Monitoring and Compliance

Many of the fences were burned in the 2014 South Fork Fire. Rebuilding the fences was started in 2017 and will continue until all of the fences are completed. The fence around the Cabbage Patch pasture was completed in 2022.

No Region 6 Level II stream surveys, short or long-term MIM monitoring, or PIBO monitoring has been completed in the Aldrich allotment.

Monitoring. There are no PIBO Monitoring sites in streams within the Aldrich allotment. One MIM DMA is located on Cabin Creek in the Cabin–Todd pasture, but no data has been collected to date. Access to the DMA is difficult requiring a 5-mile hike, and MNF indicated this precluded monitoring in 2019 and 2020. Upland monitoring occurred from 2017–2021. End-of-season photo monitoring occurred at the DMA in Cabin Creek in the Cabin–Todd in 2018, 2021, and 2022. End-of-season photos showed streambanks heavily covered by vegetation with little to no use by livestock in both years.

Spawning surveys. Spawning surveys were completed in Todd and Cabin creeks in 2018, 2019, 2021, and 2022, and zero redds were observed. In 2020 there was an internal miscommunication at the MNF, and spawning surveys were not conducted, although cattle grazed prior to July 1 in the Cabin–Todd Pasture.

Roads and Temperature. Stream temperature monitoring has not been conducted in the Aldrich allotment. The MPI rated the Watershed condition pathway for the Road Density and Location Indicator as “not properly functioning” for greater than 3 mi/mi², as roads occur in many valley drainages.

Fields Peak Allotment

The Fields Peak allotment contains streams that provide CH for the SFJD and the UJDR populations of MCR steelhead. The Fields Peak allotment is located within the UJDR subbasin. The pastures comprising the Fields Peak allotment lie within the Murderers Creek, Fields Creek–John Day River, and Laycock Creek–John Day River watersheds. The allotment includes approximately 30,718 acres. Approximately 272 acres of private land are intermingled with NFS lands.

This allotment contains five larger pastures: Murderers Creek, Fields Peak, North Murderers Creek, Tex Creek, and Miners Creek. There will be an additional pastures once a fence is completed to construct the Miners Creek Riparian pasture.

There are four exclosures (Tex Creek Livestock, Tex Creek Wildlife, Murderers Creek Guard Station, and Lemon. The Tex Creek Wildlife exclosure is approximately 1.2 acres, and contains

CH and MSRA on Tex Creek. The Tex Creek Livestock enclosure is approximately 3.63 acres, and contains CH and MSRA on Tex Creek. The Lemon Creek enclosure contains 0.85 miles CH on Lemon Creek. The Murderers Creek Guard Station is fenced into a 10-acre pasture containing 0.06 miles of CH and 0.06 miles of MSRA. Livestock are not authorized to graze in these enclosures.

The Fields Peak allotment contains 21.62 miles of MCR steelhead CH and 7.62 miles of MSRA. Streams containing UJDR steelhead CH in the Fields Peak pasture are: Fields Creek, Buck Cabin Creek, and Wickiup Creek. Streams containing SFJD steelhead CH are: Tex Creek, Miners Creek, Sugar Creek, Basin Creek, White Creek, Charlie Mack Creek, Lemon Creek, and Murderers Creek. MSRA is designated in Miners Creek pasture (Miners Creek), Tex Creek pasture (most of Tex Creek), Fields Creek pasture (Wickiup Creek), and Murderers Creek pasture (most of Murderers Creek).

Tex Creek Riparian pasture contains 3 water gaps, 2.37 miles of CH, and 1.49 miles of MSRA. Murderers Creek Riparian pasture contains 4.69 miles of CH and 4.51 miles of MSRA. There are 2 water gaps that cross Murderers Creek. For the duration of the 2023–2027 consultation, Tex Creek Riparian, Murderers Creek Riparian, and Miners Creek Riparian pastures, and the four enclosures, will be rested.

Activities

Historically, riparian areas were logged by conventional tractor yarding. Mining occurred in portions of Murderers Creek watershed and to a limited extent in Deer Creek watershed. The combination of past logging, livestock grazing, insect epidemic, and valley bottom roads has contributed to reduced shading from riparian species. The watersheds encompassing the allotments support a mix of NFS and state and private lands. Activities that have occurred or continue to occur within these watersheds include grazing, timber harvest, limited mining, roads, trails, prescribed and natural fire, noxious weed treatment, and motorized and non-motorized recreation.

Compliance and Resource Condition Issues

The Fields Peak allotment was previously included in the Murderers Creek allotment for the 2012 opinion (NMFS 2012). In 2020, Murderers Creek Gather pasture and Tex Creek Gather pasture were administratively moved into the Murderers Creek allotment.

The Fields Creek corrals received major maintenance and are now fully functional.

In 2017, NMFS and MNF staff toured the Fields Peak pasture and determined that browse and photos would be acceptable monitoring at the DMA site. The MSRA in North Murderers Creek pasture on White Creek was electric fenced, and a new DMA was placed upstream in shrubby habitat, which represents the remainder of the pasture. Therefore, it was determined that photo monitoring, instead of MIM, would be most appropriate.

Historically in the Fields Peak Allotment, miscommunication and permit transfers caused issues regarding fence maintenance responsibilities, and fences were not maintained to the required standard. Livestock frequently accessed unauthorized pastures because boundary fences adjacent

to Murderers Creek allotment were not sufficiently maintained. MNF staff reviews fence maintenance needs with permittees during the spring AOI meeting review.

Blue Mountain Ranger District planned to build a permanent fence along White Creek in North Murderers Creek pasture in 2022. This fence has not been constructed to date. Therefore, photo monitoring and MIM will be conducted until the fence is completed.

PIBO Monitoring. There are three PIBO-K sites and one PIBO-I site within the allotment. PIBO-K sites are located in Upper Murderers Creek in Murderers Riparian pasture, Murderers Creek in North Murderers pasture, and Fields Peak Creek in Fields Creek pasture. The PIBO-I site is located in Fields Creek. Monitoring occurred at two K sites (Fields Creek and Murderers Creek) and the Fields Creek I site, up to four times, between 2003 and 2013. Monitoring at Upper Murderers Creek occurred twice, once in 2013 and again in 2018. Fields Creek is likely the only stream with steelhead spawning habitat within the Fields Creek pasture. Wickiup Creek and Buck Cabin Creek provide steelhead rearing habitat.

Two PIBO-K sites, Upper Murderers Creek in Murderers Riparian pasture and Murderers Creek in North Murderers pasture, had very low total index scores. The third site, Fields Peak, had a moderate score of 56.3. For pool indicators, only the Murderers Creek site was above the reference and mean values for percent pools. All three K sites were at or above the reference and mean for residual pool depths. Overall, data shows that trends for many attributes were relatively static, with more improvement at Fields Creek.

The Fields Creek I site had moderate total index scores (60–43), with an improvement since 2013. The Fields Creek I site had a fine sediment (% fines for <6 mm) level in 2003 that exceeded PIBO reference and managed mean values, improved over time, and by 2018 was below the PIBO reference and managed mean values. Bankfull width-to-depth ratio improved each year from 2003 to 2008 to 2013 on Fields Creek, and in 2018 was slightly higher, but was still below the reference mean value.

The greenline wetland rating and the greenline woody cover rating were relatively unchanging over the three sample years on Fields Creek. Trends on the two Murderers Creek sites are harder to identify given the few overall data points.

Information from the Fields Creek K and I sites indicate improving channel morphology with decreasing width-to-depth ratios and percent fines. However, increasing bank angle and decreasing vegetative bank stability, and static or decreasing overall bank stability, indicate some processes at work that are not moving in the desired direction for overall condition.

MIM Monitoring. The MIM DMAs are on Fields Creek (Fields Peak pasture), Tex Creek (Tex Creek Riparian pasture), Miners Creek (Miners Creek pasture), White Creek (North Murderers Creek pasture), and Murderers Creek (Murderers Creek Riparian pasture), two gather pastures (Tex Creek Gather and Murderers Creek Gather) and four exclosures (Tex Creek, Tex Creek Wildlife, Murderers Creek Guard Station, and Lemon).

No long-term trend MIM monitoring has been completed on any pastures in the Fields Peak Allotment. From 2011 to 2021, MIM (stubble height, woody browse, and bank alteration) or photo monitoring was conducted at DMAs. The Fields Peak allotment was largely rested from 2011 to 2016 (the North Murderers Creek Pasture was grazed within the Deadhorse allotment). Miners Creek pasture was rested in 2017, North Murderers Creek pasture was rested in 2017 and 2020, and Murderers Creek pasture was rested in 2017 and 2018.

Compliance. In 2016 bank alteration on White Creek was measured at 26 percent, exceeding the 20 percent standard (Table 107). Although the North Murderers pasture was to be rested in 2020, livestock accessed the pasture and excess use was documented. No other exceedances of standards have been documented in the Fields Peak allotment according to the 2021 MNF End of Year Report (MNF 2022).

Table 107. Short-term Multiple Indicator Monitoring (MIM)

Pasture and Stream	Livestock End-of-Use Date	Date Monitored	Stubble Height		Browse Use		Streambank Alteration	
			Standard	Measured	Standard	Measured	Standard	Measured
Fields Peak Fields Creek	9/15/16	10/6/16	4–6”	*NP	40–50%	14%	15%	4%
	9/2/17	9/13/17	6”	*NP	40–50%	Photo	15%	0%
	8/8/18	10/2/18	6”	*NP	40–50%	13%	20%	0%
	10/1/19	9/23/19	6”	Photo	40–50%	Photo	20%	Photo
	10/5/20	2020	6”	Photo	40–50%	Photo	20%	Photo
	8/15/21	08/23/21	6”	Photo	40–50%	10%	20%	Photo
Tex Creek Riparian	Rested	2016	4–6”	Rested	40–50%	Rested	15%	Rested
	Rested	2017	6”	Rested	40–50%	Rested	15%	Rested
	9/25/18	2018	6”	Rested	40–50%	Rested	15%	Rested
Tex Creek	Rested	2019	6”	No Photos	40–50%	No Photos	15%	No Photos
Murderers Creek Riparian	Rested	2016	4–6”	Rested	40–50%	Rested	15%	Rested
	Rested	2017	6”	Rested	40–50%	Rested	15%	Rested
	Rested	11/7/18	6”	23”	40–50%	24%	15%	5%
	Rested	8/22/19	6”	Photos	40–50%	Photos	15%	Photos
	Rested	2020	6”	Rested	40–50%	Rested	15%	Rested
	Rested	2021	6”	Rested	40–50%	Rested	15%	Rested
North Murderers Creek	8/1/16	10/6/16	4–6”	6”	40–50%	49%	20%	26%
	2017?	Rested	6”	Rested	40–50%	Rested	15%	Rested
	7/24/18	8/6/18	6”	*NP	40–50%	Rested	20%	Rested
	7/01/19	10/03/19	6”	Photos	40–50%	Photos	20%	Photos
	Rested	2020	6”	Photos	40–50%	Photos	20%	Photos
White Creek	9/13/21	9/20/21	6”	Photos	40–50%	Photos	20%	Photos
	9/30/16	10/6/16	4–6”	NP	40–50%	30%	20%	10%
	Rested	2017	6”	Rested	40–50%	Rested	20%	Rested
	9/2/18	?	6”	Photo	40–50%	Photo	20%	Photo
	Rested	8/19	6”	Photos	40–50%	Photos	20%	Photos
	10/5/20	2020	6”	Not Monitored	40–50%	Not Monitored	15%	Not Monitored
Murderers Creek	10/14/21	10/25/21	6”	6”	40–50%	10%	15%	5%
	Rested	2016	6”	Rested	40–50%	Rested	15%	Rested
	10/15/17	10/24/17	6”	22”	40–50%	10%	15%	4%

Pasture and Stream	Livestock End-of-Use Date	Date Monitored	Stubble Height		Browse Use		Streambank Alteration	
			Standard	Measured	Standard	Measured	Standard	Measured
Gather	Not documented	11/7/2018	6"	Photo	40–50%	Photo	15%	Photo
	10/15/19	10/29/19	6"	9"	40–50%	10%	15%	10%
	10/15/20	10/20/20	6"	10"	40–50%	15%	15%	8%
	10/15/21	10/21/21	6"	10"	40–50%	10%	15%	14%

*Stubble Height Column: NP means "no herbaceous key species"

***All critical habitat has been fenced out. Monitoring location has been moved outside of critical habitat

Region 6 Level II Stream Surveys. Stream Surveys were completed in 1992, 1995, 2015, 2018, and 2019. In most stream reaches, width-to-depth ratio (except Tex Creek) and bank stability are Properly Functioning; pool frequency and large woody debris (except Wickiup Creek), and fine sediment are Not Properly Functioning. Table 108 includes the most recent survey data, 2015–2019. All survey data are provided in the Final BA (USDA FS 2022). There have been no recent surveys on Fields and Wickiup creeks.

Table 108. Region 6 Level II Stream Survey Data for the Fields Peak Allotment.

Stream name	Survey year	Pool frequency (pools/mi)	Large woody debris (pieces/mile)	Fine sediment/embeddedness -No RMO standard	Width-to-depth (W:D) ratio	Bank stability %	Shade % (with solar pathfinder, Avg July/August) -No RMO or NMFS standard
Basin Creek R1	2018	4.9 (NPF)	23.07 (NPF)	100% <2 mm (NPF)	4.55 (PF)	99.34 (PF)	49.84
Charlie Mack Creek R1	2018	(dry)	20 (NPF)	65.3% <2 mm (NPF)	(dry)	99.22 (PF)	94.5
Lemon Creek R1	2018	35.65 (NPF)	14.35 (NPF)	84.8% <2 mm (NPF)	8.73 (PF)	99 (PF)	78.58
Miners Creek R1	2019	85 (PF)	41 (NPF)	47.2% (NPF)	10.12 (NPF)	89.88 (NPF)	82
Miners Creek R2	2019	14 (NPF)	14 (NPF)	33.1% (NPF)	9.41 (PF)	90.59 (PF)	80.5
Murderers Cr. R9 ¹	2015	14.08 (NPF)	11.27 (NPF)	36.04% <2 mm (NPF)	18.8914 (NPF)	98.79 (PF)	60
Murderers Cr. R10	2015	10.53 (NPF)	14.03 (NPF)	-	-	97.97 (PF)	9.5
Murderers Cr. R11	2015	10.11 (NPF)	12.92 (NPF)	-	-	96.48 (PF)	29.5
Murderers Cr. R12	2015	9.33 (NPF)	15.11 (NPF)	-	-	98.66 (PF)	46
Murderers Cr. R13	2015	11.32 (NPF)	15.1 (NPF)	68.89% <2 mm (NPF)	13.8 (NPF)	99.4 (PF)	42.5
Murderers Cr. R14	2015	10.74 (NPF)	14.76 (NPF)	-	-	99 (PF)	88
Murderers Cr. R15	2015	4 (NPF)	22 (PF)	66.97% <2 mm (NPF)	6.2691 (PF)	98.78 (PF)	39

Stream name	Survey year	Pool frequency (pools/mi)	Large woody debris (pieces/mile)	Fine sediment/embeddedness -No RMO standard	Width-to-depth (W:D) ratio	Bank stability %	Shade % (with solar pathfinder, Avg July/August) -No RMO or NMFS standard
Murderers Cr. R16	2015	4.92 (NPF)	16.39 (NPF)	-	-	99.48 (PF)	75.5
Orange Cr. R1 ¹	2015	36.51 (NPF)	12.7 (NPF)	35.27% <2 mm (NPF)	5.0188 (PF)	100 (PF)	85.5
Sugar Creek R1	2018	4.9 (NPF)	26.14 (NPF)	63.15% <2 mm (NPF)	6.72 (PF)	99.79 (PF)	87.4
Tex CK. R2 ¹	2015	54.86 (NPF)	4.86 (NPF)	9.95% <2 mm (PF)	24.8176 (NPF)	99.49 (PF)	57.54
Tex CK. R3	2015	59.05 (NPF)	10.47 (NPF)	24.05% <2 mm (NPF)	14.909 (NPF)	100 (PF)	77.5
Tex CK. R4	2015	35.71 (NPF)	3.58 (NPF)	13.82% <2 mm (AR)	21.1918 (NPF)	100 (PF)	63.13
Tex CK. R5	2015	51.59 (NPF)	8.28 (NPF)	23.61% <2 mm (NPF)	21.6574 (NPF)	100 (PF)	58.12
Tex CK. R6	2015	59.26 (NPF)	14.81 (NPF)	40.60% <2 mm (NPF)	11.1614 (AR)	100 (PF)	53.00
White Creek R1	2018	14.58 (NPF)	16.67 (NPF)	100% <2 mm (NPF)	4.69 (PF)	100 (PF)	44.1

Values in **bold font** are meeting fish habitat objectives for Amendment 29, values not bold are not meeting fish habitat objectives. PF = NMFS MPI Properly Functioning, NPF = MPI Not Properly Functioning.

Spawning Surveys. Spawning surveys were conducted on Charlie Mack, White, and Basin Creeks all in the North Murderers Creek pasture. The BMRD report stated the creeks all had low potential for spawning habitat and spawning fish survival and it was decided to not continue surveys on those streams in the future.

During the 2018–2022 consultation timeframe, redd surveys were completed in Fields Creek, Buck Cabin Creek, Wickiup Creek, and Murderers Creek Gather pastures. Redds were observed in Fields and Buck Cabin creeks (Table 109).

Table 109. Middle Columbia River Steelhead Spawning Surveys for the Fields Peak Allotment.

Pasture	Stream	# Redds Observed 2018	# Redds Observed 2019	# Redds Observed 2020	# Redds Observed 2021	# Redds Observed 2022
Fields Peak	Fields Creek	2	No Survey	3	6	No Survey
Fields Peak	Buck Cabin Creek	0	No Survey	1	2	No Survey
Fields Peak	Wickiup Creek	0	No Survey	0	0	No Survey
Fields Peak	Murderers Creek Gather	0	0	No Survey	No Survey	0

In 2019 and 2022, surveys were not required because pastures were not grazed prior to July 1.

Roads and Temperature. The Fields Peak pasture of the Fields Peak allotment encompasses part of the Fields Creek watershed. The MPI rated the Watershed condition pathway for the Road Density and Location Indicator as “not properly functioning” for greater than 3 mi/mi², as roads occur in many valley drainages.

Fields Creek and Tex Creek exceed the 7-day mean maximum of 64.4 °F and are on the State of Oregon 303(d) list for water temperature.

Murderers Creek Allotment

The Murderers Creek allotment contains streams that provide CH for the SFJD population of MCR steelhead. The Murderers Creek allotment is located within the UJDR subbasin. The pastures comprising the Murderers Creek allotment lie within the Murderers Creek and Middle South Fork John Day watersheds.

This allotment is divided into 27 pastures. Red Rocks, Martin Corrals, Oregon Mine, Timber Mountain, Blue Ridge/Antelope Springs, Horse Mountain, Dans Creek, John Young Cow Camp, John Young Meadow, Deer Creek, and Frenchy Butte, are pastures included in rotations. The remaining pastures are exclosures, which are not typically grazed or are gather/trailing pastures. These pastures are: Tex Creek Gather, Murderers Creek Gather, Oregon Mine Campground, South Fork exclosure, Bark Cabin exclosure, Horse Mountain exclosure, Vester Creek exclosure, Watershed pasture, Dans Creek Riparian, Orange Creek Riparian, Blue Creek exclosure, South Fork Murderers Creek Gather, South Fork Murderers Creek Gather Exclosure, Deer Creek Guard Station, Antelope exclosure, and Deer Creek Horse Pasture. Several of these pastures contain state and BLM land.

The Murderers Creek allotment contains 52.21 miles of MCR steelhead CH and 26.27 miles of MSRA (Table 110).

Table 110. Stream miles of Critical Habitat and Most Sensitive Riparian Areas (MSRA) within each pasture on Murderers Creek allotment.

Pasture Name	Stream Name	Steelhead Critical Habitat (Miles)	MSRA (miles)
Timber Mountain	Crazy Creek	1.61	0
South Fork Exclosure	South Fork Murderers Creek	0.76	0.77
	Crazy Creek	0.03	0
Horse Mountain Exclosure	South Fork Murderers Creek	1.82	1.82
South Fork Murderers Creek Gather Riparian	South Fork Murderers Creek	0.45	16 feet
Bark Cabin Exclosure	Bark Cabin Creek	0.11	0
Blue Creek Unit Exclosure	Blue Creek	0.73	0.61
Blue Ridge	Bark Cabin Creek	0.61	0
	South Fork Murderers Creek	2.05	0.30 (exclosed in SF Gather)
Red Rocks	Duncan Creek	3.47	0
Martin Corrals	Thorn Creek	3.83	0

Pasture Name	Stream Name	Steelhead Critical Habitat (Miles)	MSRA (miles)
	Duncan Creek	1.33	0
	Murderers Creek	2.08	2.07
Oregon Mine	Duncan Creek	1.12	0
	Tennessee Creek	2.04	0
	Thorn Creek	3.13	0
	Murderers Creek	3.95	3.93
Oregon Mine Campground	Murderers Creek	0.35	0.35
Orange Creek Riparian	Orange Creek	0.55	0
Dans Creek Riparian	Dans Creek	0.75	0.75
John Young Meadow	South Fork Murderers Creek	0.09	0.09
Deer Creek	Deer Creek	2.47	2.47
	Corral Creek	2.51	2.47
	South Fork Deer Creek	1.75	1.25
	North Fork Deer Creek	2.22	0.72
Watershed Pasture	South Fork Deer Creek	0.48	0.48
Frenchy Butte	Deer Creek	6.61	6.56
	Buck Creek	1.60	0.96
	Blue Creek	0.33	0
	Vester Creek	1.45	0
Vester Creek Exclosure	Vester Creek	0.40	0
Murderer Creek Gather	Murderers Creek	0.76	0.78
	Dans Creek	0.06	0.05
Tex Creek Gather	Murderers Creek	0.09	0.03
	Tex Creek	0.09	0.08
Total Miles		52.21	26.27

Activities

Activities that have occurred or continue to occur within the Murderers Creek and Middle South Fork John Day watersheds include: legacy mining, timber harvest, grazing, roads, trails, prescribed and natural fire, noxious weed treatment, and recreation. These activities have degraded conditions and altered natural floodplain and riparian conditions in the watershed. This allotment has also had heavy grazing by wild horses and wild ungulates in the past.

Projects completed in the Murderers Creek Allotment include: exclosure fencing on South Fork Murderers Creek, Tex Creek, and Orange Creek; excluding all Dans Creek CH; and installing wildlife ingress/egress ramps.

Resource Condition, Monitoring and Compliance

During 2012–2017, the IDT inspected the entire length of MSRA on Blue Creek within the Blue Ridge pasture and identified an appropriate location to conduct end-of-season monitoring. Blue Creek within the Blue Ridge pasture tends to go dry early in the season and does not support hydric species. Therefore, the established DMA was moved downstream in 2018. In 2019, the adjacent SF Murderers Creek Gather was extended excluding the DMA site and remaining MSRA within Blue Ridge pasture from grazing. Photo monitoring was conducted at this DMA in 2019 because of delays in the fence being completed to exclude the MSRA in Blue Ridge

pasture. Photo monitoring took place in 2021 and 2022, and additional monitoring occurred using game cameras. The establishment of a new DMA is still needed.

PIBO Monitoring. There are eight PIBO DMA (K) sites in the Murderers Creek allotment, representing seven pastures with CH. These sites are located on Crazy Creek (Timber Mountain pasture, monitoring occurred in 2003, 2008, and 2013), Deer Creek (Frenchy Butte pasture, monitoring occurred in 2008 and 2013), North Fork Deer Creek (Deer Creek pasture, monitoring occurred in 2013 and 2018), Lower Deer Creek (Deer Creek pasture, monitoring occurred in 2013 and 2018), Middle Murderers Creek (Murderers Creek Gather, monitoring occurred in 2013 and 2018), Lower Murderers Creek (Oregon Mine pasture, monitoring occurred in 2013 and 2018), South Fork Murderers Creek (Timber Mountain pasture, monitoring occurred in 2013 and 2018) and Thorn Creek (Martin Corrals pasture, monitoring occurred in 2003, 2008, 2013, and 2018).

North Fork Deer Creek, South Fork Murderers Creek, and Thorn Creek had the lowest total index scores, which indicates conditions are worse than expected based on an index score evaluation of the physical data (Archer and Ojala 2017). The other K sites scored between 19 and 41, which is below the approximate reference values of 50 for the ecoregion (Blue Mountains) and 50 for all PIBO program reference sites. The MNF noted in the Final BA (USDA FS 2022): “It is difficult to pick up a consistent pattern in the K site PIBO data, except that streams of most concern appear to be South Fork Murderers, Crazy Creek, and based on some indicators Thorn Creek and North Fork Deer Creek. Crazy Creek did not have one of the lower PIBO index scores, but the other three creeks did.”

There are three Integrator Sites (I) in the Murderers Creek allotment; Murderers Creek (Murderers Creek Gather pasture), South Fork Murderers Creek (Timber Mountain Pasture) and Thorn Creek (Martin Corrals pasture). Thorn Creek and South Fork Murderers Creek had very low total index scores (<10), which indicates conditions are worse than expected.

PIBO data from all monitoring sites is included in the Final BA (USDA FS 2022). In summary, South Fork Murderers Creek I site reflects less than desired conditions, while Murderers Creek reflects better condition for many indicators (except for % fines). Thorn Creek had a mix of good and bad indicator conditions. For all the PIBO data combined, South Fork Murderers Creek and Thorn Creek appear to have habitat indicators that are most often departed from reference conditions.

MIM Monitoring. MIM implementation monitoring data has been collected in the Murderers Creek allotment since 2011. Data from 2016 to 2021 is included in Table 111.

Table 111. Short-term Multiple Indicator Monitoring (MIM) on the Murderers Creek Allotment.

Pasture and Stream	Livestock End-of-Use Date	Date Monitored	Stubble Height		Browse Use		Streambank Alteration	
			Standard	Measured	Standard	Measured	Standard	Measured
Deer Creek	9/20/16	10/5/16	4–6”	7”	40–50%	23%	15%	9%
	9/23/17	10/5/17	4–6”	15”	40–50%	11%	15%	6%
Deer Creek	9/17/18	10/10/18	6”	7”	40–50%	17%	15%	10%

Pasture and Stream	Livestock End-of-Use Date	Date Monitored	Stubble Height		Browse Use		Streambank Alteration	
			Standard	Measured	Standard	Measured	Standard	Measured
	09/25/19	10/09/19	6"	11"	40-50%	20%	15%	4%
	9/24/20	10/7/20	6"	8"	40-50%	23%	15%	12%
	9/1/21	09/15/21	6"	6"	40-50%	30%	15%	12%
Dans Creek	7/15/16	10/6/16	4-6"	10"	40-50%	10%	15%	11%
	9/15/17	10/5/17	4-6"	20"	40-50%	11%	15%	8%
Dans Creek	Rested	10/16/18	6"	12"	40-50%	10%	15%	12%
	10/14/19	10/24/19	6"	19"	40-50%	15%	15%	7%
	Rested	9/16/20	6"	14"	40-50%	12%	15%	12%
	7/5/21	All critical habitat has been excluded from this pasture.						
Frenchy Butte	7/25/16	10/5/16	4-6"	8"	40-50%	10%	15%	7%
	8/25/17	9/14/17	4-6"	15"	40-50%	10%	15%	5%
	8/2/18	8/23/18	6"	7"	40-50%	13%	15%	9%
Deer Creek	08/10/19	09/03/19	6"	9"	40-50%	13%	15%	7%
	8/08/20	8/20/20	6"	10"	40-50"	16%	15%	9%
	8/09/21	08/23/21	6"	8"	40-50%	10%	15%	12%
John Young Meadow	10/5/16	10/5/16	4-6"	22"	40-50%	15%	15%	11%
	10/3/17	10/6/17	4-6"	19"	40-50%	23%	15%	8%
	10/4/18	10/16/18	6"	13"	40-50%	11%	15%	10%
SF Murderers	10/14/19	10/24/19	6"	21"	40-50%	12%	15%	4%
	10/14/20	11/05/20	6	11"	40-50%	16%	15%	9%
	9/17/21	9/30/21	6	16	40-50%	10%	15%	5%
Oregon Mine, Red Rocks, Duncan Creek*	9/14/16	10/6/16	4-6"	11"	40-50%	10%	15%	5%
	10/15/17	10/11/17	4-6"	17"	40-50%	11%	15%	6%
	9/20/18	10/9/18	6"	7"	40-50%	11%	15%	14%
	09/20/19	10/03/19	6"	14"	40-50%	10%	15%	5%
	10/10/20	10/14/20	6"	8"	40-50%	16%	15%	9%
Murderers Creek	10/15/21	10/21/21	6"	9"	40-50%	10%	15%	10%
SF Murderers Creek Gather	Rested	2016	4-6"	Rested	40-50%	Rested	15%	Rested
	Rested	2017	4-6"	Rested	40-50%	Rested	15%	Rested
	2018	Rested	Rested	Rested		Rested		Rested
	2019	All critical habitat has been excluded from this pasture.						
	2020	All critical habitat has been excluded from this pasture.						
SF Murderers Creek	Rested	All critical habitat has been excluded from this pasture						
Oregon Mine Campground	9/28/17	10/11/17	4-6"	13"	40-50%	12%	15%	7%
	?	10/9/2018	6"	16"	40-50%	16%	15%	5%
	Rested	7/17/2019	6"	Photos	40-50%	Photos	15%	Photos
	Rested	5/7/2020	6"	7"	40-50%	10%	15%	0%
	Murderers Creek	Rested	11/17/21	6"	Photo	40-50%	Photo	15%
Rested		11/17/21	6"	Photo	40-50%	Photo	15%	Photo
Blue Ridge	10/15/2018	11/7/2018	6"	6"	40-50%	17%	20%	22%
	10/15/19	09/11/19	6"	20"	40-50%	11%	20%	14%
SF Murderers	9/30/20	All critical habitat has been excluded from this pasture.						
	8/15/21	All critical habitat has been excluded from this pasture.						

Pasture and Stream	Livestock End-of-Use Date	Date Monitored	Stubble Height		Browse Use		Streambank Alteration	
			Standard	Measured	Standard	Measured	Standard	Measured
Creek								
Timber Mountain	8/15/2018	9/4/2018	6"	*NP	40–50%	26%	20%	0%
	08/15/19	9/12/2019	6"	*NP	40–50%	14%	20%	0%
	8/30/20	9/9/2020	6"	Photos	40–50%	Photos	20%	Photos
Crazy Creek Watershed**	6/30/21	07/13/2021	6"	Photos	40–50%	10%	20%	Photos
	9/1/21	09/15/2021	6"	10"	40–50%	10%	15%	23%

*Oregon Mine, Red Rocks, and Duncan Creek pastures is one pasture.

**Watershed is a small enclosure that was the Forest Service’s responsibility to maintain. Livestock accessed it due to a lack of fence maintenance. Future maintenance will be the permittees’ responsibility.

Compliance 2018–2022. During the 2018–2021 grazing seasons, multiple instances of excess use from unauthorized livestock grazing occurred in several pastures that were excluded from grazing or scheduled to be rested, including:

- South Fork Murderers Creek Gather pasture in 2019 and 2020.
- Dans Creek pasture (scheduled to be rested due to wild horse browse high in pre-season monitoring) in 2020.
- Watershed Pasture in 2018, 2019, and 2021.

In 2018, non-compliance issues in Blue Ridge pasture (SF Murderers Creek) had both stubble and bank alteration exceedances. The MNF sent a notice of non-compliance to the permittee. Critical Habitat was then fenced in this pasture in 2019. All CH in this pasture is now excluded from livestock.

Both the South Fork Murderers Creek Gather and Watershed pastures were to be rested or livestock excluded 2017–2022. In 2018, 2019, and 2021, unauthorized livestock access occurred on SF Deer Creek in the rested Watershed pasture because of poor fence maintenance. Although MNF documented unauthorized livestock use during mid-season inspections, end-of-season use was not monitored. During 2021, unauthorized cattle use resulted in exceedance of the bank alteration standard (23 percent) on South Fork Deer Creek. The MNF sent a Letter of Warning to the permittee in 2021. The MNF Line Officer decided that a Letter of Warning was sufficient to resolve the issue in 2021. The MNF did not send a notice of non-compliance because the permittee voluntarily accepted maintenance responsibility of the Watershed enclosure. Prior to this incident, the USFS was responsible for fence maintenance of the enclosure. However regular maintenance had not been occurring. In 2022, the fence was maintained by the permittee prior to turnout, and grazing standards were met.

The unauthorized livestock use in Dans Creek pasture did not result in any end-of-year indicator standard exceedances.

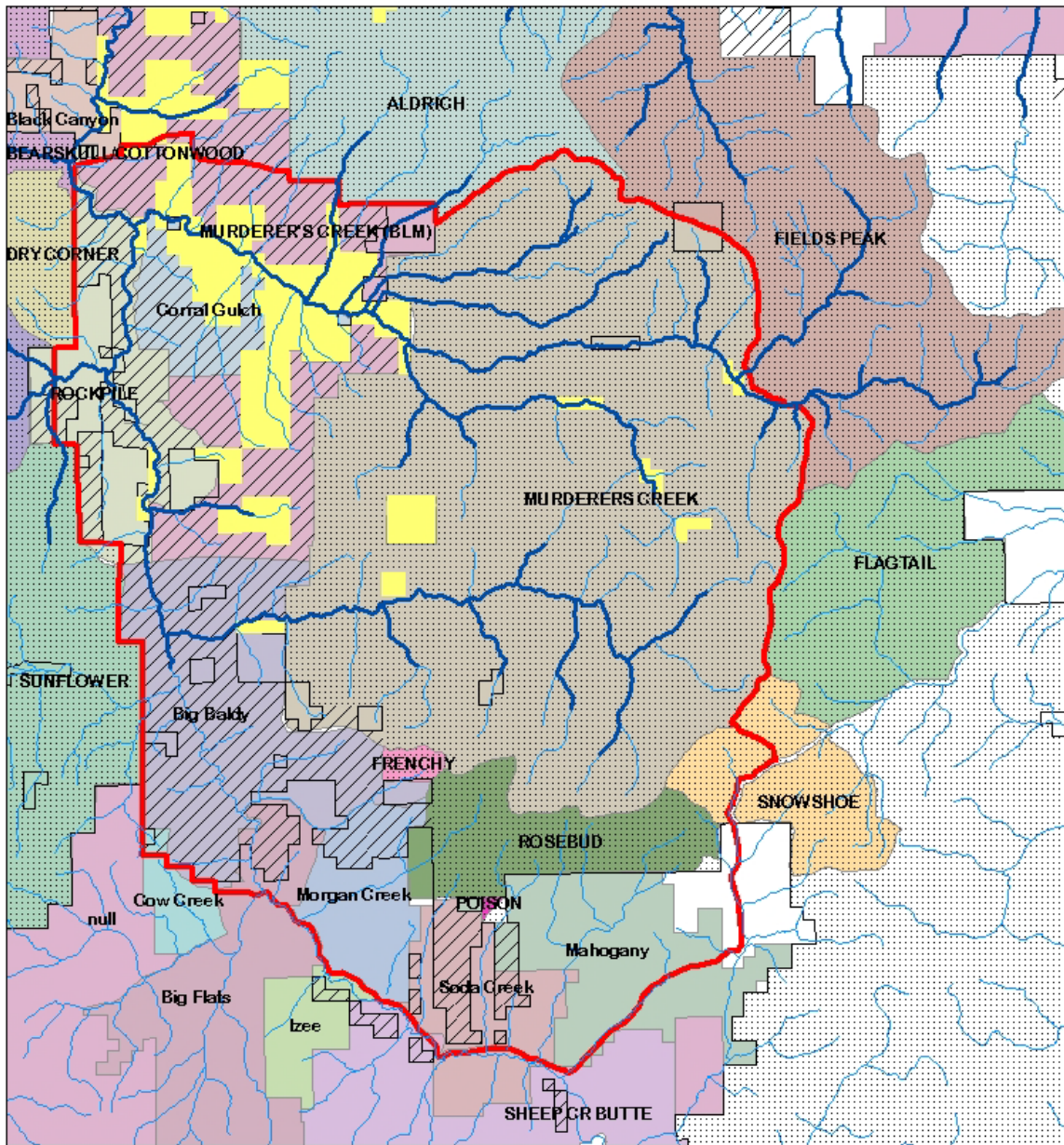
Over the years, Murderers Creek allotment has had multiple instances of heavy browse from wild ungulates and wild horses, as well as from inadequate fence maintenance. Problems and inconsistencies regarding completion of pre-season monitoring prior to livestock turnout also occurred in some years, contributing to exceedances of end-of-season standards. No letters of non-compliance were issued by MNF due to excess use in rested pastures.

Compliance on Murderers Creek Allotment 2008–2018

Wild ungulate and wild horse use in the Murderers Creek Allotment impacts allowable cattle grazing within the allotment. Heavy browse by any ungulate or wildlife may inhibit establishment of hardwoods and riparian vegetation and prevent annual regrowth and recovery of vegetation.

There was prior litigation related to wild ungulate and livestock use of the Murderers Creek Allotment. Related to the litigation there was no or limited livestock grazing in some pastures in some years (2008, 2009, 2010, and 2011), as well as removal of wild horses from the area in one year (2009). Additional information about this litigation and grazing activities during this time period is summarized in Section 2.3.5 of the 2018 opinion (NMFS 2018). As part of the 2013 settlement agreement to resolve one of these lawsuits (*Stout v. U.S. Forest Service*, 869 F. Supp. 2d 1271 (D. Oregon 2012)), the MNF agreed to document estimated wild horse population levels, especially when over Appropriate Management Level (AML).

Murderers Creek Wild Horse Territory



Legend

- CH_Steelhead_MCR
- Major Streams
- Wild Horse Territory
- State Land
- Private Land
- US Forest Service
- Bureau of Land Management



Figure 37. Murderers Creek Wild Horse Territory

On January 29, 2013, NMFS issued an opinion (NMFS 2013b) on the Murderers Creek Wild Horse Territory/Herd Management Area Management Plan BA (USDA USDI 2012), which includes the entirety of the Murderers Creek allotment, other MNF allotments outside the range of MCR steelhead, and state, BLM, and private lands to the east (see Figure 37 above). Horses have also been documented outside the identified Wild Horse Territory in the Fields Peak allotment, and are suspected to be using parts of the Aldrich allotment as well. The management plan sets the AML of 50–140 horses, averaging 100 horses, which is designed to maintain a level of horses that will minimize environmental impacts on the landscape. In 2016, the wild horse population grew to an estimated 261 adult horses on both BLM and NFS lands. The current population is unknown, and is believed to be considerably higher, and in exceedance of the AML. As such, horse density directly influences annual livestock grazing management on the Murderers Creek allotment, and more recently, neighboring Fields Peak and Aldrich allotments as well. The MNF is currently drafting their Wildhorse Management Plan to improved herd management, which we anticipate will undergo a separate ESA consultation in 2023–2024.

Livestock management in the allotment is also impacted by the MNF Land and Resource Management Plan (MNF 1990), which involves consideration of wild ungulate and wild horse use of the allotment. When pre-season monitoring indicates that heavy use by wild horses and big game are close to or exceed a grazing endpoint, then livestock management may be limited or reduced (USDA USDI 2012). In 2020, wild horse browse was high in Dans Creek when measured during pre-season monitoring and prevented turnout of livestock grazing in that pasture for the year.

Previous Redd Trampling.(2012–2016)

In 2016, steelhead spawning surveys occurred in Deer Creek (Frenchy Butte Pasture), Buck Creek (Frenchy Butte pasture), Dans Creek (Dans Creek Pasture), and South Fork Murderers Creek (South Fork Exclosure pasture) in 2016. A total of 66 redds were counted in Deer Creek (Frenchy Butte). Twenty-two of these redds were protected with brush fencing, of which two were trampled by livestock and two were likely disturbed but not stepped on. An additional four redds were observed in South Fork Murderers Creek (Horse Mountain pasture) within a 300-foot reach. It was not documented in the 2022 Final BA (USDA FS 2022) if these redds were additionally protected or trampled.

Steelhead Spawning Surveys. From 2018–2022, spawning surveys were conducted in all CH, to the upper extent of suitable spawning habitat (presence of gravels/cobbles, access), when livestock grazing would occur prior to July 1 (Table 112). Redds were identified in Murderers Creek in Martin Corrals, and protected. No redd trampling was documented.

Table 112. Middle Columbia River 2018–2022 Steelhead Spawning Surveys in Murderers Creek Allotment

Pasture	Stream	# Redds Observed 2018	# Redds Observed 2019	# Redds Observed 2020	# Redds Observed 2021	# Redds Observed 2022
Dans	Dans Creek	No Survey	No Survey	0	No Survey	No Survey
Dans	Orange Cr.	No Survey	No Survey	0	No Survey	No Survey
Martin Corrals	Murderers Cr.	18*	1	11*	4*	No Survey

Pasture	Stream	# Redds Observed 2018	# Redds Observed 2019	# Redds Observed 2020	# Redds Observed 2021	# Redds Observed 2022
Martin Corrals	Thorn Creek	No Survey	0	0	0	No Survey
Oregon Mine	Duncan Cr.	No Survey	0	0	No Survey	No Survey
Oregon Mine	East Trib. to Duncan Cr.	No Survey	No Survey	0	No Survey	No Survey

Bold indicates that an adult steelhead migration barrier was identified downstream of the pasture by MNF staff. No Survey indicates pasture was not grazed prior to July 1 and did not require a survey.
* Indicates surveys were completed but a change in pasture timing occurred after surveys were conducted in order to protect redds.
Note that if an abundance of redds were found in Murderers Creek by Oregon Department of Fish and Wildlife (ODFW), and as a result, pasture use was delayed until after 7/1 (*), other CH surveys within those pastures were not surveyed. The ODFW does not survey other CH streams within the Murderers Creek allotment, but does survey Murderers Creek, typically prior to Forest Service surveys. If pasture rotations are changed to delay use until after 7/1, other critical habitat streams in that pasture were no longer needed.

Region 6 Level II Stream Survey. Fifteen streams, located in eight pastures, were surveyed in the Murderers Creek allotment during the 2015 summer/fall field season using the R6 Level II survey methodology. In 2018 and 2019, eight additional surveys were completed within the Murderers Creek allotment. All collected stream survey data are reported in the Final BA (USDA FS 2022). Several streams within the Murderers Creek allotment are degraded for multiple stream parameters. Bank stability and shade % were the only elements in the allotment that were rated as properly functioning for most streams. The vast majority of reaches sampled were not properly functioning for pool frequency, large woody debris, or percent fine sediment (Table 113).

Table 113. Region 6 Level II Stream Survey Data for the Murderers Creek Allotment.

Stream name	Survey year	Pool frequency (pools/mi)	Large woody debris (pieces/mile)	Fine sediment/embeddedness -No RMO standard	Width-to-depth (W:D) ratio	Bank stability %	Shade % (with solar pathfinder, Avg. July/Aug) -No RMO standard -No NMFS standard
Alder Creek R1	2015	2.44 (NPF)	2.44 (NPF)	100% <2 mm (NPF)	19.5897 (NPF)	100 (PF)	66.5
Bark Cabin Cr. R1	2015	8.47 (NPF)	30.5 (PF)	74.96% <2 mm (NPF)	12.7012 (NPF)	99.01 (PF)	88.2
Bark Cabin Cr. R2	2015	11.48 (NPF)	8.2 (NPF)	60.41% <2 mm (NPF)	11.8812 (AR)	95.78 (PF)	62.25
Bark Cabin Cr. R3	2015	6.9 (NPF)	6.9 (NPF)	78.00% <2 mm (NPF)	21.2553 (NPF)	98.54 (PF)	92.5
Bark Cabin Cr. R4	2015	-	4.4 (NPF)	74.11% <2 mm (NPF)	14.958 (NPF)	97.68 (PF)	80
Beaverdam Cr. R1	2009	34.04 (NPF)	2.12 (NPF)	60.00% <2 mm (NPF)	3.5463 (PF)	100 (PF)	

Stream name	Survey year	Pool frequency (pools/mi)	Large woody debris (pieces/mile)	Fine sediment/embeddedness -No RMO standard	Width-to-depth (W:D) ratio	Bank stability %	Shade % (with solar pathfinder, Avg. July/Aug) -No RMO standard -No NMFS standard
Beaverdam Cr. R2	2009	12.14 (NPF)	10.71 (NPF)	88.15% <2 mm (NPF)	7.0833 (PF)	100 (PF)	
Beaverdam Cr. R1	2019	26.7 (NPF)	5.82 (NPF)	69.4% <2 mm (NPF)	3.59 (PF)	100 (PF)	38.1
Blue Cr. R1	2015	46.51 (NPF)	0 (NPF)	2.39% <2 mm (PF)	4.5866 (PF)	98.14 (PF)	62.5
Blue Cr. R2	2015	12.77 (NPF)	0 (NPF)	4.21% <2 mm (PF)	7.9147 (PF)	99.07 (PF)	42.25
Blue Cr. R3	2015	2.25 (NPF)	8.99 (NPF)	2.82% <2 mm (PF)	8.3832 (PF)	98.3 (PF)	59
Buck Cr. R1	2015	4.41 (NPF)	5.28 (NPF)	68.7% <2 mm (NPF)	14.1473 (NPF)	98.34 (PF)	63.5
Buck Cr. R2	2015		15.54 (NPF)	90.20% <2 mm (NPF)	19.2128 (NPF)	99.65 (PF)	83.5
Corral Cr. R1	2015	4.39 (NPF)	18.05 (NPF)	37% <2 mm (NPF)	14.4691 (NPF)	96.07 (PF)	67
Corral Cr. R2	2015	2.86 (NPF)	11.42 (NPF)	100% <2 mm (NPF)	10.6024 (AR)	99.4 (PF)	81.5
Corral Cr. R3	2015	14.07 (NPF)	14.81 (NPF)	57.31% <2 mm (NPF)	11.261 (AR)	95.54 (PF)	90
Crazy Creek R1	2009	75 (PF)	8.59 (NPF)	27.95% <2 mm (NPF)	13.6098 (NPF)	99.25 (PF)	
Crazy Creek R1	2019	72 (NPF)	13.82 (NPF)	6.4% <2 mm (PF)	8.8 (PF)	98.86 (PF)	69.2
Crazy Creek R2	2019	20.5 (NPF)	20.54 (NPF)	9.8% <2 mm (PF)	7.4 (PF)	98.7 (PF)	70.6
Dans CK. R1	2015	14.36 (NPF)	10.26 (NPF)	63.97% <2 mm (NPF)	13.4749 (NPF)	99.76 (PF)	67.92
Dans Creek R2	2015	3.2 (NPF)	1.6 (NPF)	91.87% <2 mm (NPF)	15.671 (NPF)	100 (PF)	76
Dead Injun Creek R1	1993	52.54 (NPF)	72.88 (PF)	-	6.0093 (PF)	100 (PF)	-
Dead Injun Creek R1	2018	5.76 (NPF)	9.5 (NPF)	62.45% <2 mm (NPF)	5.85 (PF)	63.07 (NPF)	71.11
Deer Creek R1	2007	15.22 (NPF)	1.63 (NPF)	5.08% <2 mm (PF)	15.2223 (NPF)	97.62 (PF)	57
Deer Creek R2	2007	25.95 (NPF)	2.53 (NPF)	4.78% <2 mm (PF)	15.9993 (NPF)	98.07 (PF)	51
Deer Creek R3	2007	31.69 (NPF)	2.06 (NPF)	2.33% <2 mm (PF)	13.3771 (NPF)	97.78 (PF)	47
Deer Creek R2	2018	45.66 (NPF)	10.9 (NPF)	41% <2 mm (NPF)	20.18 (NPF)	96.84 (PF)	67.47
Deer Creek R3	2018	22.92 (NPF)	18.61 (NPF)	36.95% <2 mm (NPF)	21.52 (NPF)	86.65 (NPF)	77.71
Deer Creek R4	2018	22.74 (NPF)	12.37 (NPF)	70.5% <2 mm (NPF)	21.11 (NPF)	56.44 (NPF)	63.915

Stream name	Survey year	Pool frequency (pools/mi)	Large woody debris (pieces/mile)	Fine sediment/embeddedness -No RMO standard	Width-to-depth (W:D) ratio	Bank stability %	Shade % (with solar pathfinder, Avg. July/Aug) -No RMO standard -No NMFS standard
Deer Creek R4	2007	32.08 (NPF)	3.07 (NPF)	0% <2 mm (PF)	18.1552 (NPF)	99.595 (PF)	40
Deer Creek R5	2007	26.28 (NPF)	3.41 (NPF)	6.82% <2 mm (PF)	12.7424 (NPF)	97.19 (PF)	44
Dewey Creek R1	1995	13.04 (NPF)	26.09 (PF)	-	8.7564 (PF)	-	-
Dewey Creek R1	2019	44.14 (NPF)	22.07 (NPF)	76.25% <2 mm (NPF)	4.93 (PF)	97.62 (PF)	64.47
Duncan Cr. R2	2015	17.07 (NPF)	12.19 (NPF)	14.92% <2 mm (AR)	13.4809 (NPF)	98.08 (PF)	62.92
Duncan Cr. R3	2015	5.51 (NPF)	23.53 (PF)	15.69% <2 mm (AR)	10.696 (AR)	99.07 (PF)	70.63
Duncan Cr. Trib. 2 R1	2015	14.29 (NPF)	20.63 (PF)	34.48% <2 mm (NPF)	10.1354 (AR)	99.95 (PF)	85.25
Duncan Trib. 1 R1	2015	29.09 (NPF)	14.55 (NPF)	45.44% <2 mm (NPF)	9.3007 (PF)	99.97 (PF)	96.5
Murderers Cr. R2	2015	22.95 (NPF)	18.03 (NPF)	29.46% <2 mm (NPF)	31.6563 (NPF)	99.3 (PF)	56.5
Murderers Cr. R4	2015	39.51 (PF)	14.2 (NPF)	33.13% <2 mm (NPF)	32.5673 (NPF)	98.76 (PF)	61
Murderers Cr. R5	2015	40 (PF)	6 (NPF)	43.66% <2 mm (NPF)	35.4068 (NPF)	99.41 (PF)	50.5
Murderers Cr. R6	2015	25 (NPF)	10.94 (NPF)	25.05% <2 mm (NPF)	33.3413 (NPF)	99.16 (PF)	-
Murderers Cr. R8	2015	18.32 (NPF)	3.05 (NPF)	59.86% <2 mm (NPF)	17.6035 (NPF)	97.75 (PF)	36
Murderers Cr. R9 ¹	2015	14.08 (NPF)	11.27 (NPF)	36.04% <2 mm (NPF)	18.8914 (NPF)	98.79 (PF)	60
North Fork Deer Creek R2	2007	8.25 (NPF)	9.28 (NPF)	81.37% <2 mm (NPF)	9.1068 (PF)	100 (PF)	68
North Fork Deer Creek R1	2007	18.13 (NPF)	0.63 (NPF)	52.18% <2 mm (NPF)	9.3746 (PF)	99.605 (PF)	43
North Fork Deer Creek R3	2007	-	0 (NPF)	0% <2 mm (PF)	-	100 (PF)	24
North Fork Deer Creek R2	2019	129 (PF)	7 (NPF)	50.8% <2 mm (NPF)	8.18 (PF)	97.89 (PF)	67.14
North Fork Deer Creek R1	2019	93 (PF)	2 (NPF)	49.6% <2 mm (NPF)	6.17 (PF)	99.74 (PF)	75.21
North Fork Deer Creek R3	2019	56 (NPF)	4 (NPF)	65.8% <2 mm (NPF)	3.92 (PF)	100 (PF)	41.40
Orange Cr. R1	2015	36.51 (NPF)	12.7 (NPF)	35% <2 mm (NPF)	5.0188 (PF)	100 (PF)	85.5
Orange Cr. R2	2015	5.26 (NPF)	10.53 (NPF)	94% <2 mm (NPF)	6.5385 (PF)	100 (PF)	80.5
Oregon Mine Cr. R1	2015	26.92 (NPF)	1.92 (NPF)	48.11% <2 mm (NPF)	11.5227 (AR)	100 (PF)	53.42

Stream name	Survey year	Pool frequency (pools/mi)	Large woody debris (pieces/mile)	Fine sediment/embeddedness -No RMO standard	Width-to-depth (W:D) ratio	Bank stability %	Shade % (with solar pathfinder, Avg. July/Aug) -No RMO standard -No NMFS standard
SF Murderers Cr. R2	2009	22.03 (NPF)	1.69 (NPF)	28.17% <2 mm (NPF)	20 (NPF)	98.87 (PF)	-
SF Murderers Cr. R3	2009	59.78 (NPF)	4.35 (NPF)	15.48% <2 mm (AR)	10.1368 (AR)	100 (PF)	-
SF Murderers Cr. R4	2009	103.39 (PF)	22.03 (PF)	39.86% <2 mm (NPF)	10.3514 (AR)	98.07 (PF)	-
SF Murderers Cr. R5	2009	39.01 (NPF)	3.55 (NPF)	50.45% <2 mm (NPF)	10.7803 (AR)	95.94 (PF)	-
SF Murderers Cr. R6	2009	9.72 (NPF)	2.77 (NPF)	100% <2 mm (NPF)	6.7425 (PF)	97.7 (PF)	-
SF Murderers Cr. R7	2009	6.83 (NPF)	1.95 (NPF)	58.36% <2 mm (NPF)	15.5926 (NPF)	98.69 (PF)	-
SF Murderers Cr. R8	2009	1.74 (NPF)	1.74 (NPF)	82.76% <2 mm (NPF)	7.5 (PF)	100 (PF)	-
SF Murderers Cr. R9	2009	1.22 (NPF)	-	100% <2 mm (NPF)	6.3312 (PF)	97.69 (PF)	-
SF Murderers Cr. R2	2019	55.92 (NPF)	7.24 (NPF)	7.3 <2 mm (PF)	7.52 (PF)	98.99 (PF)	33.15
SF Murderers Cr. R3	2019	83.81 (NPF)	9.36 (NPF)	42.1% <2 mm (NPF)	5.7 (PF)	98.68 (PF)	32.89
SF Murderers Cr. R5	2019	25 (NPF)	2.55 (NPF)	51.45% <2 mm (NPF)	5.59 (PF)	98.21 (PF)	38.45
SF Murderers Cr. R7	2019	20 (NPF)	0.54 (NPF)	10 <2 mm (PF)	2.51 (PF)	99.95 (PF)	61.70
South Fork Deer Creek R1	2007	8.7 (NPF)	3.38 (NPF)	59.52% <2 mm (NPF)	11.2119 (AR)	100 (PF)	49
South Fork Deer Creek R2	2007	0.74 (NPF)	8.15 (NPF)	70.39% <2 mm (NPF)	-	100 (PF)	-
South Fork Deer Creek R1	2019	67.5 (NPF)	8.75 (NPF)	49% <2 mm (NPF)	5.92 (PF)	91.6 (PF)	41
South Fork Deer Creek R2	2019	45.8 (NPF)	20.32 (NPF)	57% <2 mm (NPF)	7.8 (PF)	97.4 (PF)	40
Tennessee Cr. R2	2015	23.66 (NPF)	10.75 (NPF)	10.89% <2 mm (PF)	10.91 (AR)	99.37 (PF)	76.17
Tennessee Cr. R1	2015	55.17 (NPF)	20.69 (PF)	12.14% <2 mm (AR)	7.0437 (PF)	100 (PF)	83.88
Tex CK. R2 ¹	2015	54.86 (NPF)	4.86 (NPF)	9.95% <2 mm (PF)	24.8176 (NPF)	99.49 (PF)	57.55
Thorn Cr. R2	2015	29.3 (NPF)	5.5 (NPF)	61.74% <2 mm (NPF)	19.1517 (NPF)	97.7 (PF)	28.5
Thorn Cr. R3	2015	21.51 (NPF)	1.8 (NPF)	9.64% <2 mm (PF)	20.1303 (NPF)	97.63 (PF)	63.7
Thorn Cr. R4	2015	14.08 (NPF)	2.16 (NPF)	39.33% <2 mm (NPF)	15.1919 (NPF)	100 (PF)	91.1
Vester Cr. R1	2015	3.57 (NPF)	20 (PF)	48.61% <2 mm (NPF)	7.6108 (PF)	100 (PF)	93

Stream name	Survey year	Pool frequency (pools/mi)	Large woody debris (pieces/mile)	Fine sediment/embeddedness -No RMO standard	Width-to-depth (W:D) ratio	Bank stability %	Shade % (with solar pathfinder, Avg. July/Aug) -No RMO standard -No NMFS standard
Vester Cr. R2	2015	11.27 (NPF)	18.31 (NPF)	0.0% <2 mm (PF)	7.5864 (PF)	99.87 (PF)	55.75
Vester Cr. R4	2015	-	-	0.0% <2 mm (PF)	-	100 (PF)	23.5

Values in **bold font** are meeting fish habitat objectives for Amendment 29, values not bold are not meeting fish habitat objectives. PF = NMFS MPI Properly Functioning, NPF = MPI Not Properly Functioning.

Roads and Temperature. Bark–Cabin, lower Deer Creek, and Corral Creek are rated as “extreme” for the number of roads in proximity to streams (MNF 2004). Within a portion of the allotment is the 14,600-acre Dry–Cabin Roadless Area and the Shake–Table Natural Area. These areas are under separate management plans and not part of the proposed action.

There are 16 stream temperature monitoring sites located on six streams in the Murderers Creek allotment. Data sets for each site vary from a single year to multiple years. Three streams, and three stream segments, are on ODEQ’s 303(d) list, including: Murderers Creek (RM 0–24.7) for sedimentation, North Fork Deer Creek (RM 0–4.2) for Biological Criteria, and South Fork John Day River (RM 0–57.3) for Biological Criteria. Recorded high water temperatures exceeding the maximum State Water Quality Standard of 20°C for Upper Murderers Creek and Thorn Creek were recorded in 2015 during Region 6 stream surveys. Recorded water temperatures in 2015 met State water quality standards in Tennessee Creek, Dans Creek, Orange Creek, Duncan Creek, Bark Cabin Creek, Alder Creek, Blue Creek, Vester Creek, and Buck Creek. Water temperature was not recorded in Duncan Creek tributary #1 or tributary #2, Corral Creek, or Oregon Mine Creek.

2.4.5. MFJDR Population Allotments

Camp Creek Allotment

The Camp Creek allotment contains streams providing CH for MCR steelhead in the MFJD population. The allotment lies within the MFJD subbasin; located in the Big Creek-Middle Fork John Day and the Camp Creek-Middle Fork John Day watershed. The MFJD River and Camp Creek both flow through the allotment. Private land adjacent to the allotment is excluded by fencing.

The Camp Creek allotment is comprised of primarily dry meadows consisting of Kentucky bluegrass, meadow foxtail, orchard grass, and various wheatgrass species. Riparian tree/shrub species within the allotment are Black Hawthorne, Black Cottonwood, and Willow species. Uplands are dominated by Ponderosa Pine and Idaho fescue with lesser components of bluebunch wheatgrass.

The Camp Creek allotment is divided into seven pastures: North, Gibbs, Lower Camp Creek, Road, Middle Camp Creek, Campground, Upper Camp, and one enclosure (Camp Enclosure). Streams with MCR steelhead are in the Lower Camp Creek pasture and Middle Camp pasture. The Lower Camp pasture is a riparian pasture containing the mainstem MFJDR. The Middle Camp pasture contains the MFJDR and Camp Creek. In 2011, an enclosure was constructed along both the MFJDR and Camp Creek, called the Camp Enclosure, and is located within the Middle Camp pasture. The Campground pasture is a very small unit that includes 0.32 miles of CH and MSRA, and has been removed from the rotation since 2012.

There are 2.20 miles of CH and 2.50 miles of MSRA on Camp Creek and MFJDR. DMAs are located within Lower Camp Creek, Campground (rested), Camp Enclosure, and Middle Camp Creek pastures. The only CH and MSRA available to be grazed was the MFJD River in the Lower Camp Creek pasture.

Activities

Historically, riparian areas were degraded through the combination of logging and railroad grades in floodplain and riparian corridors, valley bottom roads, insect epidemic, and historic livestock grazing, which reduced riparian shading from hardwood and conifer species and created deficit instream wood loading conditions. Historical beaver populations were likely much higher than current conditions. The watersheds encompassing the allotments support a mix of primarily NFS with smaller amounts of private lands located mostly along the mainstem MFJDR. Activities that have occurred or continue to occur within these watersheds include timber harvest, grazing, road and trail use, water diversions, prescribed and natural fire, noxious weed treatment, and recreation (hiking, hunting, off-road vehicle use, driving for pleasure, camping, cross country skiing, and horseback riding).

There are four existing irrigation diversions on Camp Creek: two are located on NFS lands and two are located on private lands. The two on NFS lands are no longer functional and there are no plans for repairing them, but they do not impede fish passage. The push-up dam diversion points, which irrigate private lands, have been improved through the installation of infiltration galleries.

Restoration Projects. Over the years multiple restoration projects have been implemented on the MFJDR and Camp Creek including removing log-weirs, large wood placement, installation of beaver dam analogs, riparian planting, and AOP culvert replacements and removals. More recent restoration has targeted the removal of legacy railroad grades, increasing side channel habitat, placing additional large wood in channels and the floodplains, installation of large riparian enclosures, riparian planting and additional AOP culvert replacements improving passage. During the recent consultation timeframe (2018–2022) restoration in the Camp Creek allotment included large wood placement, removal of berms and old log weirs, and riparian planting.

Watershed-scale restoration within the Camp Creek subwatersheds (also includes many projects within the Slide and Long Creek Allotments) is related to the Camp Creek Watershed Action Plan (WRAP). In 2011, the Camp Creek WRAP was finalized in response to the Oregon Conservation and Recovery Plan for Oregon Steelhead Populations in the Middle Columbia

River Steelhead Distinct Population Segment (Carmichael & Taylor 2010) and the John Day Subbasin Revised Draft Plan (CBMRC&DA 2005).

The Camp Creek WRAP identifies and prioritizes site-specific restoration activities that directly address limiting factors identified in the recovery plans, including: fish passage barriers; altered hydrology and sediment routing; degraded floodplains; riparian communities; stream channels (habitat diversity/quantity); and water quality (stream temperature). In 2020, NMFS issued a separate biological opinion (WCRO-2019-03481) for the Camp Lick Vegetation Management Project. The project area consists of the Long Creek, Slide Creek, Camp Creek, and York allotments within the Middle Fork John Day subbasin. Project activities include small diameter thinning, commercial thinning, and ecological riparian treatments.

In 2021, the WRAP was revised and remaining essential projects within the WRAP were re-evaluated and prioritized. Currently, 46 percent of essential projects have been completed. The remaining projects are estimated to be completed once timber-haul within the Camp Lick Planning Area is done, and remaining road treatments and AOP culvert replacements/removals can be completed.

Ecological Inventory. In November 2015, the MFJDR Ecological Inventory Final Report was published by the Carex Working Group (Group) from specific field objectives completed by the Group in 2014 on the MFJDR and its tributary Camp Creek (see BAs Appendix J). To briefly summarize, the report lists two basic ecological problems for the MFJDR and Camp Creek. One being channel incision and channelization, causing changes to the water table, water retention, and riparian plant communities. The second problem is heavy browsing inhibiting preferred riparian shrubs and cottonwood establishment. This contributes to reduced shade, reduced food for beaver, and reduced habitat for other wildlife.

Resource Condition, Monitoring and Compliance

During the 2012–2016 consultation, compliance issues occurred; included fences being cut, excess use on livestock in unauthorized pastures, and exceedance of standards. These previous compliance issues are described in the 2021 EOY reports (MNF 2022) submitted to the Services and in the 2018 opinion (NMFS 2018). Frequently, unauthorized livestock from adjacent allotments resulted in excess and unauthorized use from private lands cattle in the Lower Camp and Middle Camp Creek pastures, resulting in exceedance of woody browse standards.

During past consultations, there were issues with inconsistent monitoring and documentation of end-of-season grazing use. For example, End of Year monitoring reports indicated woody species along the greenline during MIM monitoring were not present in 2014 and 2015. However, in 2015, the MNF also reported woody species were present and browse use was 40 percent. The MNF also reported woody species present for browse all other subsequent years. Monitoring was also not completed promptly after cattle left the pastures and often not measured for months after end of use. Monitoring has improved in recent years.

During the 2021 grazing season, end-of-season MIM monitoring reported standards exceeded with 70 percent woody browse use following livestock grazing along the MFJDR within the

Lower Camp Creek pasture. MNF attributed the exceedance to wild ungulates. Heavy browse use has frequently been attributed to wild ungulates along the MFJDR, when livestock are not present. Similarly, high browse levels have been observed on adjacent Confederated Tribes of Warm Springs (CTWS) lands on the Oxbow Property, where livestock grazing is not authorized. Therefore, pre-season browse monitoring prior to livestock turnout will occur to prevent excess browse use in areas with high wild ungulate browse use.

PIBO Monitoring. PIBO monitoring was conducted from 2008 to 2019 at I and K sites in the Camp Creek Allotment. There are four integrator (I) PIBO sites within the allotment; three on Camp Creek proper and one site on the MFJDR. These sites were monitored in 2009, 2014, and 2019.

Integrator Site Results. The MFJDR PIBO-I site is just downstream of the confluence with Camp Creek on the MFJDR. From 2009 to 2019, there was a slight improvement in five of the 14 indicators measured (i.e., bankfull width/depth, percent pool, percent fines, bank stability, and vegetative stability). The remainder of the indicators appeared to show an overall static or slight downward trend. Mean particle size (D50) increased from 66 to 92 mm. The managed mean is 43 and the PIBO reference mean is 58. When D50 increases past the reference value, fines are leaving the system, exposing larger substrate and rock. Percent pool for this site increased from 31 to 41.7. Bank stability increased slightly from 91 to 93.2, however vegetative bank stability increased from 38 percent to 61.3 percent.

The Camp Creek PIBO-I sites are located in the lower portion of Camp Creek proper. Two are within a livestock enclosure (C1, C2) and one is located in the Camp Ground pasture (C3). C1 and C2 saw a declining trend across several indicators. Notably, percent fines increased dramatically across both sites. C1 increased from 7.3 percent fines less than 6 mm in 2014 to 87.3 percent in 2019. C2 saw a similar increase with 1.7 percent fines less than 6 mm in 2014 to 78.05 percent in 2019. This was likely due to upstream restoration activities in 2019 and has likely gone back down after the 2020 spring flows. Several other metrics also saw a decline, including: total index, percent pools, pool depths, vegetative stability, bank angle, and undercut banks.

MIM Monitoring. From 2011 to 2021, MIM implementation monitoring occurred on the Lower Camp Creek pasture on the MFJDR. In 2016, a MIM DMA was created in the Middle Camp Creek pasture and monitored from 2016–2021. Table 114 includes results of MIM monitoring from 2016–2021.

Table 114. Short-term Multiple Indicator Monitoring (MIM) for the Camp Creek Allotment.

Pasture and Stream	Livestock End-of-Use Date	Date Monitored	Stubble Height		Browse Use		Streambank Alteration	
			Standard	Measured	Standard	Measured	Standard	Measured
Lower Camp MFJDR	7/23/16	9/29/16	4–6"	10"	40–50%	27%	15%	13%
	8/20/17	8/28/17	6"	14"	40–50%	13%	15%	4%
	7/20/18	8/8/18	6"	10"	40–50%	25%	15%	15%
	7/29/19	8/6/19	6"	10"	40–50%	10%	15%	6%

Pasture and Stream	Livestock End-of-Use Date	Date Monitored	Stubble Height		Browse Use		Streambank Alteration	
			Standard	Measured	Standard	Measured	Standard	Measured
	8/10/20	8/19/20	6"	6"	40–50%	27%	15%	12%
	9/11/21	09/21/21	6"	5"	40–50%	70%	15%	19%
Middle Camp MFJDR	6/20/16	10/3/16	4–6"	8"	40–50%	21%	15%	4%
	8/20/17	8/28/17	6"	10"	40–50%	11%	15%	3%
	10/1/18	10/24/18	6"	8"	40–50%	27%	15%	6%
	6/30/19	7/30/19	6"	16"	40–50%	10%	15%	2%
	6/30/20	7/14/20	6"	14"	40–50%	11%	15%	2%
	6/22/21	06/30/21	6"	12"	40–50%	10%	15%	2%

Compliance. In 2013, the browse use standard was exceeded by 27 percent in Lower Camp Creek Pasture. In 2021, stubble height, woody browse, and bank alteration standards were all exceeded on the Lower Camp Pasture. The MNF sent a notice of non-compliance letter to the permittee. MNF stated this was the first notice of non-compliance for this allotment and adaptive measures were implemented to prevent exceedances in the future.

MNF management actions were taken 2017–2021. The Campground pasture and Camp Enclosure were rested. Camp Creek allotment had a 33 percent reduction in c/c numbers for the season in 2017. In addition, the North and Upper Camp Creek pastures were rested in 2017 and the North pasture was rested again in 2021.

Region 6 Level II Stream Surveys. Region 6 Level II Stream Surveys for six primary habitat elements were conducted in 2008 on the MFJDR and in 2016 on two reaches of Camp Creek. All stream reaches surveyed were rated “not properly functioning” for pool frequency, large woody debris, and width-to-depth ratio (Table 115).

Table 115. Region 6 Level II Stream Survey Data for the Camp Creek Allotment.

Stream name	Survey year	Pool frequency (pools/mi)	Large woody debris (pieces/mile)	Fine sediment/embeddedness -No RMO standard	Width-to-depth (W:D) ratio	Bank stability (%)	Shade % (with solar pathfinder) -No RMO standard -No NMFS standard
MF John Day Lower Reach 4 ¹	2008	1.43 (NPF)	1.42 (NPF)	2.84% <2 mm (PF)	23.8732 (NPF)	97.19 (PF)	41.5
Camp Creek Reach 1	2016	32.88 (NPF)	12.33 (NPF)	18.84% <2 mm (AR)	39.6605 (NPF)	95.91 (PF)	23
Camp Creek Reach 3 ²	2016	31.82 (NPF)	10.23 (NPF)	18.64% <2 mm (AR)	35.4263 (NPF)	98.83 (PF)	18.5

¹ Overlaps with private property

² Overlaps with Long Creek Allotment

Values in **bold font** are meeting fish habitat objectives for Amendment 29, values not bold are not meeting fish habitat objectives. PF = NMFS MPI Properly Functioning, NPF = MPI Not Properly Functioning.

Spawning Surveys. Spawning surveys were conducted on the MFJDR with Middle Camp pasture surveyed 2018–2022 and Lower Camp pasture surveyed 2018–2020. Lower Camp

pasture was not surveyed in 2021 or 2022 because grazing did not occur during the spawning period. Three redds were observed on the MFJDR in Middle Camp pasture; two in 2019 and one in 2021 (Table 116). Protection was successfully implemented and no redd trampling was observed.

Table 116. Spawning Survey Results.

Pasture	Stream	# Redds Observed 2018	# Redds Observed 2019	# Redds Observed 2020	# Redds Observed 2021	# Redds Observed 2022
Middle Camp	MF John Day River	0	2	0	1	0
Lower Camp	MF John Day River	0	0	0	No Survey*	No Survey*

*No survey needed due to pasture not being grazed prior to July 1.

Water Temperature Monitoring. Water temperature monitoring was conducted in July and August of 2008 and 2014 at the three PIBO sites on Camp Creek. Water temperatures ranged 73.22°F To 79.34°F, exceeding fish habitat objectives for migration, rearing, and spawning.

Long Creek Allotment

The Long Creek allotment contains MCR steelhead which are part of the MFJDR population. The allotment lies within the MFJD subbasin. The pastures comprising the allotment are within the Camp Creek-MFJDR and Long Creek watersheds.

The Long Creek consists of 15 pastures: Camp Creek Riparian–Camp, Camp Creek Riparian–Eagle, Camp Creek Riparian-Charlie, Camp Creek Riparian–Big Rocks, Camp Creek Riparian–Cougar, Corral, Coxie Creek, Flood Meadows, Keeney Meadows, Ladd, Flat Camp Cow Camp, Lick Creek Riparian, Flat Camp, Lick Creek, Hiyu; and one enclosure, Coxie Creek enclosure. Of the 15 pastures all five of the Camp Creek pastures, Flood Meadows, and Lick Creek Riparian are smaller riparian pastures.

The Long Creek allotment contains 35.18 miles of MCR steelhead CH and 21 miles MSRA. All streams containing CH and MSRA within pastures is included in Table 6 in the Proposed Action’s Allotment Specific section.

Activities

Historically, this allotment was heavily logged and railroad grades are still evident in most riparian areas. Old and current roads were built along the bottom of most major drainages. The combination of logging, valley bottom roads and railroad grades, insect epidemic, and historic livestock grazing reduced riparian shade.

Upland ponds across the allotment are located on ridge tops and outside of riparian areas. There are five gravel pit ponds, and the remaining ponds are fed by a spring source. Fence and water development maintenance responsibilities are distributed among the four permittees that graze the allotment.

Numerous restoration treatments were completed within the allotment area between 2011–2020, and future restoration activities are currently being planned. Large wood and beaver dam analogs were added to many streams, including most of Camp Creek to dissuade livestock access. Other treatments included removal of log weirs and berms, and riparian planting.

The DMA sites that are monitored will be evaluated for cattle accessibility on a yearly basis. Multiple cattle crossings were also constructed on Cougar Creek, West Fork Lick Creek, Lick Creek, and Camp Creek.

Resource Condition, Monitoring and Compliance

The Long Creek allotment has had complex compliance issues over the years, which are described in the 2012 and 2018 opinions. Multiple issues occurred 2012–2016, including: fence breeching, livestock in unauthorized pastures, redd trampling, and exceedance of end-of-year standards. Authorized grazing on the Long Creek allotment 2012–2022 was reduced to 60 percent of the permitted AUM.

In early summer of 2021, two new DMAs were established for full MIM along CH within the Upper Camp Creek watershed. These included the Camp Riparian-Charlie pasture on upper Camp Creek and the Coxie Exclosure pasture on Coxie Creek. These new DMA are located in pastures that had not been grazed for many years, and are intended to serve as reference DMAs.

PIBO Monitoring and Evaluation. PIBO Effectiveness Monitoring has been conducted at 11 sites in Long Creek Allotment. Seven of the sites have been monitored three times, and three sites have been monitored twice. PIBO monitoring data are reported in the 2022 Final BA (USDA FS 2022), and sites monitored three times are discussed below.

Besides riparian vegetation condition, the stream attributes most directly affected by grazing activities are bank stability, bank angle, width-to-depth ratio, and percent undercut banks. The bankfull width-to-depth ratios show all DMA's are at or better than the Reference Mean as measured by PIBO. Both Bengeyfield (2006) and Rosgen (1996) have indicated that the relationship between a stream's width and depth is perhaps the most revealing of all stream channel indicators as to whether the stream is in a condition to perform the various tasks that lead to a healthy riparian area. This indicator, along with appropriate riparian vegetation, is critically important for a stream to maintain its dimension, pattern, and profile even during moderate to high (10–25+ year return intervals) flow events. Bank stability and width-to-depth ratio both improved, which is a positive signal in this analysis. However, Regional 6 Level II stream surveys do not indicate this value is being met across all reaches (Table 117).

Table 117. PIBO monitoring results for PIBO-I and K sites in the Long Creek Allotment. Bolded values are at or better than PIBO reference values. The * indicates that active instream restoration activities took place at the DMA between the identified year and the previous year the site was sampled.

Stream Site ID Site Type	Pasture	Year	Total Index	Bankfull w:d	Bank Stab. (%)	Bank Angle (°)	Under-cut (%)
Camp Creek 158-04-I	Camp Riparian (Cougar)	2008	10.4	43.3	100	139	4.6
		2014	15.1	17.8	100	142	5.3
Camp Creek 518-05-I	Camp Creek Riparian (C14)	2008	20.3	32.6	100	147	2.4
		2014	36.6	12.7	100	128	18.4
		2019*	41.9	15.97	100	148	0.0
Camp Creek 518-06-I	Camp Creek Riparian (C18)	2008	24.1	21.9	100	143	2.4
		2014	23.0	13.7	98	135	7.5
		2019*	61.9	17.33	100	140	2.5
Camp Creek 518-07-I	Camp Riparian Big Rock (C25)	2008	39.5	22.7	100	114	28.6
		2014*	43.6	11.5	97	129	21.1
		2019	36.3	16.75	97	142	8.3
Camp Creek 518-08-I	Camp Riparian Charlie (C28)	2008	23.3	20.5	98	130	14.6
		2014*	24.8	10.1	98	128	15.0
		2019*	0.0	11.9	100	136	13.5
Camp Creek 154-09-K	Camp Riparian (Charlie)	2011	21	15	100	140	9.5
		2016	37	13	95.2	125	17.5
Lick Creek (L2) 518-09-I	Lick Creek	2008	40.4	24.4	100	131	11.9
		2014	41.2	14.0	100	137	11.9
		2019	--	16.44	100	148	4.8
Lick Creek (L4) 518-10-I	Lick Creek Riparian	2008	48.1	22.1	95	120	21.4
		2014	42.3	13.9	100	131	23.1
		2019	49.9	14.9	100	126	19.5
Long Creek 153-02-I	Flood Meadows	2005	30.6	20.4	100	141	4.8
		2010	37.3	15.0	97	126	25.0
		2015	33.8	10.0	100	116	20.0
Long Creek 153-02-K	Ladd	2005	-	-	88	140	2.4
		2010	-	8.4	100	135	11.1
		2015	5.3	6.4	100	119	5.3
South Fork Long Creek 153-01-K	Keeney Meadows	2005	-	-	93	130	9.5
		2010	-	53.5	98	133	21.4
		2015	-	-	100	131	12.5
PIBO Managed Mean		-	-	23.9	74.6	108	26.4
PIBO Reference Mean		-	-	22.6	79.9	99.3	32.7
FLMP standard		-	-	-	greater than 90	75% < 90	50–75%

FLMP refers to the Forest Land Management Plan, or Forest Plan standard.

Two Camp Creek Riparian PIBO-I sites (C14 and C18) were monitored in 2008, 2014, and 2019. Site C14 improved in total index and almost all indicators except bank angle and greenline wet rating. Bankfull width-to-depth, pool depth, pool percentage, percent fines, and bank stability

were at or better than the PIBO reference means in 2019. Site C18 improved in many indicators, including total index. Bankfull width-to-depth, percent pools, pool depth, percent fines, and bank stability were at or better than PIBO reference means in 2019.

Camp Riparian-Big Rock PIBO-I site (C25) was monitored in 2008, 2014, and 2019. Site C25 exhibited a downward trend in total index, bank angle, and undercut banks. However, the measured values for bankfull width-to-depth, pool depth, percent fines, and bank stability were at or better than the PIBO reference means in 2019.

Camp Riparian-Charlie PIBO-I site (C28) was monitored in 2008, 2014, and 2019. Site C28 exhibited a total index decline. Percent fines increased drastically and the corresponding mean particle size decreased, likely due stream restoration projects occurring during this timeframe. Other values were relatively static. This is due to the stream restoration in 2011, 2012, and 2016 and correlates with D50 going down, however, percent pools have also decreased from 41 in 2008 to 31 in 2014 but increased slightly (33.7) from 2014 to 2019. PIBO photographs show upward healthy vigorous deep rooted vegetation dominating the site.

Lick Creek PIBO-I site (L2) was monitored in 2008, 2014, and 2019. Site L2 improved in two of the 13 indicators (percent pools, pool depth,) and is at or better than the PIBO reference mean in five indicators (bankfull width-to-depth, percent pools, pool depth, percent fines, and bank stability). Mean particle size has increased over time. Vegetative stability bank angle, and undercut banks have declined, several restoration activities have taken place at or near this DMA, which are likely affecting indicator values. It is expected that declining indicator values will improve as disturbed areas recover further.

Lick Creek PIBO-I site (L4) was monitored in 2008, 2014, and 2019. Site L4 518-10-I showed an improving trend in total index, percent pools, and bank angle, and is at or better than PIBO reference means for bankfull width-to-depth, percent pools, percent fines, and bank stability. There was a slight decrease in undercut banks and vegetative stability.

Long Creek PIBO-I site, which was monitored in 2005, 2010, and 2015, improved for percent veg bank stability. All other indicators are showing a negative or static trend. This site is also going in a negative direction for three of the four macroinvertebrate indicators.

Long Creek PIBO-K site, (153-02-K), which was monitored in 2005, 2010, and 2015, has maintained a low percent undercut banks, but bank angle has improved. All other indicators show a static trend.

Of the seven PIBO sites for which macroinvertebrate data is available, the Camp Creek site shows the four indicators assessed are all improving. One site on Camp Creek (PIBO site 518-07-I, C25) indicates worsening biotic integrity of the stream based on all four indicators assessed. Two Camp Creek sites have a mix of improving and declining indicators for biotic integrity as indicated by the macroinvertebrate communities. The two PIBO sites on Lick Creek were assessed for changes between 2008 and 2014. Each site had two of four indicators improve and two indicate a static or declining macroinvertebrate scores.

However, with the overall habitat index score showing a significant negative trend (PIBO Integrators) it is still not obviously apparent, or just too early, to determine overall trend in

channel and habitat conditions in the subbasin, and thus is still deemed to be relatively static. While trends for some of these parameters show improvement, the current status of most of the habitat metrics (except pool percent, mean substrate and percent pool fines) are still moderately to highly departed from reference conditions.

MIM Monitoring. The MIM DMAs are currently located in the following pastures: Flat Camp (Long Creek), Lick Creek (West Fork Lick Creek), Lick Creek Riparian (Lick Creek), Lick Creek (Camp Creek), Hiyu (Long Creek), Flood Meadow (Long Creek), Ladd (Long Creek), and in the Camp Creek Riparian pastures (Cougar, Big Rock, Charlie, Eagle, and Camp), all of which are located along Camp Creek. MIM effectiveness monitoring and/or photo monitoring has been conducted in multiple pastures since 2011 (USDA FS 2022). Effectiveness monitoring data from 2016-2021 is included in Table 118.

Table 118. Short-term Multiple Indicator Monitoring (MIM) on the Long Creek Allotment.

Pasture and Stream	Livestock End-of-Use Date	Date Monitored	Stubble Height		Browse Use		Streambank Alteration	
			Standard	Measured	Standard	Measured	Standard	Measured
Flat Camp	9/29/16	9/27/16	4–6"	8"	40–50%	30%	15%	8%
	9/23/17	10/12/17	6"	9"	40–50%	27%	15%	8%
Long Creek	7/5/18	7/24/18	6"	7"	40–50%	26%	15%	21%
	7/25/19	08/13/19	6"	8"	40–50%	10%	15%	11%
	7/23/20	7/23/20	6"	7"	40–50%	19%	15%	8%
	08/02/21	08/16/21	6"	5"	40–50%	50%	15%	13%
Lick Creek	7/10/16	2016	4–6"	Not Monitored - Alt DMA in same pasture used	40–50%	Not Monitored - Alt DMA in same pasture used	15%	Not Monitored - Alt DMA in same pasture used
Camp Creek	Rested	2017	6"	Rested	40–50%	Rested	15%	Rested
	8/20/18	9/10/18	6"	7"	40–50%	33%	15%	24%
	Rested	9/12/19	6"	Photos	40–50%	Photos	15%	Photos
	Rested	9/8/20	6"	Photos	40–50%	Photos	15%	Photos
	Rested	Rested	6"	No Photos	40–50%	No Photos	15%	No Photos
Lick Creek	7/10/16	10/4/16	4–6"	7"	40–50%	42%	15%	8%
	Rested	2017	6"	Rested	40–50%	Rested	15%	Rested
WF Lick Creek	8/20/18	9/10/18	6"	4"	40–50%	37%	15%	26%
	2019	Rested	6"	Photos	40–50%	Photos	15%	Photos
	2020	9/08/20	6"	Photos	40–50%	Photos	15%	Photos
	Rested	10/27/21	6"	Photos	40–50%	Photos	15%	Photos
Hiyu	9/1/16	10/4/16	4–6"	6"	40–50%	42%	15%	11%
	10/15/17	10/24/17	6"	7"	40–50%	28%	15%	9%
	10/15/18	10/29/18	6"	14"	40–50%	17%	15%	7%
	10/15/19	10/16/19	6"	13"	40–50%	12%	15%	8%
	10/15/20	10/22/20	6"	7"	40–50%	30%	15%	9%
	10/15/21	10/21/21	6"	6"	40–50%	30%	15%	7%
Camp Creek Riparian 1** (Cougar)	9/13/16	9/21/16	4–6"	11"	40–50%	46%	15%	15%
	Rested	2017	6"	Rested	40–50%	Rested	15%	Rested
Camp Creek	7/26/18	9/18/18	6"	11"	40–50%	55%	15%	11%
	Rested	9/12/19	6"	Photos	40–50%	Photos	15%	Photos
	Rested	9/28/20	6"	Rested	40–50%	Rested	15%	Rested
	Rested	07/19/21	6"	20"	40–50%	10%	15%	1%
	Rested	08/03/21	6"	26"	40–50%	10%	15%	2%

Pasture and Stream	Livestock End-of-Use Date	Date Monitored	Stubble Height		Browse Use		Streambank Alteration	
			Standard	Measured	Standard	Measured	Standard	Measured
Camp Creek Riparian 2** (Big Rocks)	9/13/16	9/21/16	4-6"	10"	40-50%	16%	15%	10%
	Rested	2017	6"	Rested	40-50%	Rested	15%	Rested
	9/10/18	9/18/18	6"	14"	40-50%	40%	15%	13%
	Rested	9/12/19	6"	Photos	40-50%	Photos	15%	Photos
Camp Creek	Rested	9/08/20	6"	Rested	40-50%	Rested	15%	Rested
	Rested	10/26/21	6"	12"	40-50%	10%	15%	3%
Camp Creek Riparian 3** (Charlie)	9/13/16	9/21/16	4-6"	10"	40-50%	16%	15%	10%
	Rested	2017	6"	Rested	40-50%	Rested	15%	Rested
	Rested	Rested	6"	Photos	40-50%	Photos	15%	Photos
	Rested	9/12/19	6"	Rested	40-50%	Rested	15%	Rested
Camp Creek	Rested	Rested	6"	Rested	40-50%	Rested	15%	Rested
	Rested	10/26/21	6"	Photos	40-50%	Photos	15%	Photos
Camp Creek Riparian 4 (Eagle)	9/13/16	9/21/16	4-6"	Rested	40-50%	Rested	15%	Rested
	Rested	2017	6"	Rested	40-50%	Rested	15%	Rested
	Rested	2018	6"	Rested	40-50%	Rested	15%	Rested
	Rested	9/12/19	6"	Photos	40-50%	Photos	15%	Photos
	Rested	9/08/20	6"	Photos	40-50%	Photos	15%	Photos
Camp Creek Riparian 5 (Camp)	Rested	10/25/21	6"	19"	40-50%	10%	15%	2%
	9/13/16	9/21/16	4-6"	Rested	40-50%	Rested	15%	Rested
Lick Creek Riparian	Rested	2017	6"	Rested	40-50%	Rested	15%	Rested
	Rested	Rested	6"	Rested	40-50%	Rested	15%	Rested
	Rested	9/12/19	6"	Photos	40-50%	Photos	15%	Photos
	Rested	9/08/20	6"	Photos	40-50%	Photos	15%	Photos
	Rested	10/25/21	6"	Photos	40-50%	Photos	15%	Photos
Lick Creek	Rested	10/4/16	4-6"	9"	40-50%	28%	15%	10%
	Gather	2017	6"	Rested	40-50%	Rested	15%	Rested
	8/12/13	9/12/18	6"	5"	40-50%	34%	15%	23%
	Gather	9/12/19	6"	Photos	40-50%	Photos	15%	Photos
Flood Meadows	7/16/15	9/08/20	6"	Photos	40-50%	Photos	15%	Photos
	9/13/16	10/27/21	6"	10"	40-50%	10%	15%	4%
	9/13/16	10/4/16	4-6"	9"	40-50%	*NP	15%	11%
	10/15/17	10/19/17	6"	19"	40-50%	*NP	15%	10%
	10/1/18	10/18/18	6"	17"	40-50%	*NP	15%	14%
Long Creek	10/15/19	10/16/19	6"	12"	40-50%	*NP	15%	7%
	10/15/20	10/22/20	6"	9"	40-50%	*NP	15%	13%
	10/16/21	10/21/21	6"	17"	40-50%	*NP	15%	2%
Ladd Long Creek	9/13/16	10/4/16	4-6"	14"	40-50%	30%	15%	7%
	7/2/17	8/11/17	6"	16"	40-50%	11%	15%	2%
	10/15/17	10/19/17	6"	15"	40-50%	20%	15%	6%
	6/14/18	10/29/18	6"	15"	40-50%	21%	15%	9%
	Rested	9/17/19	6"	Photos	40-50%	Photos	15%	Photos
	6/14/20	6/25/20	6"	17"	40-50%	10%	15%	4%
	06/09/21	06/23/21	6"	12"	40-50%	10%	15%	5%
10/15/21	11/08/21	6"	9"	40-50%	30%	15%	24%	
Flat Camp	7/26/18	7/30/18	6"	8"	40-50%	52%	20%	18%
	Rested	9/17/19	6"	Photos	40-50%	Photos	20%	Photos
Cow Camp	10/01/20	2020	6"	Photos	40-50%	Photos	20%	Photos
	10/01/21	08/04/21	6"	Photos	40-50%	Photos	20%	Photos
Coxie	9/20/18	10/17/18	6"	10"	40-50%	12%	15%	17%
Camp Creek	Rested	10/8/19	6"	15"	40-50%	11%	15%	13%
	Rested	9/14/20	6"	Photos	40-50%	Photos	15%	Photos
	Rested	10/25/21	6"	17"	40-50%	30%	15%	5%

*Browse Use Column: NP means "no browse species present"

**Camp Riparian 1,2, and 3 were grazed at the same time due to fences being removed for the Camp Restoration project.

Compliance (2012–2016). Prior to 2017, the following exceedances of the three end-of-use standards occurred:

- Flat Camp Pasture (Long Creek) – browse use in 2013 and 2015
- Lick Creek Pasture (Camp Creek) – stubble height in 2012, browse use 2013 and 2015
- Lick Creek Pasture (West Fork Lick Creek) – browse use in 2013 and 2016
- Hiyu Pasture (Long Creek) – browse use in 2012, 2013, 2015, and 2016
- Camp Creek Riparian-Cougar Pasture (Camp Creek) – streambank alteration in 2016, browse use in 2013, 2015, and 2016
- Camp Creek Riparian 2-Big Rocks pasture (Camp Creek) – browse use in 2013
- Lick Creek Riparian Pasture (Lick Creek) – stubble height in 2015, browse use in 2013, and 2014

The permittees hired additional range riders in 2012 and 2013 for the Lick Creek pasture to support grazing management and move livestock away from streams. Electric fences were placed on accessible reaches on the West Fork Lick Creek and around identified steelhead redds on Camp Creek. The electric fences on West Fork Lick Creek were breeched in 2012. Redd trampling was not observed but the MNF noted that there was a potential for trampling of at least one redd to have occurred. The MNF recommended additional mitigation measures going forward. On July 2, 2012, MNF staff documented evidence of livestock activity in the vicinity of redds in Cougar Creek, including trailing across and along the stream and hoof prints in the stream substrate. The site visit team concluded that redd trampling may have occurred, and that additional mitigation is appropriate. On July 3, 2012, MNF staff visited Camp Creek to evaluate potential redd trampling due to livestock. They reported evidence of livestock activity within the vicinity of the 5 lowest redds, including trailing along and across the stream. They assumed redds further upstream had similar potential for trampling, but they were not inspected during the visit. The MNF documented that additional mitigation in the future would be appropriate. A temporary electric fence had been installed on June 13, 2012 to protect MCR steelhead redds.

On September 6, 2012, MNF staff went to Upper Camp Creek (now Camp Riparian-Charlie pasture), and observed that the bank alteration standard was potentially exceeded. MNF also observed several livestock in Camp Creek within the Camp Riparian-Charlie enclosure just upstream from Eagle Creek. However, end-of-season monitoring indicated grazing standards were met.

All CH and MSRA in the Long Creek allotment was grazed in 2012. During the 2012 season, the IDT conducted end-of-season monitoring at Camp Creek Riparian pasture at three PIBO-I sites, which included MSRA on Lick Creek and West Fork Lick Creek. West Fork Lick Creek was determined to be in very poor condition. Due to past activities, the team determined that it would not likely recover, regardless of grazing, without an input of large wood to collect sediment and rebuild banks. Ungrazed sedges at the site were measured with a stubble height of 4 inches,

below recommended height for riparian recovery. However, the majority of the greenline was composed of forbs (buttercup) or grass (*Poa spp.*) Active restoration was recommended to improve riparian habitat condition.

Electric fencing was not used on West Fork Lick Creek in 2013, and likely will not be needed to protect redds in the near future, because placement of large wood in 2013 as part of the Camp Creek restoration project reduced livestock access to CH and MSRA outside of stream crossings. However, the large wood project did not prevent all access to the stream, several livestock stream crossings are still accessible to livestock. The MNF will continue to monitor CH and MSRA in West Fork Lick Creek annually, to make sure the LWD is effective and limiting livestock access to stream crossings. The MNF will also conduct spawning surveys, and implement protective measures if a redd is observed.

From 2012–2016, the woody browse standard was exceeded multiple years in Flat Camp, Lick Creek (on Camp and WF Lick Creeks), Hiyu, Camp Creek Riparian (Cougar), Camp Creek Riparian (Big Rocks), and Lick Creek Riparian pastures. Stubble height was exceeded in the Lick Creek pasture in 2012, and in the Lick Creek Riparian pasture in 2015. Streambank alteration was exceeded within the Camp Creek Riparian-Cougar Pasture in 2015. However, for multiple years at many of the DMA sites, MNF did not conduct monitoring within the recommended 1 to 2 weeks of livestock removal. Some years, the measurements were taken up to 3 months after at the end-of-grazing use date. Monitoring that occurred later than 1 to 2 weeks after the livestock were removed from the pasture does not provide a true reflection of the effects on riparian conditions due to annual livestock grazing along the CH and MSRA streams. Therefore, NMFS does not know if there were additional exceedances beyond those reported.

In 2016, the aquatics Camp Creek Riparian restoration project was completed. During construction, the fence separating the Camp Creek Riparian pastures from the Lick Creek pasture as well as the Hiyu pasture was taken down to move equipment through the project area. With no fence, the cattle had unauthorized access into the rested riparian pastures. The most accessible MIM DMA of these pastures was monitored (PIBO-I site 518-07-I).

Brush fencing used to protect MCR steelhead redds has not been effective. Therefore, brush fencing no longer used in this, or any other, allotments.

Compliance (2017-2022). From 2017–2021, the following exceedances of the three end-of-season use standards occurred:

- Flat Camp Pasture (Long Creek) – streambank alteration in 2018, stubble height in 2021
- Lick Creek Pasture (Camp Creek) – streambank stability in 2018
- Lick Creek Pasture (West Fork Lick Creek) – stubble height and streambank alteration in 2018 and 2022
- Camp Creek Riparian-Cougar Pasture (Camp Creek) – browse use in 2018
- Lick Creek Riparian Pasture (Lick Creek) – stubble height and streambank alteration in 2018
- Flat Camp-Cow Camp Pasture (Long Creek) – browse use in 2018
- Coxie Pasture (Camp Creek) – streambank alteration in 2018

In 2017, multiple pastures were rested. This resulted in a 52 percent decrease in the number of cattle grazed and a 22 percent decrease in the amount of time cattle were grazed that year. There were no exceedance of end-of-season standards in 2017 in pastures that were grazed and monitored. However, no MIM monitoring was conducted on the rested pastures following unauthorized grazing.

The MNF sent Notice of Non-Compliance letters to permittees in 2018, 2021 and 2022 for the exceedances which occurred 2018–2021. As a result of the 2018 Notices of Non-Compliance, the permittees took a voluntary reduction in numbers from 967 c/c pairs to 520 c/c pairs, from 2019–2022. Following the 2021 non-compliance, CH in Flat Camp pasture was fenced to exclude grazing in 2022. The DMA was moved from the newly excluded area to Cottonwood Creek within the Flat Camp pasture.

In 2022, the bank alteration standard was exceeded in Lick Creek pasture (West Fork Lick Creek) due to unauthorized cattle. Because the unauthorized grazing and exceedance was caused by a pasture boundary fence and cattle guard being damaged by a timber contractor, MNF did not issue a notice of non-compliance to the permittee. Exceedance of end-of-season standards also occurred in Camp Creek Charlie pasture. Permittees received a notice of non-compliance when livestock were not removed, and they were also billed for excess use.

Region 6 Level II Stream Surveys. Stream surveys on six primary habitat elements were completed on streams within the Long Creek allotment in 1989, 1992, 1994, 1998, 2014, 2016, and 2021. All data is included in the 2022 Final BA (USDA FS 2022). In summary, all eight reaches surveyed were not properly functioning for pool frequency. Camp Creek stream survey reaches 7, 8, 9, 10, and 11 (not associated with PIBO numbers) all have extremely high percent fines. This may be because the stream survey was conducted immediately after stream restoration. Seven of the eight sampled reaches were properly functioning for bank stability, and most reaches were properly functioning for width-to-depth ratio.

Four reaches were surveyed on Cottonwood Creek. All four reaches are not properly functioning for pools per mile. All four reaches are properly functioning for bank stability and meeting standards. High percent fines were measured in reaches 2, 3, and 4 in 2016, and these reaches are not properly functioning or functioning at risk.

Both reaches surveyed in Cougar Creek are not properly functioning for pools per mile or large wood, but are properly functioning for bank stability. The lower reach (reach 1) of Cougar Creek has high fines and a width-to-depth ratio that is not properly functioning. Reach 2 meets standards for percent fines and width-to-depth.

Long Creek stream survey reaches 1, 2, 4, 5, 6 were surveyed in 2021 (reach 3 is a small private inholding). Bank stability is properly functioning throughout all reaches except reach 6 (Hiyu Pasture), which failed standards. Pool frequency and width to depth ratios failed standards in all reaches and are considered not properly functioning within the Ladd, Flat Camp, and Hiyu pastures (except reach 5 where width to depth ratios are at risk within the Flood Meadow riparian pasture). Fine sediment/embeddedness is at risk throughout reaches 1–2 and 4 (Ladd, Flat Camp and Hiyu pastures) transitioning to not properly functioning in reaches 5–6 failing standards at

50.1 percent and 84.3 percent fine sediment (<2 mm) within the Flood Meadow and Hiyu pastures.

West Fork Lick Creek reaches 1, 2, 3 were surveyed in 2016. Pool frequency in all reaches considered not properly functioning. West Fork Lick Creek reaches 1 and reach 2 were not properly functioning for fine sediment and reach 3 was at risk. Width to Depth ratios were considered not properly functioning for reaches 1 and reach 2, however, were properly functioning for reach 3. Bank stability was properly functioning for all reaches on West Fork Lick Creek. Whiskey Creek was considered not properly functioning for all habitat elements, except bank stability was properly functioning when also surveyed in 2014 (Table 119).

Table 119. Region 6 Level II Stream Survey Data for the Long Creek Allotment.

Stream name	Survey year	Pool frequency (pools/mi)	Large woody debris (pieces/mile)	Fine sediment/ embedded ness -No R.M.O. standard	Width-to-depth (W:D) ratio	Bank stability (%)	Shade % (with solar pathfinder) -No R.M.O. standard -No NMFS standard
Cougar Creek tributary 1	1989	18.75 (NPF)	50 (PF)	-	7.646 (PF)	-	-
Keeney Creek tributary	1992	50.67 (NPF)	10.67 (NPF)	-	10.8797 (AR)	-	-
Cottonwood Creek tributary	1994	12.5 (NPF)	87.5 (PF)	-	3.000 (PF)	-	-
Cougar Creek tributary 2	1994	74.51 (NPF)	62.74 (PF)	-	7.7931 (PF)	-	-
Lick Creek tributary	1994	45.45 (NPF)	43.63 (PF)	-	7.875 (PF)	-	-
Coxie Creek tributary	1994	111.25 (PF)	66.25 (PF)	-	10.4812 (AR)	-	-
Camp Creek tributary	1994	103.82 (PF)	102.29 (PF)	-	12.038 (NPF)	-	-
Eagle Creek Reach 1	1994	68.09 (NPF)	55.32 (PF)	-	5.0975 (PF)	-	-
Jonas Creek Reach 1	1992	103.98 (PF)	3.98 (NPF)	-	11.2506 (AR)	-	-
Jugow Creek Reach 1	1992	82.05 (PF)	0.85 (NPF)	-	7.4732 (PF)	-	-
Keeney Creek Reach 1	1992	94.44 (PF)	11.66 (NPF)	-	11.6548 (AR)	-	-
Sulphur Creek Reach 1	1994	57.72 (NPF)	66.67 (PF)	-	9.4523 (PF)	-	-
Big Rock Creek R1	2014	27.96 (NPF)	23.66 (PF)	52.2% <2mm (NPF)	22.9254 (NPF)	99.66 (PF)	-
Big Rock Creek R2	2014	8.33 (NPF)	22.91 (PF)	46.7% <2mm (NPF)	7.8841 (PF)	99.25 (PF)	-
Camp Creek Reach 4	2016	34.23 (NPF)	15.917 (NA)	1.4% <2mm (PF)	15.331 (NPF)	99.753 (PF)	52.33

Stream name	Survey year	Pool frequency (pools/mi)	Large woody debris (pieces/mile)	Fine sediment/ embedded ness -No R.M.O. standard	Width-to-depth (W:D) ratio	Bank stability (%)	Shade % (with solar pathfinder) -No R.M.O. standard -No NMFS standard
Camp Creek Reach 5	2016	25.53 (NPF)	9.901 (NPF)	5.05% <2mm (PF)	15.086 (PF)	98.57 (PF)	25.25
Camp Creek Reach 6	2016	31.9 (NPF)	32.989 (PF)	13.7% <2mm (AR)	16.977 (PF)	99.599 (PF)	50.22
Camp Creek Reach 7	2016	31 (NPF)	22.423 (PF)	36.85% <2mm (NPF)	11.583 (AR)	98.414 (PF)	42.08
Camp Creek Reach 8	2016	69.57 (NPF)	35.226 (NA)	38.05% <2mm (NPF)	6.462 (PF)	99.479 (PF)	37.725
Camp Creek Reach 9	2016	37.58 (NPF)	9.409 (NPF)	18.25% <2mm (AR)	10 (AR)	96.735 (PF)	23.75
Camp Creek Reach 10	2016	18.82 (NPF)	14.1302 (NA)	58.15% <2mm (NPF)	7.417 (PF)	88.9 (PF)	71.67
Camp Creek Reach 11	2016	18.84 (NPF)	23.269 (PF)	91.85% <2mm (NPF)	5.95 (PF)	67.849 (NPF)	83.17
Charlie Creek R1	2014	1.89 (NPF)	15.09 (NPF)	46.9% <2mm (NPF)	11.7204 (AR)	99.52 (PF)	84.5
Cottonwood Creek R1	2016	46.49 (NPF)	17.762 (NPF)	2.55% <2mm (PF)	11.135 (AR)	100 (PF)	80.3
Cottonwood Creek R2	2016	16.8 (NPF)	4.766 (NA)	32.6% <2mm (NPF)	12.377 (NPF)	99.5 (PF)	35
Cottonwood Creek R3	2016	18.89 (NPF)	12.271 (NPF)	24.9% <2mm (NPF)	15.191 (NPF)	100 (PF)	97.8
Cottonwood Creek R4	2016	2.38 (NPF)	14.219 (NPF)	51.8% <2mm (NPF)	6.69 (PF)	100 (PF)	91
Cougar Creek R1	2014	22.04 (NPF)	5.31 (NPF)	25.8% <2mm (NPF)	13.400 (NPF)	99.46 (PF)	73
Cougar Creek R2	2014	5.32 (NPF)	2.13 (NPF)	17.9% <2mm (AR)	8.1275 (PF)	99.44 (PF)	91
Coxie Creek R1	2016	5.58 (NPF)	23.754 (PF)	41.85% <2mm (NPF)	11.924 (AR)	94.9 (PF)	37.25
Coxie Creek R2	2016	0 (NPF)	15.385 (NPF)	100% <2mm (NPF)	9.783 (PF)	95.3 (PF)	21.75

Stream name	Survey year	Pool frequency (pools/mi)	Large woody debris (pieces/mile)	Fine sediment/ embedded ness -No R.M.O. standard	Width-to-depth (W:D) ratio	Bank stability (%)	Shade % (with solar pathfinder) -No R.M.O. standard -No NMFS standard
Eagle Creek R1	2014	10.96 (NPF)	17.81 (NPF)	33.3% <2mm (NPF)	7.1123 (PF)	99.86 (PF)	81.5
Eagle Creek R2	2014	1.05 (NPF)	30.52 (PF)	38.1% <2mm (NPF)	11.487 (AR)	99.48 (PF)	80
East Fork Camp Cr. R1 ²	2016	39.56 (NPF)	30.77 (PF)	92.3% <2mm (NPF)	14.33 (NPF)	84.1 (PF)	62.9
Lick Creek R1	2016	19.62 (NPF)	1.962 (NPF)	18.2% <2mm (AR)	30.48 (NPF)	96 (PF)	65
Lick Creek R2	2016	20.49 (NPF)	1.927 (NPF)	17.7% <2mm (AR)	10.79 (AR)	95.66 (PF)	76.25
Lick Creek R3	2016	8.7 (NPF)	6.837 (NPF)	21.3% <2mm (NPF)	8.46 (PF)	99.59 (PF)	58.5
Little Trail Creek	2014	6.76 (NPF)	26.35 (PF)	72% <2mm (NPF)	6.547 (PF)	98.72 (PF)	-
Long Creek R1	2004	64.19 (NPF)	29.73 (PF)	85.8% <2mm (NPF)	7.8068 (PF)	97.07 (PF)	-
Long Creek R1	2021	34 (NPF)	11.31 (NPF)	16.6% <2mm (AR)	20.6 (NPF)	97.4 (PF)	59.6/66
Long Creek R2	2021	26 (NPF)	8.07 (NPF)	13.2% <2mm (AR)	18.9 (NPF)	98.2 (PF)	49.7/52
Long Creek R4	2021	14 (NPF)	12.7 (NPF)	12.3 <2mm (AR)	23.3 (NPF)	97.8 (PF)	61.4/73.2
Long Creek R5	2021	40 (NPF)	26.28 (PF)	50.1 <2mm (NPF)	11.2 (AR)	94 (PF)	49.2/54.4
Long Creek R6	2021	(dry)	110.84 (PF)	84.3 <2mm (NPF)	(dry)	74.04 (NPF)	No data
Shoberg R1	2014	60.66 (NPF)	6.56 (NPF)	36.2% <2mm (NPF)	15.65 (NPF)	98.77 (PF)	71
Shoberg R2	2014	44.54 (NPF)	21.01 (PF)	43.4% <2mm (NPF)	14.95 (NPF)	98.58 (PF)	83.5
Trail Creek R1	2014	6.57 (NPF)	5.05 (NPF)	12.7% <2mm (AR)	10.8581 (AR)	99.2 (PF)	85.5

Stream name	Survey year	Pool frequency (pools/mi)	Large woody debris (pieces/mile)	Fine sediment/embeddedness -No R.M.O. standard	Width-to-depth (W:D) ratio	Bank stability (%)	Shade % (with solar pathfinder) -No R.M.O. standard -No NMFS standard
West Fork Lick Cr. R1	2016	29.41 (NPF)	31.235 (PF)	25.4% <2mm (NPF)	23.723 (NPF)	95 (PF)	56.83
West Fork Lick Cr. R2	2016	45.6 (NPF)	33.587 (PF)	36% <2mm (NPF)	12.8 (NPF)	97 (PF)	80.5
West Fork Lick Cr. R3	2016	66.67 (NPF)	56.872 (PF)	17.9% <2mm (AR)	7.338 (PF)	99 (PF)	78.5
Whiskey Creek R1 ¹	2014	7.59 (NPF)	0 (NPF)	26% <2mm (NPF)	16.1 (NPF)	99 (PF)	93

¹Overlaps with Slide Creek Allotment

²Overlaps with Dixie Creek Allotment

³Overlaps with Fox Allotment

Values in **bold** font are meeting fish habitat objectives for Amendment 29, values not bold are not meeting fish habitat objectives. PF = NMFS MPI Properly Functioning, NPF = MPI Not Properly Functioning.

Spawning Surveys. Spawning surveys were completed 2018–2022 on Long Creek, (Ladd and Flat Camp pastures), Cottonwood Creek (Flat Camp pasture), and Jonas Creek (Flat Camp pasture) (Table 120). One redd per year was observed in Long Creek in the Ladd pasture. Each redd was successfully protected by hog panels.

Table 120. Spawning Surveys 2018–2022

Pasture and Use Dates	Stream	# Redds Observed 2018	# Redds Observed 2019	# Redds Observed 2020	# Redds Observed 2021	# Redds Observed 2022
Ladd	Long Creek	1	1	1	1	1
Flat Camp	Long Creek	0	0	0	0	0
Flat Camp	Cottonwood Creek	0	0	0	0	0
Flat Camp	Jonas Creek	0	0	0	0	0

Roads and Temperature. The MPI rated the Watershed condition pathway for the Road Density and Location Indicator as “not properly functioning” for the watershed road density containing greater than 3 mi/mi², and as roads occur in many valley drainages.

PIBO water temperature monitoring was conducted twice on seven streams: Camp, East Fork Camp, Cottonwood, Cougar, Coxie, Lick, Long, Sulphur, and Big Rock creeks. Temperature data from 2008 and 2019 at four sites in this allotment indicated potentially improving trends. However, the Blue Mt Ranger District collected 7-day mean maximum water temperature for streams in the Long Creek allotment at seventeen sites in 2014. The Malheur Forest Plan standard for water temperature is for no measurable increase in maximum water temperature, and

the PacFish riparian management objective (RMO) is for maximum water temperatures below 64°F within migration and rearing habitat and below 60°F within spawning habitats. During the months when these temperatures are taken steelhead would be rearing in these streams. The water temperature RMO for migration and rearing habitat was met for Cougar Creek, upper Lick Creek, and upper Sulphur Creek. The state water quality standard of the 7-day mean maximum temperature of 64°F for streams with anadromous fish passage and salmonid rearing use was *not met* for ten of the 17 sites. The Amendment 29 DFC for 7-day mean maximum temperature of 64°F was *not met* for ten of the 17 sites.

Lower Middle Fork Allotment

The MCR steelhead in this allotment are part of the MFJDR population. The Lower Middle Fork allotment is located within the MFJD River subbasin; the Camp Creek and Big Creek watersheds; and the Big Creek, Bear Creek, Balance Creek, Big Boulder Creek, and Granite Boulder Creek subwatersheds. The watersheds encompassing the Lower Middle Fork allotment support a mix of NFS and private lands. The 17,137 acre allotment is currently grazed as the Pizer pasture. The Chicken House pasture which is described below is contained within the Pizer pasture, however, Chicken House is currently grazed together with Pizer until a new fence is installed to separate into two pastures.

Within the allotment there are seven streams with MCR steelhead CH: Big Creek, East Fork Big Creek, Pizer Creek, Lost Creek, Onion Gulch, Deadwood Creek, and Swamp Gulch. Three contain MSRA: Big Creek, Deadwood Creek, and Swamp Gulch. The allotment includes 16.41 miles of steelhead CH and 3.56 miles of MSRA. All designated MSRA is in the Pizer pasture (Table 121).

Table 121. Pastures and streams with designated Critical Habitat (CH) and Most Sensitive Riparian Area (MSRA) in the Lower Middle Fork allotment.

Pasture	TOTAL MCR Steelhead CH by Pasture	Stream	MCR steelhead CH (miles) by Stream	MSRA
Pizer	16.41	Big Creek (0.25 mi. exclosed-2022)	8.91	2.17
		Deadwood	2.33	1.14
		East Fork Big Creek	2.34	0
		Lost Creek	1.13	0
		Onion Gulch	0.29	0
		Pizer Creek	0.70	0
		Swamp Gulch	0.71	0.244
		Total	16.41	3.56

Activities

Activities that have occurred or continue to occur within these watersheds include historic mining, timber harvest, grazing, roads, trails, prescribed and natural fire, noxious weed treatment, and recreation.

The Mosquito Vegetation Management project within the allotment includes decommissioning Forest Road 2090, and installing a new fence to separate the Pizer and Chicken House pastures. Once the fence is installed, the Chicken house pasture will be formed, and a MIM DMA established prior to livestock turnout into the new pasture.

Numerous aquatic restoration projects were completed 2016–2022 in the allotment area. Directional felling occurred along Lost, Pizer, and East Fork Big creeks, and 2 miles of large wood was placed in Deadwood Creek upstream of the confluence of Big Creek in 2016. AOP culvert replacements were completed on Deadwood Creek in 2016 and 2019 improving fish passage. Electric fencing was installed following the 2016 restoration within the reach to exclude livestock from 0.87 miles of Deadwood Creek and MSRA.

Big Creek has been degraded by past mining and logging, leaving tailings and ponds within the lower portion of the MSRA at the confluence with Deadwood Creek, fragmenting the floodplain. Big Creek was channelized around the floodplain at this location and bisected by a major road (NFSR 2090). In 2018, restoration of abandoned mine ponds and tailings began, and included placing large-wood throughout the floodplain and 1.4 miles of the main channel, encouraging side-channels within the floodplain to activate during high flows.

Extensive riparian planting was done in 2019 and 2022 throughout the restored floodplains. In 2019, electric fencing was placed around the restoration sites and riparian planting in the floodplain. In 2022, 0.6 miles of large wood was placed in Big Creek and riparian planting to improve floodplain connectivity. Electric fencing was placed around these areas, however, in 2022 the area was fenced to exclude both livestock and potential wildlife browse.

The Camp Lick Vegetation Management Project is also occurring in this allotment. On March 26, 2020, NMFS issued an opinion on the project (WCRO-2019-03481). The Camp Lick Project includes non-commercial, commercial treatments and fuels treatments up to 25 years to: reduce surface and ladder fuels in forested areas; reduce the impacts of roads, legacy structures, and ungulates to riparian areas; improving tree health and vigor, reducing tree stand densities, improving fish and wildlife habitat, improve aspen stand health and resiliency; and improve forage for ungulates in uplands. Protective measure, such as resting pastures and/or fencing of riparian areas to prevent livestock access, will be completed for any treatment and restoration in riparian areas and along the CH streams with livestock grazing per the Camp Lick opinion's requirements (WCRO-2019-03481).

The MNF completed informal consultation with NMFS on the Ragged Ruby Restoration Project (vegetation management). NMFS issues a LOC on November 23, 2020 (WCRO-2020-02882), and will be implemented over the next 25 years.

Additional projects were implemented through the ARBO II programmatic opinion process, including: willow planting and installing temporary 10-foot enclosure panels to protect plantings along the MFJRD in the C pasture, Lower Middle Fork allotment.

Resource Condition, Monitoring and Compliance

The electric fencing installed following the 2016 restoration within the reach to exclude livestock from 0.87 miles of Deadwood Creek and MSRA failed. It did not completely exclude livestock from Deadwood Creek, and livestock accessed the rested area in 2017, 2019, 2020, and 2021. Electric fencing will continue to be installed for the next five years to help dissuade livestock use post restoration recovery. If livestock use does occur, the site will be monitored.

In 2017, cattle were not turned out into this allotment until after July 1 and the end of steelhead spawning and rearing. Due to the lapse in ESA consultation and pending completion of the 2018 BO, the permittee also decreased cattle numbers in the allotment by approximately 10 percent and grazing duration by approximately 40 percent to ensure grazing remained within allowable use levels. Upland utilizations were conducted on all pastures, and MIM surveys were conducted on all pastures with CH and cattle use. No measurements exceeded allowable use levels.

However, in 2017, the MNF expressed concerns about livestock utilization of Deadwood Creek in the Pizer pasture. In mid-July 2017, the Interagency Level 1 Team and BMRD management and range staff visited the DMA and aquatic restoration large wood placement project on Deadwood Creek. While on site, the group documented that grazing was approaching the bank alteration and stubble height standards. However, removal of livestock and installation of a temporary electric fence to protect the DMA and MSRA was not initiated until August 30, 2017—6 weeks later. The electric fence reportedly failed to exclude livestock. The Interagency Level 1 and 2 Teams visited the allotment September 12 to discuss management strategies and possible excess use. All livestock were moved from the allotment by September 29. MIM DMA end-of-grazing use monitoring was completed October 16, and all end-of-season use standards were met. However, monitoring did not occur until 1.5 months after livestock were removed from the pasture, and we are unable to determine if end-of-season grazing standards were met.

In 2019, electric fencing was placed around restoration sites and riparian planting in the floodplain. However, a few livestock still accessed rested sites within the fences, and were promptly removed. In 2022, electric fencing was placed around the 0.6 miles of large wood was placed in Big Creek and riparian planting, but it was not effective at keeping livestock out of the restored area and browse use was high in 2022. In response, this reach was fenced in 2022 to exclude both livestock and potential wildlife browse. Electric fencing of the Big Creek restoration site will continue for the next 5 years to help dissuade livestock use, but if use occurs, the site will be monitored.

PIBO Monitoring. Two PIBO sites (one I site and one DMA-K site are located in the Lower Middle Fork allotment on Deadwood Creek in the Pizer pasture. The I site was monitored in 2005, 2010, and 2015. The K site was monitored in 2012 and 2015. All monitoring data is included in the Final 2022 BA.

At the Deadwood Creek I site, five out of nine indicators are static: D50 mean particle, pool percentage, pool depth, bank stability and bank angle. Percent undercut banks has decreased since 2010, and percent fines in both the <2 mm and <6 mm categories have increased. Width-to-depth has decreased, and no pools were measured deeper than 1 meter. Bank stability has slightly decreased.

The DMA-K site results shows a static trend for bankfull width, 50D mean particle, pool depth, and bank stability. Width to depth ratios increased from 7.2 in 2012 to 8.4 in 2015. Bank stability has slightly decreased from 100 percent to 94.7 percent. The percent pools increased from 61.6 percent in 2012 to 71.7 percent in 2015. Percent fines in both <2 mm and <6 mm category has decreased since 2012 and bank angle has reduced from 99 in 2012 to 87 in 2015. Undercut banks have increased from 37 percent to 46 percent. Being that this site was only monitored two times, within only 3 years, a status trend in hard to identify, although it looks to be improving. Percent fines appear significantly worse than expected compared with reference means. Sediment could be possibly from upstream reaches.

MIM Monitoring (2018–2022). Short-term MIM monitoring data has been collected on Deadwood Creek and Big Creek in the allotment from 2011–2022. Monitoring data was not completed years pastures were rested. Photo-monitoring was collected for some rested pastures as indicated below in Table 122.

Table 122. Short-term Multiple Indicator Monitoring (MIM) on the Lower Middle Fork Allotment.

Pasture and Stream	Livestock End-of-Use Date	Date Monitored	Stubble Height		Browse Use		Streambank Alteration	
			Standard	Measured	Standard	Measured	Standard	Measured
Pizer	10/31/16	2016	4–6"	Not Monitored	40–50%	Not Monitored	15%	Not Monitored
	10/2/17	10/16/17	6"	12"	40–50%	14%	15%	10%
Deadwood Creek	10/31/18	11/5/18	6"	6"	40–50%	35%	15%	11%
	9/23/19	10/2/19	6"	Photo	40–50%	Photo	15%	Photo
	10/20/20	11/2/20	6"	Photo	40–50%	Photo	15%	Photo
	10/22/21	10/05/21	6"	Photo	40–50%	Photo	15%	Photo
Pizer	10/31/18	11/1/18	6"	5"	40–50%	23%	15%	17%
	9/23/19	10/2/19	6"	11"	40–50%	11%	15%	9%
Big Creek	10/20/20	11/2/20	6"	11"	40–50%	18%	15%	6%
	10/22/21	11/2/21	6"	8"	40–50%	30%	15%	8%

Compliance. In 2018, Lower Middle Fork allotment exceeded standards for both stubble height and bank alteration on Big Creek in Pizer Pasture. Unauthorized cattle accessed the CH in the Pizer pasture along rested restoration reaches on Big Creek because the electric fence was not working. The MNF notified the permittee, who removed them from the restoration reaches. The Pizer Deadwood Creek pasture did not have a MIM survey conducted. There is a DMA site in this reach, but because of the electric fencing (2018–2022), it is not considered representative of use in the pasture. Therefore, an alternate DMA was established on Big Creek in 2018, however, it has not been monitored since it was established. Photos of the DMA were taken at regular intervals throughout the grazing season. A game camera was also installed at the Deadwood Creek DMA. However, the electric fence chip malfunctioned after July, and failed to prevent livestock access. Restoration plants were heavily impacted by cattle in the Big Creek mining reclamation area. MNF attributed part of the stubble height and bank alteration exceedance to

recreation use and, therefore, did not issue a letter of non-compliance for the standard exceedances or the cattle access into the fenced enclosure in the pasture.

In 2020 and 2021, electric fencing was installed along the restoration of Deadwood Creek to prevent livestock access. In both years, unauthorized cattle entered the enclosure, the permittee was notified, and livestock was removed promptly. Photos were taken both years, but short term MIM indicators were not measured.

In 2019–2021, end-of-use standards were met at the DMA on Big Creek. However, photo monitoring in 2021 at the Big Creek mining reclamation site (2018 aquatic restoration project) indicated use was heavy, restoration plantings were negatively affected, and the site was not adequately rested post-restoration. In 2022, riparian fence was installed post-restoration at the Big Creek mining reclamation site, to exclude both livestock and wildlife.

Spawning Surveys. Spawning surveys were completed in the Pizer pasture on Big Creek and Deadwood Creek of the Lower Middle Fork allotment. On June 6, 2017, the survey on Big Creek in the Pizer pasture was delayed due to high flows. Redds were not observed in 2017. In 2017 Lost Creek was not surveyed. From 2018 to 2022, redds were observed in Deadwood Creek in 2018, 2021, and 2022 based on the 2022 Final BA (USDA FS 2022) (Table 123). The 2022 BA states measures (hog panels) to protect redds were successful and no redd trampling was documented. According to the 2018 EOY Grazing report (MNF 2019) two redds were observed and protected on Big Creek in 2018.

No redd trampling was documented during 2018–2022.

Table 123. Lower Middle Fork Allotment Spawning Survey Results.

Pasture	Stream	# Redds Observed 2018	# Redds Observed 2019	# Redds Observed 2020	# Redds Observed 2021	# Redds Observed 2022
Pizer	Big Creek	2*	0	0	0	0
Pizer	Deadwood Creek	1	0	0	2	2

*Two redds were identified as observed on 5/04/2018 in the 2018 EOY report provided to the Level 1 team. These redds were not included in spawning surveys results in the 2023 Final BAs (MNF 2023). We have included the redds counted in this table.

Region 6 Level II Stream Surveys. Region 6 stream surveys were completed in 2013 on Big Creek and East Fork Big Creek; and in 2014 on Pizer Creek, Deadwood Creek, and Lost Creek. Survey information is summarized below and included in the 2022 Final BA (USDA FS 2022). All 21 reaches surveyed were properly functioning for bank stability. Only one reach, Deadwood Creek Reach 4, was properly functioning for pools per mile and LWD. All seven Deadwood Creek reaches, the East Fork Big Creek Reach, and Big Creek Reach 9 were properly functioning for width-to-depth ratio (Table 103).

Big Creek was surveyed in 2001 and 2013, the creek was separated into nine reaches. Large woody material, pools per mile, and width/depth were insufficient and didn’t meet Amendment 29 standards. New beaver activity was observed in Reach 1. Bank stability was measured at 97 to 99 percent.

East Fork Big Creek was surveyed in 2013. There was only one pool observed in the entire system and did not exceed 3 feet in depth. The stream did not meet the large woody material and pool RMOs. Reach 2 also failed to meet the width/depth ratio and percent fines. Stream gradient averages 5.4 percent. The entire channel had 100 percent stable banks.

Pizer Creek was surveyed in August 2014. Three reaches were delineated versus one reach in the 1993 survey. The first reach was the steepest (Rosgen (1996) A channel), followed by reach two which was classed as a Rosgen B (1996) channel. Percent fines <2 mm were above 20 percent in the upper two reaches (22 percent and 31 percent).

Deadwood Creek was surveyed in 2013. The first three reaches are relatively low gradient, with the remaining four reaches relatively steeper. No pools were greater than 3 feet deep. The width/depth ratio was not met for this stream.

Pizer Creek was surveyed in 1993 and in August 2014. Bank stability was 98 to 99 percent. Dominant riparian vegetation was alder and dogwood, with mixed overstory of conifers. Average shade cover was 92 to 95.5 percent for July and 89 to 93 percent for August. The average width was 4.7 feet lower in the system and averaged 1.5 feet higher in the system. No pools were deeper than 1 foot.

Lost Creek was surveyed in 1993 and 2014. Dominant riparian vegetation is dogwood, alder and currants. Overstory is mixed conifer. Stream banks were recorded at 99 to 100 percent stable. Average shade cover for July was 79 to 81 percent and 77 to 80 percent for August. This stream did not meet large woody material RMOs, no pools were greater than 1 foot deep.

Roads and Temperature.

The MPI rated the Watershed condition pathway for the Road Density and Location Indicator as “not properly functioning” for the watershed road density containing greater than 3 mi/mi², and as roads occur in many valley drainages.

Stream temperature was monitored at 13 locations on seven streams (Deadwood Creek, Big Creek, East Fork Big Creek, Ballance Creek, Beaver Creek, Granite Boulder Creek, and Sunshine Creek) in the Lower Middle Fork allotment. These systems appear to be naturally cold water systems. Multi-year trend information is unavailable, but temperature does not appear to be limiting, but does exceed 64°F (18°C) on Big Creek (briefly in late July) and in lower and middle Beaver Creek, which exceeds 68°F (20°C) during the first half of July.

North Middle Fork Allotment

The MCR steelhead in this allotment are part of the MFJDR population. The North Middle Fork allotment is located within the Middle Fork John Day (MFJD) River subbasin, and Camp Creek-MFJD River and Big Creek-MFJD River watersheds, and Mill Creek, Vinegar Creek, Little Boulder, Big Boulder, Bear, and Granite Boulder subwatersheds.

The 64,357 acre North Middle Fork allotment includes is currently divided into 21 pastures: Austin, Lower Vinegar, Upper Vinegar, Caribou, Tincup, Granite Boulder, Shop Unit, River, Tailings, Susanville, Mosquito Riparian, DeWitt, H, G, F/E, D, C, B1, B, A, and Bird pastures. These pastures do not get used more than one time per year, with the exception of the Shop, Tailings, River, and Tincup pastures which are used for holding. There is two exclosures within this allotment called the Granite-Boulder Exclosure and in 2018 the Beaver Creek Exclosure was built to exclude livestock use from the MSRA portion of Beaver Creek in the Granite-Boulder pasture. Tincup Creek MSRA was excluded from Tincup Riparian pasture in 2017. The DMA for Tincup pasture was moved to Windlass Creek in 2017.

The North Middle Fork allotment contains 52.90 miles of steelhead CH and 11.0 miles of MSRA. MCR steelhead CH is located on Mill Creek, Vinegar Creek, Vincent Creek, Blue Gulch, Caribou Creek, Little Boulder Creek, Windless, Tincup Creek, Beaver Creek, Granite-Boulder Creek, Big Boulder Creek, Badger Creek, Wray Creek, Myrtle Creek, Elf Creek, MFJD River, North Fork Elf Creek, Deep Creek, Bear Creek, and Mosquito Creek. Streams with MSRA are Vinegar Creek, Vincent Creek, Caribou Creek, Beaver Creek, Granite-Boulder Creek, and the MFJD River. MSRA is designated in Vinegar, Caribou, Susanville, C pasture, and the Granite-Boulder pasture and exclosure.

Activities

Activities that have occurred or continue to occur within these watersheds include dredge and placer mining, fire suppression, road construction in riparian areas, silvicultural treatments, and livestock grazing on public and private land, in addition to wildfire throughout the landscape. Recreation has also impacted streams due to road development providing increased access to the project area for hunting, fishing, hiking, firewood cutting, and dispersed camping. In 2022 the Crockets Knob fire burned 4,287 acres within the Susanville Pasture. This relatively low intensity fire burned in a mosaic pattern mimicking natural wildfire. Big Boulder and Myrtle Creeks (steelhead CH) experienced the most impact from the fire; however, riparian corridors remain mostly intact and continue to provide stream shade and bank stability.

Multiple restoration projects were implemented in the allotment from 2016 to 2022. Major restoration projects occurred 2018–2022, in Bear Creek (Bird pasture), Beaver Creek (Granite Boulder pasture), and Deep Creek (Susanville pasture). Both Bear and Deep creeks were degraded by past mining and timber harvest. Mine tailings at the mouth of Bear Creek (left from dredge mining the MFJDR), inhibited adult steelhead migration, especially if flows were not exceptionally high during the spring. Restoration included opening the mouth of Bear Creek in 2019, and large wood placement and riparian planting along 2.4 miles of stream within the Bird pasture. Unauthorized livestock affected the Bear Creek restoration project when electric fence enclosures failed in 2021, and is described in the Compliance section below.

Deep Creek was also confined by mine tailings and a road that was constricting the channel and crossed through an undersized culvert. In 2022, the crossing was removed and the road was decommissioned, ripped, and re-contoured. Large wood was placed throughout 1.4 miles of Deep Creek to improve access to the floodplain, and across the old road prism beginning at the forest boundary. Prior to this restoration work, livestock use was minimal. Livestock were

pushed down the road in the fall when leaving the allotment. Now that restoration activities have taken place, the permittee has agreed to take a different route off of the allotment. Use monitoring will occur in 2022–2025 to ensure livestock are not impacting restoration activities. If livestock are determined to be impacting restoration success, then a fence will be built at the top of the draw, above the restoration site, to keep livestock out of the area.

Beaver Creek was not mined in the past, but legacy railroad grades crossed the stream, confining the channel and fragmenting the floodplain. In 2022, these were removed, the floodplain was re-contoured, and large wood was placed throughout 1.3 miles of the channel and floodplain. Additionally, several log-weirs that created barriers for juvenile salmonids during low flows, and also created over-widened pools, were removed. All restoration work in Beaver Creek has been completed in the existing Beaver Creek enclosure.

Resource Condition, Monitoring and Compliance

Browse use standard was exceeded in the Caribou pasture in 2013 and 2016, and in the Upper Vinegar pasture in 2016. During the 2017 grazing season, grazing management modifications to Tincup pasture included permanently excluding with a fence the CH on Tincup Creek, resting of C pasture, and a 35 percent reduction of c/c numbers for Herd 1. The Granite Boulder, C, Mosquito riparian, Tailings, River, Bird pastures were also rested for the entire season. Cattle numbers were reduced in the allotment by 32 percent and the grazing period was reduced by 36 percent to accommodate the late turnout. Upland utilization monitoring was conducted throughout the allotment, and MIM monitoring was conducted on all of the pastures with CH where cattle were permitted to use; no measurements exceeded allowable use levels. No monitoring of MIM DMAs were conducted on rested pastures. A fence proposal was provided to the MNF Aquatic Restoration decision process that would fence the MSRA on Beaver Creek, thereby removing it from livestock use. A more detailed discussion of past compliance issues from the 2012–2016 consultation can be found in Section 2.3.6 of the 2018 Grazing opinion environmental baseline section (NMFS 2018).

In 2017, MIM monitoring was conducted on all pastures with CH where cattle were permitted to graze. All end-of-season standards were met in the allotment. During the 2018–2022 grazing consultation timeframe, the following end-of-season standards were exceeded in the North Middle Fork Allotment (Table 124):

- Caribou, Caribou Creek (2018): Woody Browse and Stubble Height
- Upper Vinegar Pasture, Vinegar Creek (2018): Streambank Alteration
- Tincup Pasture, Tincup and Windlass creeks (2021): Streambank Alteration

Table 124. Short-term Multiple Indicator Monitoring (MIM) on the North Middle Fork Allotment.

Pasture and Stream	Livestock End-of-Use Date	Date Monitored	Stubble Height		Browse Use		Streambank Alteration	
			Standard	Measured	Standard	Measured	Standard	Measured
Upper Vinegar	7/31/16	9/29/16	4–6"	4"	40–50%	52%	20%	27%
	8/3/17	8/28/17	6"	10"	40–50%	14%	15%	7%
	8/1/18	9/5/18	6"	9"	40–50%	31%	15%	18%

Pasture and Stream	Livestock End-of-Use Date	Date Monitored	Stubble Height		Browse Use		Streambank Alteration	
			Standard	Measured	Standard	Measured	Standard	Measured
Vinegar Creek	Combined with Lower Vinegar pasture							
	Combined with Lower Vinegar pasture							
Lower Vinegar	7/31/16	9/29/16	4-6"	8"	40-50%	47%	15%	11%
	8/3/17	8/28/17	6"	13"	40-50%	12%	15%	4%
	8/1/18	8/9/18	6"	12"	40-50%	15%	15%	8%
Vinegar Creek	8/1/19	8/14/19	6"	16"	40-50%	13%	15%	5%
	8/16/20	8/19/20	6"	11"	40-50%	16%	15%	6%
	08/25/21	08/26/21	6"	10"	40-50%	10%	15%	6%
Caribou	8/20/16	9/29/16	4-6"	7"	40-50%	53%	15%	15%
	9/14/17	9/14/17	6"	17"	40-50%	27%	15%	3%
	9/1/18	10/11/18	6"	5"	40-50%	55%	15%	14%
Caribou Creek	9/1/19	10/2/19	6"	17"	40-50%	16%	15%	6%
	9/20/20	9/23/20	6"	13"	40-50%	44%	15%	8%
	10/04/21	10/05/21	6"	7"	40-50%	50%	15%	11%
	~	2011	4-6"	~	40-50%	~	15%	~
Tincup Riparian	Rested	2016	4-6"	Rested	40-50%	Rested	15%	Rested
	9/11/17	10/19/17	6"	8"	40-50%	38%	15%	11%
Tincup Creek	Rested	2018	6"	No	40-50%	No	15%	No
	Rested	9/26/19	6"	Photos	40-50%	Photos	15%	Photos
	10/15/20	10/15/20	6"	10"	40-50%	30%	15%	11%
Windlass Creek	10/14/21	10/14/21	6"	7"	40-50%	30%	15%	17%
Mosquito Creek	Rested	2016	4-6"	*NP	40-50%	**NP	15%	4%
	Rested	2017	6"	Rested	40-50%	Rested	15%	Rested
	Rested	10/25/18	6"	*NP	40-50%	15%	20%	*NP
Riparian	Rested	9/26/19	6"	Photos	40-50%	Photos	20%	Photos
Mosquito Creek (No MSRA)	Rested	2020	6"	No Photos	40-50%	No Photos	15%	No Photos
	Rested	11/16/21	6"	Photos	40-50%	Photos	20%	Photos
Granite Boulder	6/28/16	10/3/16	4-6"	8"	40-50%	49%	15%	14%
	Rested	2017	6"	Rested	40-50%	Rested	15%	Rested
	7/1/18	8/2/18	6"	7"	40-50%	37%	20%	18%
Beaver Creek	7/1/19	7/11/19	6"	12"	40-50%	10%	20%	6%
	7/15/20	7/30/20	6"	9"	40-50%	17%	20%	11%
	07/15/21	07/29/21	6"	8"	40-50%	10%	20%	6%
Susanville	9/20/16	9/29/16	4-6"	11"	40-50%	33%	15%	9%
	9/11/17	10/19/17	6"	18"	40-50%	16%	15%	4%
	9/15/18	10/24/18	6"	8"	40-50%	47%	20%	15%
Dry Creek	9/15/19	10/15/19	6"	12"	40-50%	18%	20%	11%
	10/31/20	11/4/20	6"	8"	40-50%	31%	20%	11%
	10/31/21	11/04/21	6"	8"	40-50%	30%	20%	10%
Susanville	9/15/18	10/25/18	6"	7"	40-50%	21%	20%	10%
Deep Creek	9/15/19	9/26/19 11/6/19	6"	Photos	40-50%	21%	20%	Photos
	10/31/20	11/4/20	6"	8"	40-50%	15%	20%	6%

Pasture and Stream	Livestock End-of-Use Date	Date Monitored	Stubble Height		Browse Use		Streambank Alteration	
			Standard	Measured	Standard	Measured	Standard	Measured
	10/31/21	11/4/21	6"	10"	40-50%	10%	20%	5%
Tailings MFJDR	Rested	2016	4-6"	Rested	40-50%	Rested	15%	Rested
	Rested	2017	6"	Rested	40-50%	Rested	15%	Rested
	Rested	2018	6"	Rested	40-50%	Rested	15%	Rested
	Rested	2019	6"	Rested	40-50%	Rested	15%	Rested
	Rested	2020	6"	Rested	40-50%	Rested	15%	Rested
	Rested	2021	6"	Rested	40-50%	Rested	15%	Rested
C MFJDR (No CH)	6/30/16	9/2/16	4-6"	7"	40-50%	32%	15%	15%
	Rested	2017	6"	Rested	40-50%	Rested	15%	Rested
	Rested	2018		Rested		Rested	15%	Rested
	Gather	8/14/19	6"	14"	40-50%	10%	15%	3%
	Gather	7/21/20	6"	Photos	40-50%	Photos	15%	Photos
	Gather	11/16/21	6"	Photos	40-50%	Photos	15%	Photos
E & F Mosquito Creek (No MSRA)	Rested	2016	4-6"	Rested	40-50%	Rested	20%	Rested
	Rested	2017	6"	Rested	40-50%	Rested	20%	Rested
	Rested	9/5/18	6"	*NP	40-50%	16%	20%	10%
	Rested	8/14/19	6"	Photos	40-50%	Photos	20%	Photos
	Rested	2020	6"	Rested	40-50%	Rested	15%	Rested
	Rested	11/16/21	6"	Photos	40-50%	Photos	20%	Photos
Bird	Rested	2018	6"	Rested	40-50%	Rested	15%	Rested
	Rested	2019	6"	Rested	40-50%	Rested	15%	Rested
Bear Creek	Rested	2020	6"	Rested	40-50%	Rested	15%	Rested
	Rested	11/01/21	6"	Photos	40-50%	Photos	15%	Photos

*Stubble Height Column: NP means "no herbaceous key species"

**Browse use Column: NP means "no browse species present"

This allotment is grazed by one permittee; however, the permit was transferred to a new permittee between 2018 to 2021. The MNF sent notice of noncompliance letters to the permittee in 2018 for exceeding woody browse and stubble height (Caribou pasture), streambank alteration in Upper Vinegar pasture and in stream bank alteration was exceeded in Tincup Riparian pasture in 2021. The MNF stated the allotment permit changed hands between 2018 and 2021, and thus, MNF only have sent each permittee one letter at this time.

The 2021 bank alteration exceedance in Tincup Pasture occurred because another permittee's cows were moved into the pasture by a third party (Confederated Tribes of Warm Springs range rider). Coordination did not occur between the Tribes and MNF. Since the permittee did not have any cattle in the pasture, neither the permittee nor the MNF staff were checking the pasture. The North Middle Fork permittee rested the Tin Cup pasture for 2022. The South Middle Fork permittee, whose cows were put into the Tin Cup pasture by the Tribe's range rider, rested all of the pastures in the South Fork allotment, except the Balance pasture for 2022. The Malheur planned to send an informational letter to both permittees of the South and North Middle Fork allotments. The MNF made the decision to not take permit action for this allotment due to the new permittee and the circumstances that existed in 2021.

In 2021, unauthorized, excess use from neighboring allotments was also observed in Tincup, Tailings, Shop, E/F, Bird, and Mosquito Riparian pasture along the Middle Fork of the John Day River. No MIM data was collected along the MFJDR within the C pasture, in spite of high excess use potentially that exceed standards in C Pasture. The MNF explained the cause of excess use was determined to be a combination of gates being left open, broken fences, unassigned sections of fence that were not maintained, and gaps in the new 2020 fence allowing livestock access. The Blue Mountain range crew fixed the section of unassigned fence. The MNF contacted the permittees, who removed the livestock.

The Bird Pasture had several compliance issues in 2020 and 2021. As previously described this pasture included aquatic restoration work on Bear Creek in 2018 and 2019. This pasture was successfully rested in 2018 and 2019. In 2020, electric fencing was set up around the restoration work. However, the electric fencing failed to completely keep cattle out of the restoration reach. The pasture was originally scheduled to be used June 16–30, but the permittee chose to rest the pasture instead. However, some unauthorized cattle still accessed the pasture. Follow-up MIM monitoring and spawning surveys did not occur. In 2021, Bird pasture was rested. However, cattle breached the electric fence. DMA photo monitoring and ocular estimates of use occurred and MNF determined that MIM was not warranted, because cattle use at the DMA was low. However, higher use of the pasture/restoration area downstream was identified in photos. Unauthorized cattle use in this pasture in 2021 was not documented until August 24, 2021. The MNF notified the permittee, who removed livestock from the MFJDR. It is unknown when livestock first accessed this pasture in 2021.

PIBO Monitoring. Four PIBO sites are located in the North Middle Fork allotment on: Vinegar Creek in the Upper (K site) and Lower (I site) Vinegar pastures, Middle Fork John Day River in the B Pasture (I site) , and Big Boulder Creek in Susanville Pasture (I site). Monitoring occurred at the I site (Lower Vinegar pasture) four times between 2001 and 2016 and at the DMA K site (Upper Vinegar pasture) three times in 2011, 2016 and 2019. Monitoring occurred in the B Pasture (Middle Fork John Day River site) in 2009, 2014 and 2019. Monitoring also occurred in the North Middle Fork Susanville Pasture (Big Boulder Creek I site) in 2006, 2011, and 2016.

Vinegar Integrator Site Results. Within this monitored reach only bankfull width-to-depth has steadily improved during the monitoring period and bank stability has slightly improved and is high. Percent fines have decreased at this site. The remainder of the indicators appear to show an overall static or slight downward trend (total index rating, percent pools, residual pool depth, bank angle, undercut banks, greenline wetland rating, and greenline woody cover). Vinegar Creek is near PIBO reference mean values for bankfull width-to-depth, and outside desired values for percent pools, residual pool depth, bank angle, and undercut banks.

Middle Fork John Day Integrator Site Results. Most metrics were relatively stable between 2011 and 2019. The primary changes have been in mean particle size (increase), pool percentage (increase), percent fines (increase, but still very low), and undercut banks (reduced).

Big Boulder Creek Integrator Site Results. Within this monitored reach the percentage of undercut banks, percent fines, and pool depth improved from 2006 to 2016. Bankfull width-to-

depth ratio increased from 27.9 in 2006 to 30.1 in 2016. Percent pools fluctuated, decreasing from 26.9 percent in 2006 to 11.1 percent in 2011, and increasing to 16 percent in 2016.

Vinegar Creek PIBO DMA (K) site Results. Most metrics were relatively stable or exhibited a positive trend from 2011 to 2019. The total index decreased slightly (from 58.1 to 55.4).

MIM Monitoring. The MIM DMAs are currently located in the Upper and Lower Vinegar pastures on Vinegar Creek, Caribou pasture on Caribou Creek, Tincup Riparian pasture on Windlass Creek, Granite Boulder enclosure on Granite Boulder Creek, Susanville pasture on Dry Creek, C pasture on the MFJDR, and in the Mosquito Riparian pasture on Mosquito Creek.

Region 6 Level II Stream Surveys. From 1992–2014, Region 6 stream surveys were conducted on 22 streams, 58 reaches, and data was collected on the condition of six primary habitat elements. All stream reaches were surveyed once. In 2019, recent data was collected for MFJDR (Tincup Creek to Caribou Creek). The 2019 data indicated bank stability was considered properly functioning, however, pool frequency, large woody debris, fine sediment, width to depth ratio were all considered not properly functioning. In 2020 Vinegar Creek Reach 1 was surveyed. The 2020 data collected indicated fine sediments and bank stability were considered properly functioning, however, pool frequency, large woody debris and width to depth ratios were considered not properly functioning (Table 125).

Table 125. Region 6 Level II Stream Survey Data for the North Middle Fork Allotment.

Stream name	Survey year	Pool frequency (pools/mi)	Large woody debris (pieces/mile)	Fine sediment/ embeddedness	Width-to-depth (W:D) ratio	Bank stability %	Shade % (with solar pathfinder)
Badger Creek Reach 1	2001	5.94 (NPF)	79.2 (PF)	-	26 (NPF)	74.96 (AR)	-
Badger Creek Reach 2	2001	15.07 (NPF)	56.85 (PF)	-	22.4082 (NPF)	80.07 (PF)	-
Bear Creek Reach 2	2013	26.89 (NPF)	27.87 (NPF)	38.77% <2mm (NPF)	16.8505 (NPF)	93.52 (PF)	-
Bear Creek Reach 1	2020	31.25 (NPF)	102 (PF)	61.9% (NPF)	10.19 (NPF)	93.01 (PF)	43.83
Beaver Creek - Reach 1	2014	58.68 (NPF)	4.8 (NPF)	18.67% <2mm (AR)	10.9965 (AR)	97.06 (PF)	73.9
Beaver Creek - Reach 2	2014	40.7 (NPF)	26.75 (PF)	18.08% <2mm (AR)	16.1908 (NPF)	99.56 (PF)	73
Big Boulder Creek Reach 1	1992	23.6 (NPF)	16.77 (NPF)	-	15.5179 (NPF)	-	-
Big Boulder Creek Reach 2	1992	30.91 (NPF)	92.73 (PF)	-	14.5387 (NPF)	-	-
Big Boulder Creek Reach 3	1992	39.63 (NPF)	73.17 (PF)	-	12.7305 (NPF)	-	-
Big Boulder Creek Reach 4	1992	47.02 (NPF)	77.49 (PF)	-	11.7921 (AR)	-	-
Big Boulder Creek Reach 5	1992	36.41 (NPF)	104.37 (PF)	-	10.8637 (AR)	-	-

Stream name	Survey year	Pool frequency (pools/mi)	Large woody debris (pieces/mile)	Fine sediment/ embeddedness	Width-to-depth (W:D) ratio	Bank stability %	Shade % (with solar pathfinder)
Caribou Creek Reach 1	1993	24.49 (NPF)	10.2 (NPF)	-	12.6501 (NPF)	-	-
Caribou Creek Reach 2	1993	30.39 (NPF)	41.18 (PF)	-	7.3331 (PF)	-	-
Caribou Creek Reach 1	2022	67.8 (NPF)	1.69 (NPF)	31.7% <2mm (PF)	10.93 (AR)	98.62	50.07%
Coyote Creek - Reach 1	2014	50 (NPF)	45.45 (PF)	76.5% <2mm (NPF)	7.8923 (PF)	96.12 (PF)	34
Coyote Creek - Reach 3	2014	29.55 (NPF)	28.41 (PF)	63.7% <2mm (NPF)	8.2751 (PF)	85.34 (PF)	31.2
Coyote Creek - Reach 2	1992	57.95 (NPF)	256.92 (PF)	-	7.713 (PF)	-	-
Deep Creek Reach 1	1994	80.27 (PF)	99.32 (PF)	-	11.0064 (AR)	-	-
Deep Creek Reach 2	1992	67.72 (NPF)	240.21 (PF)	-	6.6768 (PF)	-	-
Deep Creek Reach 3	1992	77.27 (PF)	164.54 (PF)	-	6.3826 (PF)	-	-
Dry Creek - Reach 1	2014	60.66 (NPF)	1.64 (NPF)	54.3% <2mm (NPF)	11.0714 (AR)	98.89 (PF)	73.9
Elk Creek Reach 1	1992	96.49 (PF)	19.88 (NPF)	-	6.662 (PF)	-	-
Elk Creek Reach 2	1992	102.59 (PF)	211.2 (PF)	-	7.3961 (PF)	-	-
Granite Boulder Cr. Reach 1	2014	23.45 (NPF)	13.79 (NPF)	13.46% <2mm (AR)	23.8972 (NPF)	99.61 (PF)	56.14
Granite Boulder Cr. Reach 2	2014	23.31 (NPF)	29.24 (PF)	2.82% <2mm (PF)	32.5028 (NPF)	99.82 (PF)	51.09
Lemon Creek - Reach 1	2014	43.48 (NPF)	14.49 (NPF)	24.5% <2mm (NPF)	18.7711 (NPF)	100 (PF)	57
Little Boulder Cr. - Reach 1	2013	78.8 (PF)	19.02 (NPF)	14.93% <2mm (AR)	21.8499 (NPF)	96.67 (PF)	-
Little Boulder Cr. - Reach 2	2013	93.85 (PF)	85.48 (PF)	8.87% <2mm (PF)	26.105 (NPF)	96.37 (PF)	-
Little Boulder Cr. Tributary	1993	28.95 (NPF)	13.82 (NPF)	-	9.4947 (PF)	-	-
MF John Day Lower R3	2008	10.19 (NPF)	5.55 (NPF)	3.62% <2mm (PF)	27.2746 (NPF)	99.565 (PF)	1.3
MF John Day Lower R4	2008	1.43 (NPF)	1.42 (NPF)	2.84% <2mm (PF)	23.8732 (NPF)	97.195 (PF)	4
MF John Day - Reach (Tincup Cr. to Caribou Cr.)	2019	9.91 (NPF)	3.23 (NPF)	24% <2mm (NPF)	25.95 (NPF)	98.71 (PF)	29.15
Mill Creek - Reach 1	2011	23.53 (NPF)	1.96 (NPF)	-	11.3647 (AR)	100 (PF)	62.75

Stream name	Survey year	Pool frequency (pools/mi)	Large woody debris (pieces/mile)	Fine sediment/ embeddedness	Width-to-depth (W:D) ratio	Bank stability %	Shade % (with solar pathfinder)
Mosquito Creek Reach 1	1992	105.88 (PF)	198.03 (PF)	-	9.519 (PF)	-	-
Mosquito Creek Reach 2	1992	14.78 (NPF)	74.78 (PF)	-	7.0639 (PF)	-	-
Myrtle Creek Reach 1	2001	17.54 (NPF)	47.37 (PF)	-	17.0834 (NPF)	98.69 (PF)	-
Myrtle Creek Reach 2	2001	25 (NPF)	42.15 (PF)	-	24.2857 (NPF)	96.68 (PF)	-
Myrtle Creek Reach 3	2001	16.28 (NPF)	71.51 (PF)	-	28.8889 (NPF)	100 (PF)	-
North Fork Elk Cr. Reach 1	1992	110.99 (PF)	167.59 (PF)	-	8.555 (PF)	-	-
North Fork Elk Cr. Reach 2	1992	70.61 (NPF)	328.07 (PF)	-	8.1892 (PF)	-	-
Porky Creek Reach 1	1993	19.34 (NPF)	25.47 (PF)	-	3.1724 (PF)	-	-
Tincup Creek Reach 1	2001	12.96 (NPF)	2.78 (NPF)	-	38 (NPF)	100 (PF)	-
Vincent Creek - Reach 1	2013	58.54 (NPF)	3.84 (NPF)	9.35% <2mm (PF)	10.9256 (AR)	99.23 (PF)	-
Vincent Creek - Reach 2	2013	27.44 (NPF)	19.53 (NPF)	1.8% <2mm (PF)	10.3682 (AR)	98.83 (PF)	-
Vinegar Creek - Reach 1	2020	18.10 (NPF)	5.24 (NPF)	17.53% <2mm (PF)	24.2 (NPF)	95.74 (PF)	63.45
Vinegar Creek Reach 1	2001	14.6 (NPF)	0.73 (NPF)	-	46.25 (NPF)	87.82 (PF)	-
Vinegar Creek Reach 2	2001	11.63 (NPF)	22.09 (PF)	-	57.5 (NPF)	100 (PF)	-
Vinegar Creek Reach 3	2001	18.52 (NPF)	30.86 (PF)	-	23.2143 (NPF)	100 (PF)	-
Vinegar Creek Reach 4	2001	15.3 (NPF)	19.67 (NPF)	-	34.3333 (NPF)	100 (PF)	-
Vinegar Creek Reach 5	2001	18.52 (NPF)	12.7 (NPF)	-	28.1667 (NPF)	94.4 (PF)	-
Vinegar Creek Reach 6	2001	22.83 (NPF)	48.91 (PF)	-	20.4167 (NPF)	100 (PF)	-
Vinegar Creek Reach 7	2001	7.55 (NPF)	115.09 (PF)	-	-	-	-
Vinegar Cr. Tributary R1	2001	40 (NPF)	43.75 (PF)	-	23.3333 (NPF)	100 (PF)	-
Vinegar Cr. Tributary R2	2001	20.93 (NPF)	37.21 (PF)	-	18.875 (NPF)	100 (PF)	-
Windlass Creek Reach 1	1993	37.44 (NPF)	12.8 (NPF)	-	5.041 (PF)	-	-
Windlass Creek Reach 2	1993	7.46 (NPF)	64.18 (PF)	-	5.5773 (PF)	-	-

Stream name	Survey year	Pool frequency (pools/mi)	Large woody debris (pieces/mile)	Fine sediment/ embeddedness	Width-to-depth (W:D) ratio	Bank stability %	Shade % (with solar pathfinder)
Wray Creek Reach 1	2001	11.9 (NPF)	52.39 (PF)	-	18.5833 (NPF)	91.31 (PF)	-
Wray Creek Reach 2	2001	16.18 (NPF)	117.65 (PF)	-	17.9167 (NPF)	95.16 (PF)	-

Values in **bold** font are meeting fish habitat objectives for Amendment 29, values not bold are not meeting fish habitat objectives. PF = NMFS MPI Properly Functioning, NPF = MPI Not Properly Functioning.

Spawning Surveys. From 2018–2022, spawning surveys were completed in pastures where grazing turnout was scheduled prior to July 1. Redds were observed in Granite Boulder, Beaver, Vincent, and Vinegar creeks (Table 126). Protective measures (hog panels) were used to protect redds observed when livestock grazing was scheduled prior to July 1. The Warm Springs Tribes surveyed Caribou Creek and located 7 redds and 2 adult fish in 2022. The redds documented from the Tribes’ surveys were not protected because grazing occurred after July 1, 2022.

Table 126. Spawning Survey Results.

Pasture	Stream	# Redds Observed 2018	# Redds Observed 2019	# Redds Observed 2020	# Redds Observed 2021	# Redds Observed 2022
Granite Boulder	Granite Boulder Creek	1-ODFW Survey	0	0	0	0
Granite Boulder	Lemon Creek	0	0	0	0	0
Granite Boulder	Beaver Creek	1	0	0	1	0
Austin	Mill Creek	0	No Survey*	No Survey*	Low flow, no habitat	0
Bird	Bear Creek	No Survey*	No Survey*	No Survey	No Survey*	0
Upper Vinegar	Blue Gulch	0	0	0	0	No Survey*
Upper Vinegar	Vinegar Creek	0	0	0	0	No Survey*
Lower Vinegar	Vincent Creek	2	0	1	4	No Survey*
Lower Vinegar	Vinegar Creek	5-ODFW Survey	0	0	3	No Survey*

*No survey needed due to pasture not being grazed prior to July 1.

Roads and Temperature. The MPI rated the Watershed condition pathway for the Road Density and Location Indicator as “not properly functioning” for the watershed road density containing greater than 3 mi/mi², and as roads occur in many valley drainages.

There are seven stream temperature monitoring locations on three streams (Butte Creek, Ragged Creek, Bear Creek, Middle Fork John Day River above C Pasture, and Ruby Creek) in the North and South Fork allotments. Butte Creek and Ruby Creek have upper and lower sites. Mean maximum water temperatures are above the suitable range for salmonid species present during summer months in the Upper Middle Fork allotment in Vinegar Creek and Ragged Creek. Butte Creek and Ruby Creek show water temperatures in the 55°F to 64°F range. Temperature data shows Bear Creek has average highs in the upper teens in July and lows in late October in single

digits. In July stream temperatures are just under the MPI recommended temperature for rearing. The MFJDR stream temperature data shows that the river is above the MPI recommended temperature for rearing with highs from 68°F to 77°F.

South Middle Fork Allotment

The South Middle Fork allotment contains streams with CH for MCR steelhead in the MFJD population. The 33,734 acre allotment is comprised of five pastures: Deerhorn, Upper Butte, Lower Butte, Sunshine, and Balance. The allotment is located in the Bridge Creek-Middle Fork John Day River and Camp Creek-Middle Fork John Day River watersheds.

The South Middle Fork allotment contains 26.34 miles of steelhead CH and 6.64 miles of MSRA. MCR steelhead CH is located within the Upper Butte, Lower Butte, Deerhorn, and Sunshine pastures. MSRA is designated in Deerhorn and Lower Butte pastures. The Balance pasture does not contain CH or MSRA and it will not be discussed further.

Activities

Dredge and placer mining, fire suppression, road construction, silvicultural treatments, recreation, livestock grazing on public and private land, and wildfire throughout the landscape have reduced aquatic species habitat quality and complexity of streams within the allotment. Past logging and road construction in RHCAs have reduced canopy cover in some areas, resulting in less shade over streams, and increased water temperatures.

Butte and Ruby Creeks were degraded from past mining and logging activities and included a series of old log-weirs. Recent restoration has included road decommissioning along 1.7 miles and large wood placement in the Deerhorn pasture (2017). Within the Lower Butte pasture, 1 mile of road directly adjacent to Butte Creek was relocated and realigned. Invasive weed treatment occurred on 131 acres within Lower Butte and also Granite Boulder (in the North Middle Fork allotment). There were 51 log weirs removed between Butte, Ruby and Beaver Creeks (2022). Current and upcoming projects include: 1.5 miles of large wood placement, beaver dam analogs, riparian planting, and possibly railroad grade removal within Lower Butte pasture on Butte and Ruby Creeks (2022–2023); and additional large wood and BDA placement in Deerhorn Creek in 2023–2024.

Resource Condition, Monitoring and Compliance

PIBO Monitoring. One PIBO site (a K site) is located in the South Middle Fork allotment on Sunshine Creek. Data was collected at the Sunshine DMA in 2011 and 2016. From 2011 to 2016, bankfull width-to-depth increased and vegetation stability decreased. The PIBO long-term trend monitoring indicated the percent undercut banks increased and bank stability was maintained at 100 percent. However, bank angle and percent undercut banks are significantly worse than reference conditions.

MIM Monitoring. Short-term MIM monitoring was conducted 2011–2021 in Sunshine (Sunshine Creek), Upper Butte (Butte Creek), Lower Butte (Butte Creek), and Deerhorn (Deerhorn Creek) pastures when grazed.

End-of-season use standards were met in all pastures 2018–2021 (Table 127).

Table 127. Short-term Multiple Indicator Monitoring (MIM) on the South Middle Fork Allotment.

Pasture and Stream	Livestock End-of-Use Date	Date Monitored	Stubble Height		Browse Use		Streambank Alteration	
			Standard	Measured	Standard	Measured	Standard	Measured
Sunshine	8/20/16	9/21/16	4–6"	7"	40–50%	40%	20%	4%
	10/1/17	10/12/17	6"	8"	40–50%	24%	20%	5%
Sunshine Creek	Rested 2018	Rested	6"	Rested	40–50%	Rested	20%	Rested
	Rested	9/25/19	6"	Photos	40–50%	Photos	20%	Photos
	Rested	9/15/20	6"	7"	40–50%	26%	20%	10%
	Rested	09/15/21	6"	7"	40–50%	10%	20%	4%
Upper Butte	2016	Pasture proposed	4–6"	Pasture proposed	40–50%	Pasture proposed	20%	Pasture proposed
	2017	Rested	6"	Rested	40–50%	Rested	20%	Rested
Butte Creek	2018	Rested	6"	Rested	40–50%	Rested	20%	Rested
	2019	7/17/19	6"	Photos	40–50%	Photos	20%	Rested
	Rested	2020	6"	Photos	40–50%	Photos	20%	Photos
	Rested	07/12/21	6"	12"	40–50%	10%	20%	6%
Lower Butte	7/10/16	10/3/16	4–6"	4"	40–50%	31%	15%	24%
	2017	Rested	6"	Rested	40–50%	Rested	15%	Rested
Butte Creek **previous "Butte" monitoring location	Rested 2018	Rested	6"	Rested	40–50%	Rested	15%	Rested
	Rested	7/18/19	6"	Photos	40–50%	Photos	15%	Photos
	Rested	10/31/20	6"	14"	40–50%	20%	15%	7%
	Rested	07/12/21	6"	14"	40–50%	10%	15%	4%
	Rested	8/14/16	10/3/16	4–6"	14"	40–50%	38%	15%
Deerhorn	2017	2017	6"	Rested	40–50%	Rested	15%	Rested
	Rested 2018	Rested	6"	Rested	40–50%	Rested	15%	Rested
Deerhorn Creek	Rested	9/25/19	6"	Photos	40–50%	Photos	15%	Photos
	Rested	2020	6"	Photos	40–50%	Photos	20%	Photos
	Rested	Rested	6"	Rested	40–50%	Rested	20%	Rested

Compliance (2012–2016). Browse use was exceeded in Sunshine pasture in 2012. Streambank alteration occurred in Lower Butte pasture and also was exceeded on Butte Creek in the Butte pasture in 2016. A more detailed discussion of the 2012–2016 compliance issues and other grazing management situations are fully described in in Section 2.3.6 of the Environmental Baseline of 2018 MNF Grazing opinion (NMFS 2018).

Redd Trampling (2012–2016). The 2012–2016 consultation period included multiple changes in how the pastures of the allotment were grazed, and further issues that resulted in reduced grazing. In 2016, five redds in Butte Creek (Lower Butte pasture) were protected with brush fence. Four were effectively protected and one may have been trampled by cattle pushing aside brush fencing. Since brush fencing in ineffective it will no longer be used for redd protection. In 2017, cattle were not turned-out on CH prior to July 1 to avoid the MCR steelhead spawning period.

Compliance (2017–2022). In 2017, due to the lapse until the 2018 ESA consultation was complete the allotment herd size was reduced by 37 percent to reduce potential adverse effects to CH and prevent potential redd trampling. The Butte pasture and the Deerhorn pasture was also rested in 2017. Cattle numbers were decreased by 40 percent and period of livestock use was decreased by 34 percent to accommodate the reduced land available for the 2017 grazing season within the allotment. There were no exceedances in these pastures in 2017.

Unauthorized livestock use was reported in Balance, Sunshine, and Deerhorn Pastures in 2019 during a compliance check. The MNF contacted the owner of the livestock, and the cattle were removed promptly. However, follow up MIM monitoring of the DMAs did not occur after the excess use, due to the pastures being scheduled for rest.

As a result of the excess use by the South Middle Fork allotment livestock being placed into the Tin Cup pasture (North Middle Fork allotment), the pastures in the South Fork allotment, except the Balance pasture, were rested for 2022.

Spawning Surveys. During the 2018–2022 consultation timeframe, grazing prior to July 1 only occurred in 2021 (Table 128). Redd surveys were completed and redds were observed in Ruby Creek within Upper Butte pasture (1 redd) and Lower Butte pasture (8 redds), and in Butte Creek within the Lower Butte pasture (3 redds). In 2021, hog panels were placed to protect the redd observed on Ruby Creek in Upper Butte. To protect the redds on Ruby Creek and Butte Creek within the Lower Butte pasture turnout was delayed until after July 1. No signs of redd trampling was documented in the 2021 EOY report.

Table 128. Spawning Survey Results.

Pasture	Stream	# Redds Observed 2018	# Redds Observed 2019	# Redds Observed 2020	# Redds Observed 2021	# Redds Observed 2022
Upper Butte	Butte Creek	No Survey*	No Survey*	No Survey*	0	No Survey*
Upper Butte	Bennett Creek	No Survey*	No Survey*	No Survey*	0	No Survey*
Upper Butte	Sulphur Creek	No Survey*	No Survey*	No Survey*	0	No Survey*
Upper Butte	Ruby Creek	No Survey*	No Survey*	No Survey*	1	No Survey*
Upper Butte	Sunshine Creek	No Survey*	No Survey*	No Survey*	0	No Survey*
Lower Butte	Ragged Creek	No Survey*	No Survey*	No Survey*	0	No Survey*
Lower Butte	Ruby Creek	No Survey*	No Survey*	No Survey*	8	No Survey*
Lower Butte	Butte Creek	No Survey*	No Survey*	No Survey*	3	No Survey*

*No survey needed due to pasture not being grazed prior to July 1.

Region 6 Level II Stream Surveys. Region 6 stream surveys were conducted and data on the condition of the six primary habitat elements are presented above in the North Middle Fork

allotment discussion (see description above). No additional data were collected within the South Middle Fork allotment (Table 103).

Roads and Temperature. The MPI rated the Watershed condition pathway for the Road Density and Location Indicator as “not properly functioning” for greater than 3 mi/mi² as roads occur in many valley drainages.

The PacFish riparian management objective (RMO) is for maximum water temperatures below 64°F within migration and rearing habitat and below 60°F within spawning habitats. Butte Creek and Ruby Creek show water temperatures in the 55°F to 64°F range. However, the 7-day mean maximum stream temperature across the project planning area ranges from 55°F to 72.5°F. Mean maximum water temperatures are above the suitable range for salmonid species present during summer months according to RMOs.

Slide Creek Allotment

The Slide Creek allotment contains MCR steelhead CH for the MFJDR population. It is located within the MFJD subbasin, in the Camp Creek River and Big Creek watersheds. The 25,256 acre Slide allotment is currently divided into nine pastures: East, West, Sale Area, Whiskey Riparian, Whiskey Flats, Hog, Slide Holding, Camp Riparian, and Slide Riparian. There is 8.65 miles of CH and 2.29 miles of MSRA, which is located within five of the nine pastures: Camp Riparian, East, West, Slide, Whiskey Riparian. All pastures with MCR steelhead CH in the Slide Creek allotment have an associated MIM DMA.

Activities

Activities that have occurred or continue to occur within these watersheds include historic mining, timber harvest, grazing, roads, trails, water diversions, prescribed and natural fire, noxious weed treatment, and recreation. Restoration activities took place in the Camp Riparian pasture in 2021 and 2022. A historic railroad grade that was constraining the stream was removed, large wood additions were added to the stream and floodplain, and hardwood trees and shrubs were planted throughout the reach.

Resource Condition, Monitoring and Compliance

The allotment includes NFS Lands that range in elevation from 3,600 feet near Camp Creek to 5,500 feet near the center of the allotment. The MNF states Slide Creek allotment is one of the most productive grazing allotments on the MNF. Significant timber harvest in the early 1960s and 1970s created a mosaic of upland meadows with a diverse variety of bunchgrasses and forbs. Several designated livestock driveways facilitate proper cattle distribution and effective pasture moves. The watersheds encompassing the Slide Creek Allotment support a mix of NFS and private lands.

Overstory vegetation in the allotment varies from dominant ponderosa pine stands with associated species of Douglas fir, western larch, and lodgepole pine. Dominant grass species are

bluebunch wheatgrass/Idaho fescue and Sandberg bluegrass in the grasslands, elk sedge/pine grass in the forested areas and mixed riparian grasses and sedges along the riparian areas. Riparian overstory vegetation generally consists of a mix of hardwood and conifer species along the stream. Dominant hardwood species generally consist of alder and dogwood. Conifer species are generally grand fir and Douglas fir with lesser components of lodgepole pine.

PIBO Monitoring. One PIBO site (DMA-K) is located in the Slide Creek allotment, on Slide Creek. Monitoring occurred at the DMA (K) site two times, in 2012 and 2015. From 2012 to 2015, bankfull width-to-depth and percent pools improved. The remaining indicators showed a static or downward trend. The site is at or nearing desired values for 3 of 8 habitat metrics, notable exceptions being bank angle and undercut banks, both of which have been shown to be influenced by grazing practices (Kauffman et al. 1983; Kershner et al. 2011). All monitoring data and a description of the monitoring results are included in the 2022 Final BA (USDA FS 2022).

MIM Monitoring. MIM DMAs are located in West pasture on Slide Creek, Slide Riparian pasture on Slide Creek, Slide Riparian 2 on Slide Creek, Camp Creek Riparian pasture on Camp Creek, and East pasture on Bear Creek. MIM and/or photo monitoring has occurred since 2011, and collected data has been summarized in the 2021 EOY report. End-of-season use standards were exceeded in 2018 for streambank alteration in West pasture and East pasture in 2018 (Table 129). The MNF sent a non-compliance letter to the permittee following the 2018 exceedances. To remedy the non-compliance the letter instructed the permittee that in 2019 bank alteration standard in West Pasture will not be exceeded and that rotation dates and timing must be followed. The permittee implemented adaptive management measures in the following year to not exceed standards, including electric fencing to help dissuade cattle use in riparian areas and timing changes.

Table 129. Short-term Multiple Indicator Monitoring (MIM) on the Slide Creek Allotment.

Pasture and Stream	Livestock End-of-Use Date	Date Monitored	Stubble Height		Browse Use		Streambank Alteration	
			Standard	Measured	Standard	Measured	Standard	Measured
West Slide Creek	9/1/16	9/29/16	4-6"	*NP	40-50%	**NP	20%	NP
	10/7/17	10/16/17	6"	*NP	40-50%	31%	15%	12%
	8/31/18	9/13/18	6"	*NP	40-50%	29%	20%	36%
	10/15/19	9/10/19 10/25/19	6"	9"	40-50%	14%	20%	2%
	9/02/20	9/10/20	6"	7"	40-50%	23%	20%	7%
	10/05/21	10/28/21	6"	8"	40-50%	10%	20%	5%
Slide Riparian PIBO Slide Creek	Gather	9/28/16	4-6"	7"	40-50%	52%	15%	12%
	Rested	2017	6"	Rested	40-50%	Rested	15%	Rested
	Rested	Rested		Rested		Rested		Rested
Slide Creek	8/10/19	10/29/19	6"	13"	40-50%	11%	15%	9%
	Rested	09/10/20	6"	12"	40-50%	17%	15%	10%
	07/21	07/28/21	6"	15"	40-50%	10%	15%	6%
Slide Riparian 2 Slide Creek	Gather	9/28/16	4-6"	9"	40-50%	13%	15%	10%
	Rested	2017	6"	Rested	40-50%	Rested	15%	Rested
		Rested		Rested		Rested		Rested
	Rested	8/15/19	6"	Photo	40-50%	Photo	15%	Photo
	Rested	8/31/20	6"	Photo	40-50%	Photo	15%	Photo
	Rested	11/16/21	6"	Photo	40-50%	Photo	15%	Photo
Camp Creek Riparian	Rested	2016	4-6"	Rested	40-50%	Rested	15%	Rested
	Rested	2017	6"	Rested	40-50%	Rested	15%	Rested

Pasture and Stream	Livestock End-of-Use Date	Date Monitored	Stubble Height		Browse Use		Streambank Alteration	
			Standard	Measured	Standard	Measured	Standard	Measured
Camp Creek	Rested			Rested		Rested		Rested
	9/26/19	10/29/19	6"	11"	40–50%	15%	15%	1%
	Rested	9/14/20	6"	Photo	40–50%	Photo	15%	Photo
	Rested	10/27/21	6"	6"	40–50%	10%	15%	5%
East	8/1/16	2016	4–6"	8"	40–50%	20%	20%	8%
	9/5/17	9/15/17	6"	NP	40–50%	23%	20%	15%
	8/1/19	8/30/19	6"	*NP	40–50%	19%	20%	25%
Bear Creek	9/28/19	10/31/19	6"	8"	40–50%	23%	20%	11%
	8/07/20	8/12/20	6"	9"	40–50%	16%	20%	9%
	09/13/21	09/24/21	6"	7"	40–50%	10%	20%	6%

*Stubble Height Column: NP means "no herbaceous key species"

**Browse use Column: NP means "no browse species present"

Compliance (2012–2016). All end-of-season standards were met except in 2016. In 2016, browse use was exceeded in Slide Riparian pasture. Livestock were not turned into any pasture containing CH during the spawning period (prior to July 1) in 2017 grazing season, pending completion of the 2018 BO. The grazing schedule was modified from the original to ensure cattle would not be in CH pastures during the spawning period and all pastures in this allotment containing MSRA were rested (Camp Riparian, Slide Riparian, Whiskey Riparian). No MIM monitoring was conducted on rested pastures. No standards were exceeded in 2017. A more detailed discussion of compliance issues from the 2012–2016 consultation is in Section 2.3.6 of the environmental baseline in the 2018 MNF Grazing opinion (NMFS 2018).

Compliance (2018–2022). Unauthorized livestock from the Slide Creek allotment were observed multiple times in neighboring allotments in 2020 and 2021. Whiskey Riparian fencing was breached by cattle in 2020, and was partially repaired in 2021. However, livestock still gained access to the pasture, and were removed. This small pasture had been excluded from grazing for several years prior to 2020.

In 2021, there were five instances of excess use by livestock in the Camp Riparian Pasture. Cattle accessed the pasture through a temporary electric fence that was installed to replace the permanent fence while aquatic restoration activities occurred. Unauthorized cattle impacted restoration projects on Camp and Bear creeks. Approximately 59 percent of recent restoration plantings were browsed. However, all end-of-season standards were met. The permanent pasture fence ties were rebuilt in 2022.

Spawning Surveys. Spawning surveys were conducted in the East Pasture of Slide Creek Allotment when grazing occurred prior to July 1. In the past, redd protection implemented has been successfully implemented and documented when redds have been observed within the allotment. The 2022 Final BA (USDA FS 2022) provides a brief summary of the year's surveys were completed within each pasture. Redds were not observed in either Bear Creek or Whiskey Creek during 2018–2022 (Table 130).

Table 130. Spawning Survey Results.

Pasture and Use Dates	Stream	# Redds Observed 2018	# Redds Observed 2019	# Redds Observed 2020	# Redds Observed 2021	# Redds Observed 2022
East	Bear Creek	No Spawning Habitat**	0	0	No Survey*	No Survey*
East	Whiskey Creek	0	0	No Spawning Habitat**	No Survey*	No Survey*

*No survey needed due to pasture not being grazed prior to July 1.
 ** No Connected flow to the MF John Day River

Region 6 Level II Stream Surveys. Region 6 Level II stream surveys were completed to collect data for six primary habitat elements from 1992–2018 within the Slide Allotment. Complete data and a description are provided in the environmental baseline section of the 2022 Final BA (USDA FS 2022).

All reaches surveyed in Camp (three reaches), Whiskey (two reaches), and Bear Creek (one reach) Creeks were not properly functioning for pools per mile, or width-to-depth ratio, but were properly functioning for bank stability and meeting standards for fine sediment. Slide Creek reaches 2–4 were properly functioning for pools per mile and width-to-depth ratios in 1992, but not properly functioning in 2018. Slide Creek reaches 2–4 are also not properly functioning for large wood, fine sediment, width-to-depth ratio, or bank stability (Table 131).

Table 131. Region 6 Level II Stream Survey Data for the Slide Creek Allotment.

Stream name	Survey year	Pool frequency (pools/mi)	Large woody debris (pieces/mile)	Fine sediment/ embeddedness -No R.M.O. standard	Width-to-depth (W:D) ratio	Bank stability (%)	Shade % (with densitometer) -No R.M.O. standard -No NMFS standard
Hawkins Creek Reach 1	1993	41.4 (NPF)	41.4	-	7.4718 (PF)	-	-
Rice Creek Reach 1	1992	19.62 (NPF)	85.38	-	5.6024 (PF)	-	-
Slide Creek Reach 1	1992	88.98 (PF)	48.57	-	11.3166 (AR)	-	-
Hawkins Creek Reach 2	1993	17.39 (NPF)	39.13	-	5.9035 (PF)	-	-
Slide Creek Reach 2	1992	81.41 (PF)	214.11	-	11.204 (AR)	-	-
Slide Creek Reach 3	1992	80.74 (PF)	351.85	-	12.1397 (NPF)	-	-
Slide Creek Reach 4	1992	194.59 (PF)	237.84	-	7.7895 (PF)	-	-
Slide Creek Reach 5	1992	38.64 (NPF)	36.36	-	9.8744 (PF)	-	-

Stream name	Survey year	Pool frequency (pools/mi)	Large woody debris (pieces/mile)	Fine sediment/ embeddedness -No R.M.O. standard	Width-to-depth (W:D) ratio	Bank stability (%)	Shade % (with densitometer) -No R.M.O. standard -No NMFS standard
Slide Creek Reach 2	2018	41.8 (NPF)	17.34 (NPF)	52 (NPF)	10.95 (NPF)	89 (NPF)	33.3/34.3
Slide Creek Reach 3	2018	46.6 (NPF)	21.23 (NPF)	34 (NPF)	9.09 (NPF)	34.7 (NPF)	18.8/16.6
Slide Creek Reach 4	2018	44.7 (NPF)	44.24 (NPF)	89.5 (NPF)	6.93 (NPF)	27.24 (NPF)	20.9/18.2
Bear Creek Reach 2 ¹	2013	26.89 (NPF)	27.87	38.77% <2mm (NPF)	16.8505 (NPF)	93.52 (PF)	63.5
Camp Creek Reach 1	2016	32.88 (NPF)	12.33 (NA)	18.84% <2mm (AR)	39.6605 (NPF)	95.91 (PF)	23
Camp Creek Reach 3	2016	31.82 (NPF)	10.23 (NA)	18.64% <2mm (AR)	35.4263 (NPF)	98.83 (PF)	18.5
Camp Creek Reach 4 ²	2016	34.23 (NPF)	15.77 (NA)	1.41% <2mm (PF)	26.4306 (NPF)	99.78 (PF)	52.3
Whiskey Creek Reach 1	2014	7.59 (NPF)	-	15.44% <2mm (AR)	16.0533 (NPF)	99.66 (PF)	80.5
Whiskey Creek Reach 2	2014	1.49 (NPF)	0.37	16.43% <2mm (AR)	15.2494 (NPF)	100 (PF)	60

Values in **bold** font are meeting fish habitat objectives for Amendment 29, values not bold are not meeting fish habitat objectives. PF = NMFS MPI Properly Functioning, NPF = MPI Not Properly Functioning.

Roads and Temperature. Watershed condition pathway for the Road Density and Location Indicator is “not properly functioning” for greater than 3 mi/mi² as roads occur in many valley drainages.

Water temperature data were collected by ODFW in 2018 in the West Pasture. In 2018, mean maximum water temperatures were above the suitable range for rearing salmonid species present during summer months in Camp Creek. The water temperature RMO for migration and rearing habitat was not met for Camp Creek or Slide Creek.

York Allotment

The York on/off allotment contains streams that are occupied and designated CH for the MFJD population of MCR. The allotment is within the Big Creek-MFJD River watershed. The allotment encompasses approximately 924 acres, of which 403 acres are private land, and is divided into three pastures (Slide, York Riparian, and East) and one enclosure (York Enclosure). CH is designated on 1.05 miles of Slide Creek within the York Riparian pasture, and 0.13 miles fenced within the York Enclosure. The East and Slide pastures do not have CH and are grazed in conjunction with the private land. There is no MSRA designated in this allotment.

Activities

Activities that have occurred or continue to occur within these watersheds include timber harvest, grazing, road and trail use, mining, water diversions, prescribed and natural fire, noxious weed treatment, and recreation (hiking, hunting, off-road vehicle use, driving for pleasure, camping, cross country skiing, and horseback riding).

The York Riparian pasture was rested from grazing for the period 2011–2017, except for 2014 when it was used for gathering. MIM standards were not exceeded during those years. The York Riparian pasture was rested in 2018, 2020, and 2021. Since the pasture has generally been rested each year, MNF did not complete end of use monitoring.

Resource Conditions, Monitoring, and Compliance

Elevations within the allotment range from approximately 3,800 feet to 4,600 feet. Vegetative types range from ponderosa pine to mixed conifer. Dominant grass species are bluebunch wheatgrass/Idaho fescue on the open hill slopes and elk sedge/pine grass in the forested areas.

PIBO Monitoring. There is one PIBO site (Integrator site) in the York allotment, which is located on Slide Creek. Monitoring occurred at this integrator site three times between 2005 and 2015. The available data is included in environmental baseline section of the 2022 Final BA (USDA FS 2022). From 2005 to 2015, total index decreased and is relatively low overall at this I site. Bankfull width-to-depth and vegetation stability improved during the monitoring period. The remainder of the indicators remained static (mean particle size, percent fines, bank stability, bank angle, undercut banks, and greenline wetland rating), or declined (percent pools, residual pool depth, and greenline woody cover). A cursory examination of this site suggests that this portion of the Slide Creek is near desired/reference values for four of the eight comparable habitat metrics: bankfull width-to-depth, mean particle size, percent pools, and bank stability; and outside desired/reference values for residual pool depth, percent fines, bank angle, and undercut banks. Of the indicators most effected by grazing (bank stability, bank angle, width to depth, and percent undercut banks) there were improvements in bank angle and percent undercut banks, but both remain departed from reference means. Bank stability and width-to-depth improved and met reference means.

MIM Monitoring. There is one MIM DMA in the allotment, which is located in the York Riparian pasture on Slide Creek.

From 2011 to 2022 only short-term MIM data were collected in 2014 on the York Riparian pasture of the York allotment at MIM DMA. No long-term trend MIM monitoring has been completed in the York allotment. Cattle were not out into the York Riparian pasture except for gathering. No MIM DMA monitoring was conducted in the pasture. No photos of the site were taken.

Excess use from unauthorized neighboring livestock were observed in the allotment in 2019 and 2021. In both instances the MNF notified the permittee, who promptly removed the cattle. In

2021, ocular estimates indicated MIM was not needed. MNF determined unauthorized cattle did not result in exceedance of standards. Photos were not taken.

Standards at all other DMA's in these allotments have been met over this consultation period as described in the 2021 EOY report. The MIM DMA is in the York Riparian pasture on Slide Creek.

Region 6 Level II Stream Surveys. Stream surveys were completed on Slide Creek Reach 1 for six primary habitat elements, in 1992 and 2022. Collected data is included in the 2022 Final BA (USDA FS 2022) in the environmental baseline. Slide Creek Reach 1 went from properly functioning in 1992 for pools per mile and LWD, to not properly functioning in 2022. In 2022, Slide Creek Reach 1, width-to-depth ratio was also rated not properly functioning, however, fine sediment and bank stability were rated as properly functioning.

Spawning Surveys. MNF either rested or restricted livestock access to the York Riparian pasture to after July 1, 2018–2022. Therefore, the MNF did not conduct spawning surveys 2018–2022.

Roads and Temperature. Watershed condition pathway for the Road Density and Location Indicator is “not properly functioning” for greater than 3 mi/mi² as roads occur in many valley drainages.

Mean maximum water temperatures were above the suitable range for rearing salmonid species present during summer months and considered “not properly functioning” according to the MPI. Temperature monitoring data indicate that state water quality standards are not being met.

2.4.6. Environmental Baseline for Allotments Overlapping with the NFJDR Population

Deer Creek Allotment

The Deer Creek allotment contains streams that are occupied and designated CH for the NFJDR population of MCR steelhead. The 2,100-acre allotment is located within the North Fork John Day subbasin in the Lower North Fork John Day subwatershed of the Upper Deer Creek watershed. The allotment contains one pasture: Deer. MCR steelhead CH is designated on 1.3 miles of West Fork Deer Creek, and no MSRA. Private land borders to the north, west, and south; and there is approximately 800 acres of private land in the middle of the allotment. The Deer Creek allotment is part of the North Finger Complex Management Plan.

Activities

The Deer Creek allotment is a mix of NFS, State, and private lands. The Deer Creek allotment is part of the North Finger Complex Management Plan, but that Plan is not further discussed in this document because it is separate Plan and not included as part of the current Proposed Action and this consultation.

Activities that have occurred or continue to occur that impact the Upper Deer Creek watershed include historic mining, timber harvest, grazing, roads, trails, prescribed and natural fire, noxious

weed treatment, and recreation. A mixed conifer forest occurs along West Fork Deer Creek and consists of tall (mostly over 80 feet in height) Douglas fir and grand fir. Dominant riparian vegetation consisted of dense shrubs species (e.g., yew and dogwood).

Large wood was added to approximately 1.3 miles of West Fork Deer Creek in 2019 to improve habitat, sort stream material, create pools, and hinder livestock trailing up the creek channel and banks.

Resource Conditions, Monitoring, and Compliance

Past grazing management practices (prior to the MNF Forest Plan in 1990) impacted existing aquatic habitat and water quality due to reductions in shade and bank-stabilizing wetland vegetation, stream bank alteration, increases in width-to-depth ratios and fine sediment levels.

Overstory vegetation in the allotment varies from dominant ponderosa pine stands with associated species of Douglas fir, grand fir, and western larch. The understory consists of bluebunch wheatgrass, pine grass/elk sedge communities and Idaho fescue. Riparian overstory vegetation generally consists of a mix of hardwood and conifer species along the stream. Dominant hardwood species within the riparian areas generally consist of alder and yew; conifer species are generally grand fir and Douglas fir.

MIM Monitoring. There is no PIBO monitoring site located within this allotment. The MNF established a MIM DMA on West Fork Deer Creek in 2017. The MNF collected end-of-season MIM data in 2017 and 2021, and conducted photo monitoring in 2019. The allotment was rested in 2018, 2020, and 2022, and monitoring was not conducted. From 2017–2022, all end-of-season grazing standards were met (Table 132).

Table 132. Short-term Multiple Indicator Monitoring (MIM) on the Deer Creek Allotment.

Date Monitored	Stubble Height (inches)		Percent Browse Use		Percent Streambank Alteration	
	Standard	Measured	Standard	Measured	Standard	Measured
9/15/17	6	11	40–50	26	15	8
2018 Rested	6	Rested	40–50	Rested	15	Rested
2019	6	Photos	40–50	Photos	15	Photos
2020 Rested	6	Rested	40–50	Rested	15	Rested
9/17/21	6	11.7	40–50	10	15	5

Due to the limited sunlight along this reach, most of the West Fork Deer Creek streambanks in this allotment have a moss community as the dominant vegetation. There were only 3 hydric species identified during the end-of-season monitoring at the DMA. A full MIM (trend) monitoring survey was scheduled to be conducted at the DMA prior to livestock grazing in 2019. However, per the MNF, the large wood additions that year prevented livestock access to West Fork Deer Creek and prevented quantitative data collection at the DMA site. The survey was rescheduled for 2021. Then, due to staffing shortages for the ID team in 2021, the MNF postponed the full survey to a later date (see the 2021 End of Year Report) (MNF 2022).

Therefore, the MNF has not completed a full MIM on West Fork Deer Creek, but has planned one for this 2023–2027 consultation timeframe.

Region 6 Level II Stream Surveys. Stream surveys within the Deer pasture of the Deer Creek allotment were completed in 1993 and 2016 on reaches of West Fork Deer Creek. Both West Fork Deer Creek reaches were properly functioning for bank stability, but not properly functioning for pools per mile, LWD, or fine sediment. The 3.6 pieces of large woody material per mile observed in Reach 2 in 2016 was well below the 22.4 pieces per mile observed in 1993 (although size classes were consistent between survey dates, use of updated measuring procedures may cause these numbers to be incomparable). The average bankfull width-to-depth ratio increased from 1993 to 2016 in reach 3, as such it went from properly functioning to at risk (Table 133).

Table 133. Region 6 Level II Stream Survey Data for the York Allotment.

Stream name	Survey year	Pool frequency (pools/mi)	Large woody debris (pieces/mile)	Fine sediment/ embeddedness -No R.M.O. standard	Width-to-depth (W:D) ratio	Bank stability (%)	Shade % (with solar pathfinder) -No R.M.O. standard -No NMFS standard
Slide Creek Reach 1	1992	88.98 (PF)	48.57 (PF)	-	11.3 (AR)	-	-
Slide Creek Reach 1	2022	56.05 (NPF)	11.47 (NPF)	10.7 (PF)	15.87 (NPF)	85.42 (PF)	58.75

Values in **bold** font are meeting fish habitat objectives for Amendment 29, values not bold are not meeting fish habitat objectives. PF = NMFS MPI Properly Functioning, NPF = MPI Not Properly Functioning.

Spawning Surveys. MNF rarely conducts spawning surveys on West Fork Deer Creek, because grazing rarely overlaps with steelhead spawning. During the last consultation period (2018–2022), grazing only occurred in 1 year, 2021, prior to July 1. Redds were not observed during the 2021 spawning survey.

Roads and Temperature. The MPI rated the Watershed condition pathway for the Road Density and Location Indicator as “at risk” for moderate increases in drainage network density due to roads, and 2–3 mi/mi² in some valley bottom roads. Water temperature in West Fork Deer Creek exceeded the 7-day mean maximum of 64.4 °F in 1993 and 2016, but is not on the State of Oregon 303(d) list for water temperature.

Fox Allotment

The Fox Allotment contains streams occupied and designated as CH for the NFJDR and MFJDR populations of MCR steelhead. The allotment is within the Middle Fork John Day, North Fork John Day, and Upper John Day subbasins; the Long Creek, Beech Creek, and Cottonwood Creek watersheds; the headwaters of Long Creek, Upper Fox Creek, Upper Beech Creek; and Wiley Creek subwatersheds.

The allotment encompasses approximately 26,085 acres and is divided into four pastures: Upper Fox, Lower Fox, South Fork, and Wiley. There are 14.13 miles of CH and 4.63 miles of MSRA in the allotment (Table 134).

Table 134. Fox Allotment Streams, River Miles, Critical Habitat, and MSRA Miles

Subwatershed (12 Digit)	6th Field HUC	Stream	Steelhead Critical Habitat Miles	MSRA Miles
Wiley Creek	170702020902	Wiley Creek	0.0	0.0
		Stewart Creek	0.0	0.0
Upper Fox Creek	170702020901	Murphy Creek	0.97	0.0
		Mill Creek	0.88	0.0
		Unnamed tributary to Mill Creek	0.54	0.0
		Smith Creek	0.86	0.0
		Fox Creek	4.04	3.47
		(Forty) Day Creek	1.66	0.0
		Dunning Creek	0.98	0.0
		Gander Creek	0.0	0.0
Headwaters Long Creek 170702030401		Jordan Creek	0.0	0.0
		Pole Creek	0.0	0.0
		South Fork Long Creek	2.61	1.0
		Long Creek	0.14	0.16
Upper Beech Creek	170702010801	Cottonwood Creek	1.41	0.0
Total miles			14.13	4.63

Activities

The watersheds encompassing the Fox allotment support a mix of NFS and private lands. Activities that have occurred or continue to occur within the watersheds include: historic mining, timber harvest, grazing, roads, trails, water diversions, prescribed and natural fire, noxious weed treatment, and recreation.

Large wood placement occurred along 0.2 miles of Long Creek in 2018.

Resource Condition, Monitoring, and Compliance

Overstory vegetation in the allotment varies from dominant ponderosa pine stands with associated species of Douglas fir, western larch, lodgepole pine, to juniper and big sagebrush. There is Pacific yew located in several drainages within the allotment and western white pine associated with big huckleberry on the north slopes at elevations above 5,500 feet. Dominant grass species are bluebunch wheatgrass/Idaho fescue and Sandberg bluegrass in the grasslands, elk sedge/pine grass in the forested areas, and mixed riparian grasses and sedges along the riparian areas.

Riparian overstory vegetation generally consists of a mix of hardwood and conifer species along the streams. Dominant hardwood species within the riparian areas generally consist of alder and

dogwood. Conifer species are generally grand fir and Douglas fir with lesser components of lodgepole pine and Pacific yew.

MIM Monitoring. MIM DMAs are located in Upper Fox allotment on Dunning Creek, Lower Fox allotment on Fox Creek, Wiley Pasture on Cottonwood Creek, and South Fork pasture on South Fork Long Creek. End-of-season use monitoring was conducted 2012–2022 at most of these DMAs. Previous consultations documents browse use was exceeded in Wiley pasture in 2013.

During the 2017 grazing season, all grazing in this allotment was within allowable use levels. Compliance monitoring from 2018–2022 identified the following end-of-season standards exceedances (Table 135):

Table 135. Short-term Multiple Indicator Monitoring (MIM) on the Fox Allotment.

Pasture and Stream	Livestock End-of-Use Date	Date Monitored	Stubble Height		Browse Use		Streambank Alteration	
			Standard	Measured	Standard	Measured	Standard	Measured
Upper Fox	9/30/16	2016	4–6”	*NP	40–50%	30%	20%	0%
	9/15/17	9/19/17	6”	*NP	40–50%	**NP	20%	8%
Dunning Creek or Smith Creek*	9/30/18	9/18/18	6”	Photos	40–50%	Photos	20%	Photos
	9/30/19	10/1/19	6”	Photos	40–50%	Photos	20%	Photos
	9/30/20	2020	6”	Photos	40–50%	Photos	20%	Photos
	09/30/21	09/13/21	6”	Photos	40–50%	Photos	20%	Photos
Lower Fox Fox Creek	9/30/16	10/11/16	4–6”	12”	40–50%	30%	15%	15%
	Rested	2017	6”	Rested	40–50%	Rested	15%	Rested
	Rested	10/15/18	6”	7”	40–50%	26%	15%	15%
	Rested	9/4/19	6”	18”	40–50%	10%	15%	3%
	Rested	9/16/20	6”	Photos	40–50%	Photos	15%	Photos
Rested	09/14/21	6”	12”	40–50%	50%	15%	15%	
Wiley Cottonwood Creek*	9/30/16	9/27/16	4–6”	Not Monitored	40–50%	Not Monitored	20%	Not Monitored
	9/30/17	10/2/17	4–6”	9”	40–50%	32%	20%	2%
	9/30/18	10/3/18	6”	*NP	40–50%	30%	20%	2%
	9/30/19	9/18/19	6”	Photos	40–50%	Photos	20%	Photos
	9/30/20	8/24/20	6”	Photos	40–50%	Photos	20%	Photos
Rested	Rested	6”	Rested	40–50%	Rested	20%	Rested	
South Fork SF Long Creek	9/6/16	10/11/16	4–6”	4”	40–50%	36%	15%	9%
	Rested	2017	6”	Rested	40–50%	Rested	15%	Rested
	9/5/18	9/26/18	6”	4.3”	40–50%	33%	15%	14%
	9/2/19	9/4/19	6”	13”	40–50%	11%	15%	2%
	9/01/20	9/15/20	6”	12”	40–50%	23%	15%	0%
09/03/21	09/14/21	6”	6”	40–50%	10%	15%	6%	

*Stubble Height Column: NP means "no herbaceous key species"

**Browse use Column: NP means "no browse species present"

Compliance (2018–2022). Compliance end-of-season MIM monitoring from 2018–2022 identified the following standards exceeded and non-compliance issues:

- 2018 South Fork pasture on South Fork Long Creek: exceeded stubble height standard. The MNF issued a letter of non-compliance in 2018 for the stubble height exceedance.

- 2022 Lower Fox pasture on Fox Creek: streambank alteration (24 percent). Lower Fox pasture was rested in 2022. However, excess use occurred from unauthorized cattle. Excess use has been noted several times in Lower Fox pasture in this allotment from neighboring unauthorized cattle. Unauthorized cattle are usually removed promptly, and indicators not exceeded, with the exception of 2022. The MNF sent a Notice of Non-Compliance to the neighboring permittee and a Letter of Warning to the Fox Allotment permittee. The Non-compliance notice outlined remedy actions including that the division fence between Upper Fox Pasture and Lower Fox Pasture must be maintained prior to turnout and range staff will be inspecting fence maintenance prior to turnout. A bill for excess use was sent to the neighboring permittee.

In addition, in 2019, photo monitoring occurred two weeks prior to livestock off date in the Wiley Pasture, which was inconsistent with the monitoring plan in the 2018 opinion (NMFS 2018).

Spawning Surveys. During the last consultation spawning surveys were only completed on the South Fork Long Creek in 2017 . Due to delays with surveys, turnout was delayed most years. In 2017, there were four redds observed and multiple *O. Mykiss* observed. Redd trampling was not documented.

From 2018–2022, spawning surveys were conducted in varying streams in the Fox allotment (Table 136). Redds were recorded in South Fork Long Creek and Long Creek. No redds were described as trampling in the 2021 EOY report.

Table 136. Spawning Survey Results.

Pasture and Use Dates	Stream	# Redds Observed 2018	# Redds Observed 2019	# Redds Observed 2020	# Redds Observed 2021	# Redds Observed 2022
South Fork	SF Long Creek	0	1	0	1	2
South Fork	Long Creek	1	0	1	4	0
Wiley	Cottonwood Creek (Beech)	0	0	0	0	0
Wiley	Mill Creek	0	0	No Spawning Habitat	No Spawning Habitat	No Spawning Habitat
Wiley	Murphy Creek	0	0	No Spawning Habitat	No Spawning Habitat	0
Upper Fox	Dunning Creek	0	0	No Spawning Habitat	No Spawning Habitat	No Spawning Habitat
Upper Fox	Smith Creek	0	0	0	No Spawning Habitat	0
Lower Fox	Fox Creek	No Survey*	0	No Survey*	No Survey*	No Survey*
Lower Fox	Mill Creek	No Survey*	0	No Survey*	No Survey*	No Survey*
Lower Fox	Day Creek	No Survey*	0	No Survey*	No Survey*	No Survey*
Lower Fox	Trib. to Mill Creek	No Survey*	0	No Survey*	No Survey*	No Survey*

2.3.7. Summary of Overall Compliance Issues for all Allotments

During 2012–2016, the MNF reported potential redd trampling had occurred on the Long Creek allotment where evidence of cattle was found within the electric fence established to protect steelhead redds. As previously described above and in details in the 2018 BO, the Level 1 Team discussed the potential 2012 redd trampling on West Fork Lick Creek (n=5), Cougar Creek (n=2), Camp Creek, (n=7), and Lick Creek (n=2). Details of MNF’s investigation into the potential steelhead redd trampling at these locations were provided to the NMFS in a memorandum from the MNF, dated August 13, 2012. The memorandum and details are included in the previous consultation files.

In a 2016, MNF provided a livestock grazing season summary, “MNF BMRD [redd] Trampling Effectiveness Monitoring, June 30, 2016”. The MNF presented information about the efficacy of redd trampling mitigation measures that occurred on the BMRD. Of the 51 redds addressed for protection in the MFJDR, 3 or possibly 4 redds were trampled, all of which had “placement of brush fencing” as the protective measure implemented. The potential trampling occurred on: Cougar Creek in the Lick pasture of Long Creek allotment (n=1); Butte Creek of the Butte pasture, former Upper Middle Fork allotment (n=1); and Beaver Creek in the Boulder pasture of the Lower Middle Fork allotment (n=2). The summary also stated of the 72 redds found in 2016 in the John Day River mainstem and SFJDR tributaries, 4 redds were likely trampled on Deer Creek in the Frenchy Butte pasture of Murderers Creek allotment. All trampled redds had “placement of brush” as the means of protection. Given the large number of redd trappings that have occurred on the MNF while exercising brush-fencing as the selected protective mechanism, the use of brush-fencing is viewed as ineffective, and not supported as an option for redd protection implementation going forward.

These past events contributed to the MNF developing more detailed components in 2018 to their BAs identifying requirements “Common to All” allotments to help ensure proper implementation of the livestock grazing program. The proposed action in those BAs attempted to address past implementation issues through emphasizing: proper data collection (spawning surveys, short-term and long-term MIM data collection) both in time and type; accountability to MNF range program and permittees for appropriate time of use/removal of livestock; and critical communication steps and reporting practices that ensures close coordination for management of livestock on NFS lands.

MNF continued to improve their grazing management strategies during the previous 2018–2022 consultation period through improving communication with permittees, proper documentation of potential resource issues, warning and non-compliance notifications, and accountability for reoccurring non-compliance issues when appropriate to protect natural resources. These measures if properly implemented would contribute to ensuring grazing is carried out as described by the MNF and consistent with the effects analysis in the prior opinion. During the 2018–2022 consultation period, however, there were some non-compliance issues. These issues included unauthorized livestock in rested pastures, end of use standard exceedances, and fencing maintenance non-compliance occurred (Table 137). When properly implemented, protective measures, including limited livestock use during spawning periods, redd surveys, and fencing,

can be efficient to prevent livestock and redd interaction. No instances of redd trampling were documented in 2018–2022.

Table 137. Summary of Non-Compliance Issues for all Allotments 2018–2022

Allotment	Standards Exceeded / Notice of Noncompliance	Management Action taken
Beech Creek On/Off	N/A	NA
Dark Canyon	N/A	NA
Deer Creek	N/A	NA
Dixie	N/A	NA
Fawn Springs	N/A	NA
Fox	2018: South Fork Pasture Stubble Height (4.3")	Lower Fox Pasture Rested in 2019
	2022: Lower Fox Pasture, Bank Alteration (24%) (Caused by excess use from neighboring permittee)	Neighbor permittee billed for excess use. Remedy in NONC stated that division fence between Upper Fox Pasture and Lower Fox Pasture must be maintained prior to turnout and range staff will be inspecting fence maintenance prior to turnout. Permittee was given a warning letter NONC as well.
McCullough	N/A	NA
Herberger On/Off	N/A	NA
John Day	N/A	NA
Long Creek	<p>2018: Flat Camp Pasture–Bank Alteration (21%), Woody Browse (52%) Lick Creek Pasture–WF Lick Creek–Stubble Height (4.4"), Bank Alteration (26%) and Camp Creek–Bank Alteration (24%) Lick Creek Riparian Pasture–Stubble Height (5.2"), Bank Alteration (23%) Camp Creek Cougar Pasture–Woody Browse (55%)</p> <p>2021: Flat Camp Pasture–Stubble Height (5") Ladd Pasture–Bank Alteration (24%)</p> <p>2022: Lick Creek Pasture–Bank Alteration (19%) (Caused by excess use from neighboring permittee) Camp Creek riparian pastures–excess use (no exceedance)</p>	<p>2018: NONC–permittees took 53.7 % voluntary reduction in numbers from 967 c/c pairs to 520 c/c pairs from 2019-2022.</p> <p>2021: NONC–critical habitat in Flat Camp Pasture fenced to exclude grazing in 2022</p> <p>2022 NONC–FS billed permittee for excess use from failure to remove cattle within 72 hours and for repeating excess use over the summer in the riparian creek pastures. Instances of excess use in 2022 in the riparian pastures did not cause standards to be exceeded. Remedy is all of camp creek riparian pasture fences will be inspected and maintained prior to turn out in 2023.</p>

Allotment	Standards Exceeded / Notice of Noncompliance	Management Action taken
		Lick Creek pasture no NONC issued due to excess use being caused by a cattle guard and fence that was damaged by FS and contractors.
Slide Creek	2018: West Pasture: Bank Alteration (36%) East Pasture: Bank Alteration (25%)	2018: NONC remedy instructions to permittee were to not exceed standards again and follow rotation dates and timing. Permittee implemented adaptive management (electric fencing and timing changes) to not exceed standards again.
Camp Creek	2021: Stubble Height (5"), Bank Alteration (19%), Woody Browse (70%)	2021: NONC sent and instructed use of adaptive management to not exceed standards again.
York On/Off	N/A	NA
Mt. Vernon	2018: Belshaw Pasture–Stubble Height (4.8") 2021: Belshaw Riparian Pasture–Bank Alteration (16%) 2022: Belshaw Pasture–Bank Alteration (27%)	2018 NONC–Permittees used adaptive management to meet standards 2021 NONC–no permit action, exceedance within standard error 2022 NONC–Mt Vernon Allotment will have a 6% AUM reduction in 2023 and delay turn out by herd one into Belshaw Pasture from 6/11 to 7/9
North Middle Fork Allotment	2018: Caribou Pasture–Woody Browse (55%) 2018: Caribou Pasture–Stubble Height (5.3") 2018: Upper Vinegar Pasture–Bank Alteration (18%) 2021: TinCup Pasture–Bank Alteration (17%)	NONC sent to permittees in 2018 and 2021 Permit changed hands between 2018 and 2021, so each permittee has received one letter thus far. The 2021 NONC letter remedy instructions were to not exceed standards in 2022. Please note that there is no MSRA in the Tincup Pasture. Therefore, the Tincup Standard for Bank alteration is 20%, and thus did not exceed and NONC should not have been sent.
South Middle Fork	N/A	N/A
Lower Middle Fork Allotment	2018: Pizer Pasture–Stubble Height (5.2"), Bank Alteration (17%)	Exceedance was partially attributed to recreation use, therefore NONC was not sent.
Seneca Allotment	N/A	N/A
Deadhorse Allotment	2018: North Riley Pasture–Stubble Height (3.5") 2018: North Riley Pasture–Bank Alteration (30%)	DMA was moved without BMRD range present in 2018. New DMA location was questioned

Allotment	Standards Exceeded / Notice of Noncompliance	Management Action taken
		internally as inappropriate, therefore MNF did not issue NONC.
Hanscomb Allotment	N/A	N/A
Roundtop Allotment	2018: Tinker Pasture–Bank Alteration (25%)	NONC sent and pasture was rested 2019.
Rail Allotment	2021:–Excess use from unauthorized use from neighboring permittee. Neighboring permitted failed to remove cattle after 72 hours.	2021: NONC sent with permit action issued for failing to remedy the non-compliance (to neighboring permittee). The permit action was a 25% suspension of time for a period of two years for the neighboring permittee.
Hot Springs Allotment	N/A	N/A
Reynolds Allotment	N/A	N/A
Murderers Creek Allotment	2018: Blue Ridge Pasture–Stubble Height (5.8") 2018: Blue Ridge Pasture–Bank Alteration (22%) 2021: Watershed Exclosure–Bank Alteration (23%)	2018: NONC was sent, and the Critical Habitat was then fenced in this pasture in 2019. 2021:The excess use within the exclosure resulted in exceedance of the bank alteration standard on South Fork Deer Creek. A Letter of Warning was sent to the permittee. Permittee took over maintenance responsibility for the exclosure (which previously had been USFS responsibility).
Fields Peak Allotment	N/A	N/A
Aldrich Allotment	N/A	N/A

2.5. Effects of the Proposed Action

Under the ESA, “effects of the action” are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action (see 50 CFR 402.02). A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (see 50 CFR 402.17). In our analysis, which describes the effects of the proposed action, we considered the factors set forth in 50 CFR 402.17(a) and (b).

Effects to ESA-listed steelhead and critical habitat include: (1) reduction in riparian vegetation, (2) altered stream shade, (3) altered water quality (stream temperature, nutrients, increased sedimentation and turbidity), (4) reduced prey base and available macroinvertebrate forage, (5) reduction in large wood recruitment, (6) altered water quantity, (7) altered spawning, (8) redd trampling, and (9) altered juvenile sheltering and feeding behavior, increasing risk of injury and death from predation.

2.5.1. Direct and Indirect Effects on MCR Steelhead Habitat

The proposed action affects steelhead habitat in the action area. These habitat effects can cause indirect effects to individual fish. The analysis in this section focuses on the extent of those habitat effects on individual fish. The effects on critical habitat PBFs are discussed in Section 2.5.3. below.

Researchers have documented the detrimental effects livestock grazing can have on stream and riparian habitats in numerous symposia and publications (Johnson et al. 1985; Trlica et al. 1977; Meehan and Platts 1978; Platts 1991; Peek and Dalke 1982; Ohmart and Anderson 1982; Kauffman and Krueger 1983; Clary and Webster 1989; Gresswell et al. 1989; Kinch 1989; Chaney et al. 1990, Amour et al. 1994; Belsky et al. 1997; Winward 2000; Kershner et al. 2004; Bengeyfield 2006; Heitke et al. 2008; Roper 2016; Archibald 2015; and Goss 2013). In these publications, researchers describe a series of additive effects that can result when cattle over-graze or impact riparian areas. Over time, woody and hydric herbaceous vegetation along a stream can be reduced or eliminated and livestock trampling causes streambanks to collapse. Without vegetation to slow water velocities, hold the soil, and retain moisture, flooding causes more erosion of streambanks; the stream becomes wider and shallower and, in some cases, downcut; the water table drops; and hydric, deeply rooted herbaceous vegetation dies out and is replaced by upland species with shallower roots and less ability to bind the soil. These physical changes to riparian habitat can increase summer water temperature, reduce the number and quality of pools and habitat adjacent to streambanks, reduce the quality of the connection between the stream and floodplain, and increase the accumulation of fine sediment on the substrate and cobble-embeddedness.

The MNF grazing program is expansive with approximately 91 percent of the forest being grazed, and the MNF currently lacks a clear understanding of the difference between the current environmental baseline condition, and the more localized (watershed, pasture, stream reach) ecological potential of the aquatic and riparian habitats in the absence of livestock grazing. The

last BA for the Proposed Revised Land Management Plans for the Blue Mountain National Forests (Final BA, August 30, 2017), states that; “98 percent of subwatersheds within the MNF are functioning-at-risk or impaired water quality, aquatic habitat, or riparian/wetland vegetation indicators.” The highly complex proposed action has limited options to reduce grazing and permitted AUM without documented exceedance of the annual grazing end of use compliance standard.

The MNF proposes a suite of management measures, project design criteria, adaptive management approaches, along with an accountability/enforcement component highlighted in the 2023-2027 proposed action to reduce the potential for effects to CH and steelhead. The proposed action includes pasture move triggers and end-of-grazing use endpoint indicators of stubble height, browse use, and bank alteration, as measured by the established MIM methodology within the DMA established for ESA compliance monitoring. The relationship between move triggers and the protection of habitat is based on monitoring, knowledge of the site (channel type, seral status, seasonal conditions and hydrograph), current best available science, and appropriately and promptly moving/removing cattle to allow for “near natural” rate of recovery of riparian areas.

Along with other features of functioning riparian habitats, measuring woody vegetation browse use is used to regulate impacts on woody shrub recruitment to streams, greenline stubble height is used to regulate grazing impacts on greenline ecological status and streambank alteration is used to regulate grazing impacts on streambank stability and channel width. Permittees are expected to meet indicators each year. Given the Murderers Creek wild horse herd overlaps with several livestock grazing allotments, the MNF will monitor pastures in the Murderers Creek allotment to ensure that endpoint indicators are not exceeded prior to cattle turnout. This range-readiness pre-turnout assessment of the endpoint indicators will also be needed in other pastures incurring wild horse use. Evidence suggests the wild horse herd has expanded to the north into Aldrich allotment and potentially the southern portion of Fields allotment; both contain MCR steelhead CH. The wild horses also use other allotments/pastures to the south of Murderers Creek allotment, but they are outside the range of MCR steelhead.

The MNF proposes to fully implement monitoring of move-trigger and endpoint/end-of-grazing use indicators to ensure compliance with these requirements. The MNF has defined detailed livestock management monitoring, reporting, and accountability components with distinct corrective actions to respond to instances when endpoint/end-of-grazing use indicators are not met. The MNF grazing program is very large and complex and some modest exceedance of endpoint indicators is inevitable. When endpoint indicators are exceeded, the MNF will implement corrective actions and adjust grazing management as outlined in the proposed actions. In cases of any exceedances, the MNF will issue a notice of non-compliance to the permittee and take corrective action in the case of repeat or significant exceedances. Corrective action may include reducing AUM (numbers of cattle or duration of grazing season) or resting a pasture/allotment. This corrective action is intended to reduce the impact of grazing in subsequent years, and to ensure these effects do not become chronic in nature and allow for improved recovery of riparian areas and in-stream habitat conditions. In cases of significant or repeat exceedances, NMFS expects that the MNF’s corrective actions will eliminate or greatly reduce the impact of grazing in subsequent years in the area impacted, which will create a

compensatory effect. If a duration of rest is required, areas damaged by the exceedance will be able to recover at a near-natural rate; and if grazing pressure is reduced, recovery of habitat will at least occur more quickly than if management direction remains unchanged.

The MNF management and staff fully implementing the corrective actions and accountability components when repeat or significant exceedances occur are critical to successfully reducing grazing impacts and the severity of effects to MCR steelhead and CH. When endpoint/end-of-grazing use indicators are not met, the severity of the effects described below (impacts to riparian vegetation, reduction of shade, input of fine sediment, *etc.*) will increase. NMFS anticipates some exceedances in our analysis of effects. Repeating or severe exceedances, spring grazing in spawning critical habitat without redd surveys, grazing outside of permitted use dates, per any modification of those dates required by move-trigger and/or end-of-grazing use endpoint indicators, will indicate effects to habitat in excess of what was contemplated in this analysis.

NMFS does not expect that an occasional exceedance (depending on its severity) will prevent the development of habitat capable of supporting viable populations of MCR steelhead. This is based on: (1) The MNF has developed a specific inter-disciplinary adaptive management process to respond to minor exceedances or other problems encountered during the grazing season, which will ensure that grazing can and will be adjusted quickly and appropriately before grazing impacts on MCR habitat are repeated or become chronic; (2) the MNF will monitor all pastures with CH being grazed each year for range readiness (before spring turnout), move-trigger indicators (begins around the middle of grazing period for the pasture with data potentially dictating earlier than scheduled livestock removal), and endpoint/end-of-grazing use standards (approaching end of scheduled grazing period and measured promptly when cattle are removed) to ensure standards are not exceeded at any time during cattle turnout and that livestock grazing will not occur beyond the scheduled use period, nor have additive effects on areas that are already impacted by wildlife, wild horses, unauthorized grazing, or drought conditions or recent fires; (3) the identification and full implementation of identified corrective actions to any endpoint/end-of-grazing use indicator exceedances creates a strong incentive for permittees to meet standards outlined in their grazing permit; and (4) when there is significant or repeat exceedances, administrative responses will be promptly implemented to reduce grazing pressure of the riparian areas and CH, allowing damaged areas to fully recover.

The MNF also proposes a number of other practices to limit the effects of grazing on MCR steelhead and their habitat. These practices include required and assigned maintenance of exterior and interior fences prior to livestock turnout, an accounting and maintenance of off-site water resources (springs, troughs, guzzlers), use of mineral supplements in uplands, riding and herding, surveying for and protection of steelhead redds, and designation and specific management of MSRAs (those areas (DMAs) that represent the CH stream reaches most susceptible to livestock impacts within each pasture).

Riparian Vegetation

In areas of historic season-long grazing, major vegetation changes can take place. Routinely grazing an area late in the growing season can cause adverse changes in the plant community. Individual plants, particularly riparian hydric graminoid species (sedges and rushes), are eliminated by re-grazing them during the growing season and not allowing adequate recovery

after grazing. Herbaceous vegetation consumed by livestock in July, August, and early September will generally not begin re-growing until Fall (September 15 or later). Some habitat functions of this riparian vegetation such as providing bank stability, shade, and cover will be lost during the summer, but the proposed utilization levels should allow for the year-to-year carry-over of plant vigor. The amount of regrowth occurring in any given year will be influenced by several factors such as temperature and total precipitation and is not predictable. Therefore, it is appropriate for the MNF to propose endpoint/end-of-grazing use indicators that do not rely on regrowth, and manage in a more conservative manner to ensure a healthy riparian plant community is developed and maintained. This is a key element of the proposed action.

Removal of riparian vegetation through grazing can reduce habitat quality and result in negative impacts on fish production (Platts and Nelson 1989; Finck et al. 2000). Reductions in streambank cover related to overhanging vegetation, root complexity, and undercut banks have been correlated with reduced fish production (EPA 1993). This is particularly evident in meadow systems, where herbaceous vegetation, and not a woody plant community, may provide the only shade to stream channels (Gillen et al. 1985). Removal of herbaceous vegetation can result in a reduction of shade and shade-producing plants, and over-hanging banks, which can increase solar exposure and reduce available cover for steelhead.

The MNF has identified a 6-inch greenline stubble height endpoint/end-of-grazing use indicator for early, mid- and late-season grazing. The move trigger associated with the 6-inch endpoint/end-of-grazing use is 7 inches for all (early, mid- and late-season) grazing. The extra inch of forage length for the move trigger above the 6-inch standard helps ensure the endpoint/end-of-grazing use standard is not exceeded, and also provides some lead time to remove livestock from a pasture. The MNF's endpoint/end-of-grazing use indicator for stubble height is consistent with recommendations made by Hall and Bryant (1995), Clary and Webster (1989), Clary and Booth (1993), BLM (1996); Clary et al. (1996), Clary and Leininger (2000), Fink et al. (2000), Goss (2013), Roper (2016), and Goss and Roper (2018). Setting and meeting the appropriate standards will: (1) prevent significant grazing of bank stabilizing vegetation (Hall and Bryant 1995); (2) allow enough streamside vegetation to trap and stabilize fine sediments (Clary et al. 1996; Clary and Webster 1989); (3) prevent unwanted over-browsing of woody riparian vegetation (Hall and Bryant 1995; Clary and Leininger 2000; Case and Kauffman 1997); and (4) prevent streambank damage (Platts and Nelson 1989). The proposed 6-inch greenline stubble height endpoint/end-of-grazing use indicator will help ensure that plant vigor is maintained, that adverse habitat effects caused by the proposed action of livestock grazing are minimized, and that degraded streams have the opportunity to improve over time.

Stream cover and shade in hardwood-dominated riparian systems can also be damaged or destroyed by unmanaged livestock grazing. Shrubby vegetation, such as willows, may be an important source of stream shade along smaller streams and in mountainous areas (Henjum et al. 1994). Cattle often begin to browse woody species when herbaceous stubble heights fall below about 4 inches (Hall and Bryant 1995). Others suggest that 4 to 8 inches of herbaceous residual stubble height may be needed to protect hardwoods, especially during late season grazing (Clary and Leininger 2000; Kauffman et al. 1983). Livestock may tend to focus on woody plants in late season as the riparian herbaceous vegetation cures and dries out, becoming less palatable. Averett et al. (2019) studied systems with high populations of wild ungulates and their results

indicated even stubble heights above 14 to 16 inches and streambank alteration below 5 percent may not prevent selective browse by wild ungulates on preferred woody plants.

In a study of late season grazing in the Blue Mountains of eastern Oregon, Kauffmann et al. (1983) found that shrub use was generally light except on willow-dominated gravel bars. They conclude that on gravel bars, plant succession was retarded by livestock grazing. In a later study in the same area, Green and Kauffman (1995) found that livestock disturbance and the ecosystem response to grazing were highly variable among plant communities. In areas rested from grazing, abundance of undesirable non-native species decreased. They also found that in grazed areas, height, establishment, and reproduction of woody species on gravel bars was less than in ungrazed areas. These studies suggest that although livestock grazing may not have adverse effects on mature, taller individuals (greater than 6 feet) of woody species such as willows, recolonization of disturbed areas such as gravel bars by woody vegetation may be impeded by livestock grazing. Another study with similar results found that regeneration of willow, cottonwood, and aspen was inhibited by browsing on seedlings (Fleischner 1994). Recent research in eastern Oregon sites where livestock grazing is absent found wild ungulate (mule deer and elk) use of preferred woody species was moderate to high (greater than 50 percent) in areas with high ungulate populations and suggest riparian guidelines for livestock may not sufficiently allow for recovery of woody species (Averett et al. 2019).

In order to avoid unwanted impacts on riparian shrubs, the MNF proposes a move-trigger use indicator of 30 to 40 percent and an endpoint/end-of-grazing use indicator of 40 to 50 percent mean incidence of use on woody shrub species, in addition to other endpoint indicators and range management measures. Woody vegetation is an important component of many stream/riparian ecosystems as it can provide a strong root system for bank stabilization, filter out sediment, and provide stream shade and habitat diversity. Woody species browse is a short-term indicator of grazing utilization of woody species. There is generally a reduction in seed production of woody plants that receive more than 55 percent utilization, and when heavy and severe utilization levels are sustained over time, overall plant health, including size and root strength, is reduced. Although the literature is not extensive, it generally suggests light to moderate allowable use on woody species (approximately 30 to 50 percent) can be sustained and not meaningfully impede the opportunity of affected woody plant communities to continue. It is also important to note that cattle generally prefer herbaceous vegetation over woody vegetation when herbaceous plants are more palatable, so the setting and successful implementation of greenline stubble height endpoint/end-of-grazing use indicators is an important tool to reduce shrub browsing by livestock. The endpoint/end-of-grazing use indicators along with the full implementation of other grazing management measures proposed by the MNF should help the retention and recruitment of woody shrubs and, over time, the development of a healthy riparian plant community.

In some allotments, the MNF is implementing grazing strategies designed to help meet riparian management objectives and promote the recovery of riparian habitats. Recent results observed on the MNF show that resting of pastures from grazing for one or more years has greatly benefited the health and function of the riparian plant community. A rest-rotation management strategy (graze in alternating years) is being implemented on a small select set of pastures on the MNF. The available information indicates that these strategies can be successful in meeting riparian management goals. A large majority of the remaining allotments are grazed annually in a

deferred-rotation method (explained below). A small subset of single-pasture allotments are grazed season-long for the entire year, however, with help of active herding to move livestock around on the allotment.

In rest-rotation grazing systems, one or more pastures in an allotment are rested every year. The period of rest is rotated among pastures over the complete cycle. Often, three or more pastures are used in this type of system. The obvious benefit of this system is that riparian areas in at least one pasture are allowed a full growing season to recover each year. Leonard et al. (1997) report several successes of this system throughout areas in the arid West.

In deferred rotation grazing systems, one or more pastures are not grazed during part of the year. This deferment is then rotated among the pastures during following years. This type of grazing system allows a window of no grazing pressure during the growing season for each pasture every few years. During this rest period, plants can store carbohydrates and put out seed without the pressure of grazing. Leonard et al. (1997) give examples of the success of this system in protecting riparian areas, but stress that livestock must be moved from pasture to pasture quickly for this system to be effective. This is linked to the significance of having and implementing clear off dates driven by the calendar and/or move triggers. Platts (1991) rates this system as fair for stream/riparian rehabilitation potential. A study in Nevada by Myers (1995) found that a switch to a deferred grazing strategy resulted in improved riparian and stream condition.

When all aspects of the MNF's proposed grazing management strategies are considered collectively, it provides the potential for riparian plant communities in the action area be on an upward trend over time. Successful riparian habitat recovery is dependent on full and timely implementation of all parts of the grazing management strategy. Therefore, the proposed action may negatively affect riparian vegetation in the short-term. However, NMFS does not expect those affects to adversely impact individual MCR steelhead in the action area.

Shade and Stream Temperature

Water temperature is an important factor affecting distribution and abundance of salmonids within the action area. Water temperatures influence water chemistry, as well as every phase of salmonid life history. Optimal temperatures for steelhead are 50° to 61°F (10° to 16°C), and the lethal temperature is approximately 77°F (25°C). Bell (1986) reported the upper lethal temperature for steelhead is 75°F, with a preferred temperature range between 50 and 55°F. The ability of rearing steelhead to tolerate temperature extremes depends to a certain degree on the fish's recent thermal history; however, research indicates that most salmonid species are at risk when temperatures exceed 73–77°F (Spence et al. 1996).

In addition to the lethal effects of high temperatures, salmonids rearing at temperatures near the upper lethal limit have decreased growth rates because nearly all consumed food is used for metabolic maintenance (Bjornn and Reiser 1991). Temperatures exceeding the upper lethal limits may be tolerated for brief periods or fish may seek thermal refugia. Li et al. (1991) reported that resident rainbow trout in an eastern Oregon stream selected natural and artificially created cold water areas when temperature in the main stream channel exceeded 75.2°F but showed no preference for these areas when temperature in the main stream channel was less than 68°F. Coldwater refugia, such as springs and groundwater seeps, allow some steelhead to persist in

areas where temperatures in mainstream channels exceed their upper lethal limit. However, total steelhead production in streams will tend to decrease if the amount of habitat suitable for the species use is restricted to areas of coldwater refugia.

Stream temperatures are of particular concern within the John Day River basin, as most of these waters that overlap with MCR steelhead distribution are identified as water quality limited for temperature on the State of Oregon's 2022 Integrated Report Assessment Database and Clean Water Act Section 303(d) list (<https://www.oregon.gov/deq/wq/Pages/epaApprovedIR.aspx>). This concern was also highlighted in the John Day Subbasin Plan (NPCC 2005) as well as the MCR Steelhead Recovery Plan (NMFS 2009). Degraded water quality, which includes elevated water temperatures, is identified as a limiting factor for MCR steelhead in both plans. Stream temperature is influenced by a number of factors including site conditions, weather, riparian vegetation, and input of solar radiation. Solar radiation is the most important source of radiant energy affecting stream temperature. Removal of riparian vegetation decreases shade which increases the amount of solar radiation reaching streams. Stream temperature is also affected by stream width-to-depth ratio, condition of riparian soil, and hydrograph. All of these factors are potentially affected by livestock grazing. Our analysis of the combined effect of these factors on stream temperature follows.

When riparian vegetation is removed by grazing, sunlight reaching streams can increase, leading to cumulative increases in downstream temperatures (Barton et al. 1985). This is especially true for high desert watersheds, such as the John Day River basin, (Platts and Nelson 1989). In a study of watersheds in the John Day River basin, Maloney et al. (1999) found that watersheds with less than 75 percent surface shade can exceed stream temperature standards for rainbow trout and Chinook salmon. Stream temperatures in all heavily grazed watersheds in this study exceeded standards for salmonids. The authors concluded that revegetation of the streamside area with shrubs or small trees would likely result in lower stream temperatures and an improved environment for rainbow trout and Chinook salmon.

Li et al. (1994) noted that solar radiation reaching the channel of an unshaded stream in the John Day River basin was six times greater than that reaching an adjacent, well-shaded stream and that summer temperatures were 4.5°C warmer in the unshaded tributary. Below the confluence of these two streams, reaches that were unshaded were significantly warmer than upstream and downstream shaded reaches. A separate comparison of water temperatures at two sites of similar elevation in watersheds of comparable size found temperature differences of 11°C between shaded and unshaded streams (Li et al. 1994). Warming of streams from loss of riparian vegetation is likely widespread in eastern Oregon and may be particularly acute because of low summer flows and many cloud-free days.

Alteration of stream temperature processes may also result from changes in stream channel morphology. Streams in areas that are improperly grazed are wider and shallower than in ungrazed systems, exposing a larger surface area to incoming solar radiation (Bottom et al. 1984; Platts 1991; Beschta 1997). Wide, shallow streams heat more rapidly than narrow, deep streams (Brown 1972). Similarly, wide, shallow streams may cool more rapidly, increasing the likelihood of anchor ice formation. Reducing stream depth may expose the stream bottom to direct sunlight, allowing greater heating of the substrate and subsequent conductive transfer to the water.

Properly managed grazing allows for the establishment of healthy riparian vegetation which in turn allows streambanks to stabilize. Overtime, vegetation traps sediments, streambanks rebuild and channels begin to narrow. As streams channels regain a more natural morphology, stream temperatures will decrease.

Changes in a stream's hydrograph can also affect stream temperature. For instance, a shift in peak stream flow earlier in the season (as seen in watersheds with high road density or post-wildfire) can reduce stream flow in summer, with a coincident increase in temperature due to reduced stream volume. Compaction of riparian soils by livestock can reduce water infiltration and decrease the amount of water released back into the stream from riparian areas during base flows. Proper management of grazing can help minimize these effects. In particular, using a combination of techniques, such as herding and use of upland mineral supplements can reduce the amount of time cattle remain in riparian areas. This can lead to less soil compaction and greater water-holding capacity of riparian soils. If grazing intensity on riparian areas is properly controlled, natural freeze-thaw cycles and the natural action of plant roots will alleviate soil compaction. Due to protective standards and other conservation measures, riparian function and water holding capacity is expected to improve in the long term under the proposed grazing management.

The proposed action will hinder development of and likely reduce stream shade, resulting in a small, but measurable increase, in stream temperatures in some stream channel types. It is probable that livestock grazing will result in small, but measurable increases in water temperature in streams with narrow channels (less than 10 feet) where grass and grass-like vegetation are providing stream shade. These types of stream channels, typically Rosgen E and C channels found in low-gradient stream reaches and meadows, are located throughout the MNF, but are not the dominant stream type. The loss of shade will continue to occur as a result of reducing the height and amount of shade-producing vegetation by grazing. The use of endpoint/end-of-grazing use indicators for stubble height and shrub browse helps to minimize this adverse effect, but does not eliminate it. At the same time, full implementation of the proposed grazing management strategy and common-to-all aspects of the proposed action should allow other factors that influence stream temperature, such as stream morphology, exposed bare ground, and soil compaction along streams, to improve over time. This and the aquatic restoration program activities¹ have the potential to reduce or offset the small increase in stream temperature expected to result from the proposed action. Because of higher spring flows, stream temperatures are generally suitable for MCR steelhead adult migration, spawning, and egg incubation. Concerns about elevated stream temperature are primarily associated with the summer juvenile rearing life stage, which takes place between June and September. Juvenile MCR steelhead exposed to higher than optimal stream temperatures suffer reduced growth or die due to thermal stress.

Factors that affect stream temperature have the potential to impact juvenile MCR steelhead distribution, movement and health. The small anticipated increase in stream temperature will be

¹ The MNF implements an aquatics restoration program that is paired with their vegetation treatment program, and emphasizes riparian habitat condition improvements such as, installing large wood into wood-deprived streams, reconnecting flood plains to streams, improving fish-passage at culverts, and installing instream beaver dam analog structures, to name a few.

small but measurable within the affected stream reaches in the action area. This is because the areas where shade is being reduced, channels 10 feet wide or less where grass or grass like plants provide shade, are located throughout the action area but are not the dominant stream type. Most streams in the action area have higher gradient and are located in a semi-forested setting where shade is provided by shrubs and conifers. The MNF's grazing strategy, including the use of endpoint/end-of-grazing use indicators, is designed to allow for improved vigor and distribution of woody shrubs. As discussed above, shade can increase on these streams as shrub communities recover over time. Also, any increase in stream temperature is likely to be at least partially offset by improvements to riparian soils and stream morphology that decrease stream temperatures. The small reductions in shade and increases in stream temperature are not expected to negatively impact individual steelhead.

Sediment and Turbidity

Grazing by large herbivores can result in hoof shear to streambanks (McIver and McInnis 2007) and trampling and consumption of streamside vegetation. Cattle trampling streambanks or exposing bare soil and subsequent erosion adds fine sediments to stream substrates. Mass wasting of sediment may occur along streambanks where livestock walk on overhanging banks (Behnke and Zarn 1976; Platts and Raleigh 1984; Fleischner 1994). Concentrated use of an area by livestock can create trails and expose bare soil which is later washed into streams during precipitation events.

The use of vehicles in support of grazing management activities on and off roads can also cause fine sediment to be transported from unpaved roads to stream channels. This happens primarily at road crossings and during rainstorms or runoff events. Due to the limited use of vehicles in support of grazing, and the MNF direction to limit any such use near streams, the amount of fine sediment generated by vehicles is expected to be extremely small.

Transportation of livestock to and from the allotments over existing roads will not cause additional effects to listed fish species and their habitat than would occur with normal vehicle travel over these roads, given the volume and frequency of those livestock transport activity compared to normal vehicle activities on the roads. This activity is deemed minor and insignificant with regard to any impacts to MCR steelhead or designated critical habitat.

Increases in fine sediment lead to greater substrate embeddedness and a decrease in interstitial spaces in gravel substrate important for MCR steelhead spawning. Increased substrate embeddedness impairs food production (discussed in greater detail below) and blocks refugia for young salmonids (Rinne 1990), thus reducing the quality of spawning and rearing habitat available. Excess fine sediment can also impact salmonid eggs in redds by suffocation in the gravels (EPA 1993). Salmonid survival at early life stages has been inversely linked to the amount of surface fines in stream substrates (EPA 1993). Juvenile salmonids depend on clean substrate for cover, especially for over-winter survival (EPA 1993). Successful salmonid spawning requires clean gravels with low fine sediment content (Spence et al. 1996). Excess fine sediment can fill pools needed by juvenile MCR steelhead for resting, hiding and foraging.

Fine sediment entering streams can also create turbidity. An increase in turbidity can adversely affect juveniles. At moderate levels, turbidity has the potential to reduce primary and secondary

productivity; at higher levels, turbidity may interfere with feeding and may injure and even kill both juvenile and adult salmonids (Berg and Northcote 1985; Spence et al. 1996). However, Bjornn and Reiser (1991), found that adult and larger juvenile salmonids appear to be little affected by the high concentrations of suspended sediments that may be experienced during storm and snowmelt runoff episodes.

Exposure duration is a critical determinant of the occurrence and magnitude of turbidity caused by physical or behavioral turbidity effects (Newcombe and Jensen 1996). Salmonids have evolved in systems that periodically experience short-term pulses (days to weeks) of high suspended sediment loads, often associated with flood events, and are adapted to such seasonal high pulse exposures. However, research indicates that chronic exposure can cause physiological stress responses that can increase maintenance energy and reduce feeding and growth (Servizi and Martens 1991). In a review of 80 published reports of fish responses to suspended sediment in streams and estuaries, Newcombe and Jensen (1996) documented increasing severity of ill effects with increases in dose (concentration multiplied by exposure duration).

Streambank alteration is another annual, short-term indicator used to evaluate the potential effects of livestock grazing in riparian areas; primarily evaluating potential effects to long-term streambank stability and channel shape (Cowley and Burton 2002). Information gathered from collecting MIM greenline vegetation composition information will greatly inform the streambank condition assessment as to what percent of the bank is bare ground, and will point to stream reaches more susceptible to introducing fine sediments into the system.

The best available information indicates that streambank alteration levels between 10 and 20 percent are appropriate to prevent bank destabilization and protect habitats critical to listed fish. Pfankuch (1978) and Hayslip (1993) set 90 percent or more unaltered streambank as the lower level of excellent or optimal condition. In a study by Thompson et al. (1998), streams with 95 percent unaltered banks received the best score. Bengeyfield and Svoboda (1998) suggest using 90 percent-plus unaltered streambank as a goal for streams containing ESA-listed fish. Powell et al. (2000) stated that greater than 20 percent of the surface affected by deep hoof prints should not occur along high value fish habitat. Cowley (2002) concluded that “streams with 90 percent of the potentially stable banks unaltered (ten percent or less alteration) would seem to allow for near optimal recovery and should not retard or prevent attainment of riparian management objectives.” The indicators are consistent with result from the one study examining streambank alteration levels and recovery of stream habitat.

Two grazed sites with streams in the Beaverhead–Deerlodge National Forest in southwest Montana showed a marked narrowing of stream channels, and an upward trend in the shape of the stream channel and improvements to riparian vegetation condition over a 4- to 6-year period after establishing and actively managing for a streambank alteration move trigger of 30 percent (Bengeyfield 2006). Although the amount of improvement differed from site to site, Bengeyfield (2006) noted an upward trend in the shape of the stream channel over a 4- to 6-year period where streambank alteration guidelines were met. The MNF’s proposed streambank endpoint/end-of-grazing use indicators also fall within the range of acceptable bank alteration recommend by the experts cited above.

The amount of fine sediment introduced into streams by livestock grazing or vehicle use of roads and trails at any one time will be small. Pulses of turbidity caused by this sediment are likely to be small, localized, and of short duration. When fine sediment is introduced to streams during high flows, the turbidity created will not be observable above background levels. Also, not all stream reaches within the action area have streambanks that are susceptible to the effects of trampling. This fine sediment will be primarily generated by streambank trampling and exposure of new, and maintaining of prior existing, bare soil by livestock. Trampling will occur at locations where streambanks are composed of soils or soil and rock mixtures. As noted above, excessive levels of fine sediment in stream substrates can reduce MCR steelhead egg survival, reduce forage available for juveniles, and decrease available refugia sites within stream substrates. The primary method to reduce the introduction of fine sediments from livestock grazing is to limit streambank trampling. Establishing proper streambank alteration endpoint/end-of-grazing use indicators in combination with the other management requirements intended to reduce the amount of time livestock spend in riparian areas will help reduce the amount of turbidity created and the fine sediment introduced into streams. Sensitive stream reaches, primarily found in the streams designated as MSRA, have lower streambank alteration endpoint/end-of-grazing use indicators which should further lower streambank trampling, exposure of bare soils, and inputs of fine sediment at these sites. The MNF has implemented limiting streambank alteration to 15 percent for streams within MSRA and 20 percent for stream reaches outside of identified MSRA.

Some individual MCR steelhead, however, will experience increased turbidity in those few locations where livestock impact streambank conditions or remove riparian bank vegetation in a manner that allows exposure of bare soils or overland movement of fine sediment into the stream. Embryos in redds may be smothered and die when suspended sediment settles out. Although increased turbidity during low flow may interrupt juvenile steelhead behaviors such as feeding, these interruptions will not be significant enough to reduce juvenile steelhead survival. Therefore, NMFS expects sediment or turbidity generated by cattle grazing will be high enough to (1) smother a very small number of eggs, alevins, and pre-emergent fry; and (2) effect feeding behavior of a small number of juvenile steelhead.

Prey Base

The coldwater communities (aquatic invertebrates and other coldwater fish) which rearing juvenile steelhead rely on for food require minimum dissolved oxygen levels of between 6 and 8 mg/L (ODEQ 1995). In streams without adequate riparian vegetation, temperatures increase and dissolved oxygen levels drop. Cold water communities shift from salmonids and less tolerant aquatic invertebrates such as mayflies and stoneflies to warmer water species dominated by sculpins and more tolerant aquatic invertebrates such as chironomids. A study by Li et al. (1994), in the John Day River basin, found that colder streams supported the highest standing crops of trout and had the most favorable trout-to-invertebrate standing crop ratios. This suggests that colder streams in this basin have a greater trophic efficiency leading to increased salmonid production.

As discussed above in the shade and stream temperature section, a reduction in riparian canopy increases solar radiation and stream temperature. This stimulates production of periphyton (Lyford and Gregory 1974). In a study of high desert streams, Tait et al. (1994) found that prey

less palatable for trout dominated the food base in warm water stream reaches exposed to sunlight. In this study, Tait et al. (1994) reported that thick growths of filamentous algae encrusted with epiphytic diatoms were found in reaches with high incident solar radiation, whereas low amounts of epilithic diatoms and blue-green algae occurred in shaded reaches. Periphyton biomass was significantly correlated with incident solar radiation. While densities of macroinvertebrates in forested streams typically increase in response to increased periphyton production, the effect of stimulated algal growth in rangeland streams is less clear. Tait et al. (1994) found that biomass, but not density, of macroinvertebrates was greater in reaches with greater periphyton biomass. The higher biomass was a consequence of many *Dicosmoecus* larvae, a large-cased caddisfly, which can exploit filamentous algae. Consequently, any potential benefits of increased invertebrate biomass to organisms at higher trophic levels, including salmonids, may be small, because these larvae are well protected from fish predation by their cases. Tait et al. (1994) suggest that these organisms may act as a trophic shunt that prevents energy from being transferred to higher trophic levels.

Reducing riparian vegetation (woody shrubs, over-hanging grasses, or hydric species) can reduce habitat for terrestrial insects, an important food for juvenile salmonids (Platts 1991). Riparian vegetation also directly provides organic material to the stream, which makes up about 50 percent of the stream's nutrient energy supply for the food chain (Cummins 1974, as cited in Platts 1991). This material provides an important food source for aquatic insects which, in turn, become prey for salmonids. Consequently, removal of riparian vegetation can affect the diet of fish by reducing production of both terrestrial and aquatic insects (Chapman and Demory 1963).

These studies underscore the need to manage grazing in a manner that allows for the establishment of healthy, fully functioning riparian vegetation. Streams with functioning riparian plant communities produce more suitable food for rearing juvenile steelhead. Steelhead juveniles that do not die, and that acquire adequate food to survive become adults. Increased survival of MCR steelhead at the juvenile stage is necessary to improve population abundance and productivity for populations that are not meeting the recovery criteria. Removal or hindering the development of streamside vegetation through livestock grazing will usually result in a decrease in the amount of food available to juvenile steelhead. However, managing grazing in a manner that promotes the development of fully functioning riparian plant community will increase the amount food available in the long-term.

The MNF proposes stubble height and shrub browse endpoint indicators that limit the amount of forage that livestock can remove from riparian areas. Riparian vegetation utilization endpoint/end-of-grazing use indicators were developed to maintain year-to-year plant vigor and allow for proper riparian function. Additionally, the MNF has proposed a number of management practices that could lead to reduction in the amount of time livestock spend in riparian areas. In recent years, the MNF has fenced more areas, excluding livestock altogether from sensitive riparian areas. The vast majority of the pastures containing MCR steelhead are grazed at least once per year, with few allotments implementing a true rest-rotation management strategy. The MNF continues to support conducting implementation and effectiveness monitoring to ensure that these practices are carried out and are having the desired results. This program of PIBO monitoring is currently under review with proposed reduction in scope due to funding limitations at the regional level. Implementation of these practices can assist in the

development of a healthy riparian plant community in streams as they begin to recover and maintenance of a healthy plant community in streams currently identified with properly functioning riparian areas. Very few watersheds within the MNF are identified as functioning properly at the present time. As riparian plant communities recover, however, the amount of food available to juvenile MCR steelhead should increase.

As discussed above, fine sediment resulting from livestock trampling banks can reduce benthic invertebrate abundance (McIver and McInnis 2007). Studies have shown that sediment inputs resulting in substrate embeddedness of greater than one-third can result in a decrease in benthic invertebrate abundance and thus a decrease in food available for juvenile salmonids (Waters 1995). Establishment of streambank alteration endpoint/end-of-grazing use indicators in combination with other management practices outlined in the Common-to-All section of the proposed action that reduce the amount of time livestock spend in riparian areas should limit the amount of fine sediment introduced into streams.

In summary, the removal of, or limiting the recovery of, streamside vegetation through grazing and the introduction of fine sediment from grazing will result in a small decrease in the amount of food available to juvenile MCR steelhead. The reduction in food availability is likely to occur within the action area on a small scale; will be greatly limited given the livestock grazing management strategies, monitoring, and adaptive management features of the proposed action. Thus, any reduction of food availability will be minor or immeasurable within the affected stream reaches and individual steelhead are not anticipated to be adversely affected by that reduction. In the long-term, the management measures proposed by the MNF should encourage an improvement of, and potential development into fully functional riparian plant communities, which in turn, should aid in increasing the amount of food available for juvenile steelhead.

Large Wood

Large wood is a key component of steelhead freshwater habitat (Spence et al. 1996). In the BAs, the MNF states that in streams within the action area, large wood is usually provided by fallen conifers. The proposed action will have limited effect on conifer recruitment outside of the riparian area. However, in some areas where hardwoods, particularly black cottonwood and quaking aspen, play an important role in riparian species composition, livestock and wild ungulate grazing can prevent future large wood recruitment by limiting sapling regeneration and eventual large tree recruitment.

Livestock grazing, particularly in the fall after grasses have dried and cured becoming less palatable, can concentrate on and suppress cottonwood recruitment, thereby reducing future levels of large wood. The proposed action will likely result in negative effects to future large wood recruitment. The effects will mostly be observed in areas where adequate cattle forage overlaps low-gradient stream sections, such as identified MSRA, that have relatively open canopy and have potential to develop into a cottonwood gallery forest. The mechanisms causing this effect include: (1) browsing on young cottonwood seedlings/saplings; (2) retarding cottonwood succession and large tree recruitment; and (3) reduction in future levels of instream large wood. These mechanisms will negatively and measurably affect the large wood levels. Negative impacts to the large wood indicator will be minimized by use of the endpoint/end-of-grazing use indicators for shrub browse and other management measures designed to reduce the

time livestock spend in riparian areas. The current use of the woody browse indicator, however, does not account for the full suite of shrub/tree age-classes necessary to ensure annual plant recruitment continues. Without annual recruitment, some shrub and tree species become decadent, unhealthy, more susceptible to bugs and disease, and potentially die out.

The proposed action will reduce the recruitment of large wood in some limited amount where grazing occurs late in the season. However, the grazing strategies, and move-trigger and endpoint indicator monitoring will greatly reduce the likelihood of cattle browsing reaching the level of limiting cottonwood recruitment. In much of the action area, conifers provide the source of large wood and the proposed action will have little to no effect on conifer recruitment. The areas where large wood recruitment will be suppressed (cottonwood, aspen, and alder galleries) are found in a limited number of locations throughout the action area. The MNF is increasing its effort to establish livestock exclosures around identified cottonwood or aspen groves. Many of the areas where cottonwood galleries could be expected to form are found on mainstem reaches of the Upper and Middle Fork John Day Rivers. Most of these reaches are on private land or on lands acquired for conservation. The suppression of recruitment caused by the proposed action will have an insignificant effect on current and future large wood levels when measured at the watershed scale. The MNF, through their large-scale vegetation treatment projects currently underway (i.e., Big Mosquito, Magone, Galena, Camp Lick and Ragged Ruby projects), is aggressively implementing stream restoration activities with a significant focus on placement of large wood (augmentation) in streams lacking that important habitat feature (e.g., Camp Creek and Deadwood Creek, both tributaries to the Middle Fork John Day River). MNF will also implement protective measures (under separate project consultations i.e. Camp-Lick opinion) for stream restoration and treatments as riparian corridor site reestablishes and recovery following project implementations. Therefore, NMFS does not expect affects to LWD to negatively affect individual fish in the action area.

Nutrients

Nutrients consumed by cattle elsewhere on the range are often deposited in riparian zones (Heady and Child 1994). The deposition of nutrients in riparian areas increases the likelihood that elements such as nitrogen and phosphorous will enter the stream. Increased nutrients from livestock waste will likely increase stream productivity for a short distance downstream from the source. Full implementation of the MNF proposed action will help limit or reduce the amount of time livestock spend in riparian areas. When considered collectively, these measures should limit the amount of waste livestock deposit in streams and riparian areas and result in negligible effects on individual MCR steelhead.

Water Quantity

Riparian vegetation has been linked to the water-holding capacity of streamside aquifers (Platts 1991). As riparian vegetation is removed or bare soils are exposed by livestock grazing and streamside soils are compacted by livestock hooves, the ability of areas to retain water decreases. Evapotranspiration and infiltration decrease and hasten surface runoff, resulting in a more rapid hydrologic response of streams to rainfall. When this occurs, high flows in the spring tend to increase in volume, leading to bank damage and erosion. Summer and fall base flows are decreased, often resulting in flows that are insufficient to provide suitable rearing habitat for juvenile salmonids. If aquifers lose their capacity to hold and slowly release water to streams, differences between peak and base discharge rates increase dramatically (EPA 1993). Some streams that typically flowed perennially may experience periods of no flow in the summer or fall. Li et al. (1994) found that streamflow in a heavily grazed eastern Oregon stream became intermittent during the summer, while a nearby, well-vegetated reference stream in a similar-sized watershed had permanent flows. They suggested that the difference in flow regimes was due to diminished interaction between the stream and floodplain, with resultant lowering of the water table.

Indirect effects of historic livestock grazing in the action area (including trailing and watering), on channel and bank features such as bank stability, undercut banks and width to depth ratio, as well as impacts to shrub recruitment and green line plant vigor, have likely affected peak and base flows on some streams. Normal cycles of drought compound this effect as observed during 2015's low snowpack; the Governor of Oregon declared a drought emergency for Grant County again for 2018 due to a relatively low winter snowpack. The uncertainty of the magnitude of changing snowpack and altered peak and baseflows are likely to result in more frequent future drought conditions. The limited annual snow fall will exacerbate water quantity issues within the action area.

As stated earlier, proper management of grazing can help minimize soil compaction and its potential changes in peak/base flow. In particular, using a combination of techniques, such as herding and use of upland water sources or mineral supplements can reduce the amount of time cattle remain in riparian areas. This can lead to less soil compaction and greater water-holding capacity of riparian soils. If grazing intensity on riparian areas is properly controlled, natural freeze-thaw cycles and the natural action of plant roots will help alleviate soil compaction. Although there may be some minor effects to water quantity in the short term, riparian function and water holding capacity is expected to be maintained in the near-term but potentially improve in the long term under the proposed grazing management. Therefore, NMFS does not expect these effects on habitat to result in adverse impacts to individual fish

2.5.2. Effects on MCR Steelhead

Grazing cattle adjacent to streams can have direct and indirect effects on both adult and juvenile steelhead. Some of these effects can result in injury and death, but the most common response is a behavioral change in the fish. These effects can be minimized or avoided by limiting the opportunity for cattle to enter streams when fish are present, or by minimizing cattle access to

stream reaches where fish are known to spawn. Grazing effects on MCR steelhead are described below.

Disruption of Steelhead Spawning

As cattle approach streams to drink or cross they could interrupt spawning behavior by forcing adult steelhead to retreat to nearby cover. Most adult MCR steelhead spawning occurs from March through May, and peaking in April. Therefore, steelhead spawning is mostly concluded by the time cattle enter the allotments addressed by this consultation. Adult steelhead either die or swim downstream after constructing redds. There are four allotments (Aldrich, Beech Creek, Fields Peak, and Murderers Creek) where turnout into CH is slated for May 15, and 14 allotments have turnout dates proposed for the first two weeks of June. The conservation measures and later turnout dates on the pastures with CH proposed by the MNF greatly reduces any potential for livestock interaction with spawning MCR steelhead. Given the majority of spawning occurs in April, with some very limited MCR steelhead spawning activity occurring in the first two weeks of May during odd water years, NMFS expects cattle interrupting spawning or other adult behavior to be unlikely. Therefore, NMFS does not expect cattle to disrupt adult spawning behavior.

Redd Trampling

Of more concern is that livestock can trample redds, which is reasonably certain to result in partial or total mortality of eggs, alevins, or pre-emergent fry concentrated in the redds. Salmonid embryos are vulnerable to mechanical disturbance, and their sensitivity varies with developmental stage (Peterson et al. 2010). For instance, Roberts and White (1992) reported that a single wading incident on a simulated redd killed 43 percent of pre-hatching embryos and twice-daily wading throughout embryo development killed at least 83 percent of eggs and pre-emergent fry.

Depending on water temperature, eggs and alevins remain in redds for approximately 45 to 60 days. During this time, redds are susceptible to trampling by livestock. By July 1, most alevins have emerged from the gravel and the susceptibility of redds to trampling drops significantly.

Although it is fairly certain that fish are injured or killed when redds are trampled, less is known about how frequently livestock come in contact with redds. Only a small number of studies have examined the likelihood that salmonid redds will be trampled by livestock ((Ballard and Krueger (2005), Gregory and Gamett (2009) Peterson et al. (2010)). None of these studies looked at steelhead redds so the results must be interpreted with caution. Data collected from the 2012-2016 grazing seasons on the MNF show the risk of redd trampling is real, and without protective measures, can occur in various streams used by spawning steelhead where livestock have access and with over-lapping grazing periods (see below). Of the 22 redds identified as trampled, or with evidence of probable trampling, from livestock grazing activities on the MNF (n=16 in 2012, and n=6 in 2016), two redds were protected by ‘electric fence placement’ and the remaining 20 redd were protected by placement of ‘brush fencing’. During 2018-2022 the methods of redd protection, fencing, and delaying livestock turnout until after spawning season was successfully implemented to protect steelhead eggs, alevins, and pre-emergent fry. No redds were identified as trampled during the 2017-2022 grazing seasons. Other than not grazing during

the period of steelhead spawning through incubation (through July 1), placement of permanent barbed-wire fencing that totally excludes livestock from accessing redds or MCR steelhead spawning reaches appears to be the only method of protecting redds with a high degree of certainty.

The MNF proposes several measures to reduce the potential for redd trampling. Pre turnout stream surveys that locate spawning steelhead and redds are required on 100 percent of MSRA and designated CH that is conducive to spawning and reflective of potential spawning habitat. If adult steelhead redds are observed, MNF and permittees will use a number of tools to prevent livestock from disturbing spawners and to protect redds from trampling. These tools include using an alternate pasture rotation that avoids spawning reaches, resting the pasture with spawners and redds, using fencing (barbed wire, livestock panels, or electric) to exclude livestock from the spawning site, and using additional riding to herd and keep cattle away from spawning sites. These forms of fencing (barbed wire, livestock panels, or electric fences) have been shown to be quite effective at protecting redds, but do not eliminate trampling. Even with fencing, constant attention and annual maintenance is required to ensure fences remain fully functional at excluding cattle from the area. Problems can occur with the electrical charge, falling trees can break barbed wire, and stream debris can hang up and potentially wash out fence components.

After reviewing the available information and considering the measures the MNF has proposed to protect redds, NMFS concludes that it is reasonably certain that a small number of MCR steelhead redds will be trampled over the 5-year term of this consultation. Due to the large geographic scale of this consultation, this trampling may or may not be witnessed during the proposed MNF surveys, but rather deduced with information collected in the area of the known redds. Trampling of redds will result in the death or injury of a small number of MCR steelhead eggs, alevins, and pre-emergent fry. However, the total number of redds trampled is expected to be low if protective measures are implemented to the fullest. Therefore, NMFS expects a very small number of eggs, alevins, and pre-emergent fry to be injured or killed by redd trampling.

Disturbance of Juvenile Steelhead

In addition to redd trampling, rearing juvenile MCR steelhead are likely to be disturbed by cattle approaching and entering streams. Similarly, range riders on horses will occasionally cross streams causing the same type of effect. Juvenile MCR steelhead may respond by leaving near shore cover and entering open water where they are more vulnerable to predation. This could lead to death or injury of these individuals. Cattle or horses entering streams may also cause juvenile steelhead to abandon other critical behaviors such as feeding.

The occasional disruptions caused by livestock are likely to disturb individual juvenile MCR steelhead. However, based on the measures proposed by the MNF, these disruptions will only occur occasionally and in dispersed areas. The disruptions to essential juvenile behaviors of feeding and sheltering are likely to be limited to stream reaches where cattle can easily approach or enter the water. Disruptions are not likely to occur in streams that are less accessible due to the occurrence of woody vegetation around the streambanks or the presence of large amounts of downed woody debris near streams. Additionally, many pastures contain fencing that exclude

cattle from streams. The MNF also proposes a number of management measures, such as herding and placement of mineral supplements in uplands, to reduce the amount of time livestock spend in riparian areas. Many of the accessible reaches are designated as MSRAs, and the more conservative management of these areas will help to further reduce the frequency of harassment of juvenile steelhead by cattle. However, some disturbance of a small number of juvenile MCR steelhead, which could lead to death or injury of these individuals from predation, is still reasonably certain to occur.

2.5.3. Effects on MCR Critical Habitat

The proposed action affects the critical habitat PBFs for MCR steelhead CH.

The action area includes PBFs for spawning, freshwater migration, and rearing. Freshwater spawning sites require water quantity and quality conditions and substrate supporting spawning, incubation and larval development. These features are essential to conservation because without them the MCR steelhead cannot successfully spawn and produce offspring.

Freshwater migration corridors free of obstruction and excessive predation with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks support juvenile and adult mobility and survival. These features are essential to conservation because without them juveniles cannot use the variety of habitats that allow them to avoid high flows, avoid predators, successfully compete, begin the behavioral and physiological changes needed for life in the ocean, and reach the ocean in a timely manner. Similarly, these features are essential for adults because they allow fish in a non-feeding condition to successfully swim upstream, avoid predators, and reach spawning areas on limited energy stores.

Freshwater rearing sites require: (1) Water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility; (2) Water quality, (3) Forage supporting juvenile development; and (4) Natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks. These features are essential to conservation because without them, juvenile steelhead cannot access and use the areas needed to forage, grow, and develop behaviors (e.g., predator avoidance, competition) that help ensure their survival.

The essential features in the action area for these three types of PBFs that will be affected by the proposed action include water quantity, water quality, substrate/spawning gravel, floodplain connectivity, forage, and natural cover/riparian vegetation. The effects of the proposed action on these features was completed with full consideration given to the suite of grazing management measures, including the adaptive management process, proposed by the MNF and are summarized below.

Water quantity– As riparian vegetation is removed by grazing and streamside soils are compacted by hooves, the ability of areas to retain water is decreased. The proposed management techniques, such as herding and use of upland mineral supplements can reduce the amount of time cattle remain in riparian areas. If grazing intensity on riparian areas is properly controlled as proposed, natural freeze-thaw cycles and the natural action of plant roots will

alleviate soil compaction. Although there may be some minor effects to the water quantity PBF in the near-term, riparian function and water holding capacity is expected to improve over time with the proposed grazing management.

Water quality– The effects of the proposed action on water quality (temperature, turbidity, and nutrients) are described in the previous section. In summary, livestock grazing and the use of roads in support of grazing management will result in short pulses of turbidity, deposition of cattle waste in riparian areas and streams, and a small increase in stream temperature in certain channel types. The application of the full suite of grazing management measures will ensure that the effects to the water quality PBF remain minor. Over time, as riparian conditions improve, and streamside shade improves, stream temperatures are expected to decrease or at a minimum, be maintained in the face of climatic changes. As streambank condition improves over time, the amount of turbidity created when cattle impact streambanks will also decrease.

Substrate– Livestock grazing and the use of vehicles on and off roads can expose bare soil or generate fine sediments which may enter streams. As described earlier, the proposed action will result in a small amount of fine sediment entering streams. This fine sediment can lead to greater stream substrate embeddedness and a general decrease in habitat quality for MCR steelhead. Establishing proper streambank alteration move triggers and endpoint indicators in combination with the other management measures intended to reduce the amount of time livestock spend in riparian areas will substantially reduce the amount of the fine sediment introduced into streams. Sensitive stream reaches, primarily found in the designated MSRAs, have lower streambank alteration endpoint indicators and/or additional conservation measures and this will further lower streambank trampling and inputs of fine sediment at these sites. The application of the full suite of grazing management measures will ensure that the effects of the proposed action on the substrate PBF remain minor at the scale of the action area. As streambank condition improves over time, the amount of fine sediment created when cattle impact streambanks will decrease.

Floodplain connectivity–Improperly managed grazing can remove riparian vegetation and damage streambanks. Without vegetation to slow water velocities, hold the soil, and retain moisture, flooding can cause more erosion of streambanks; streams can become wider and shallower, and in some cases down cut. The application of the full suite of grazing management measures will ensure that adequate riparian vegetation will be maintained along streambanks to prevent streambank erosion. Establishing and meeting the proper streambank alteration move triggers and endpoint indicators reduces the amount of streambank damage and allow banks to stabilize over time. Any effects to the floodplain connectivity PBF will be minor. Over time, with sufficient rest and recovery streams that are currently disconnected from their floodplains will be able to reestablish connectivity as riparian conditions improve. It should be noted however that it can take decades for stream bed elevation to increase enough to reestablish connectivity in streams that are significantly incised. The riparian conservation measures incorporated in the proposed action should help promote an upward trend of improving riparian habitats that in turn aid the long-term development of streambanks, and ultimately, floodplain connectivity.

Forage–Livestock grazing can reduce the amount terrestrial and aquatic insect prey available to juvenile MCR steelhead. This reduction is caused by the removal of streamside vegetation or

through the introduction of fine sediment into streams. The application of the full suite of grazing management measures limits the amount of vegetation that can be removed from riparian areas and reduces the amount of time livestock spend in riparian areas. Establishing and meeting the proper streambank alteration move-triggers and endpoint indicators reduces the amount of the fine sediment introduced into streams. The implementation of these management measures will ensure that any effects to the forage PBF will remain minor. In the long term, the grazing strategy proposed by the MNF will allow for development of functioning riparian plant communities which in turn will increase the amount of food available for juvenile steelhead.

Natural cover—MCR steelhead use various stream features such as undercut streambanks, large woody debris, boulders, and overhanging vegetation to provide cover. As described earlier, the removal of riparian vegetation can reduce overhead cover. Streambank alteration by livestock can eliminate undercut banks and improperly managed grazing can suppress the recruitment of large woody debris. The introduction of fine sediments can increase substrate embeddedness, reducing the number of hiding places between cobbles and boulders. The application of the full suite of grazing management measures limits the amount of vegetation that can be removed from riparian areas and reduces the amount of time livestock spend in riparian areas. Establishing and meeting the proper streambank alteration move triggers and endpoint indicators reduces amount of damage to streambanks. The implementation of these management measures will ensure that any effects to the natural cover PBF will remain minor. In the long term, the grazing strategy proposed by the MNF will allow for development of functioning riparian areas and more complex stream habitat which in turn will increase the amount of cover available to MCR steelhead.

Obstruction—The proposed action will not create any obstructions or block fish passage in any way.

The MNF grazing program is very large and complex and some modest exceedance of endpoint indicators is inevitable. The MNF includes in the proposed action, a well-defined set of implementation and accountability features for livestock management during the 2023-2027 period. The ability of MNF to promptly identify, through monitoring and reporting, any exceedances of endpoint/end-of-grazing use indicators, and the clearly defined communication, adaptive management, and enforcement components that identify distinct corrective actions and adjustments to grazing management to respond to instances when endpoint/end-of-grazing use indicators are not met, will limit the number and scope of adverse effects to CH.

2.5.4. Allotment-Specific Effects on UJDR, SFJDR, MFJDR, and NFJDR Populations

Effects on Steelhead

Effects from livestock grazing to MCR steelhead on the 28 allotments are expected to be consistent with the general effects described in the sections above. The effects from livestock grazing is very similar for all 28 allotments and the four MCR steelhead populations in the action area. However, there are a few differences between practices being implemented on the various allotments (Table 138) and, therefore, the potential exposure to effects at the different life stages of MCR steelhead (redds, adults, and juveniles). The Rail Creek allotment is the only allotment included in the proposed action that direct or indirect harm, injury or death of MCR steelhead is not likely to occur.

Turnout dates in all allotment pastures are after the MCR steelhead spawning period (April into first two weeks of May) (Table 138). Therefore, it is unlikely that cattle will interfere with the spawning behavior of adults from the UJDR, SFJDR, MFJDR, or NFJDR populations.

Most allotments will have livestock access overlapping with redd-incubation (Table 138). However, the timing and location of livestock grazing turnout, and MNF implementation of redd protective measures, will reduce the overlap of livestock grazing and redd-incubation. Therefore, NMFS expects a small number of eggs and alevins from the UJDR, SFJDR, MFJDR, and NFJDR populations will be trampled by livestock, resulting in injury or death.

Cattle and possibly horses used by range riders will also have access to juvenile rearing areas in every pasture for a short duration each year (Table 138). NMFS expects livestock and horses will disrupt juvenile steelhead sheltering and feeding behavior, which may result injury and death. We also expect these interactions will be limited. Therefore, NMFS expects a very small number of juvenile steelhead from the UJDR, SFJDR, MFJDR, and NFJDR populations will have their sheltering and feeding behavior disturbed, resulting in injury or death from increased risk of predation.

Habitat impacts that increase sediment and turbidity will smother and kill a very small number of eggs, alevins, and pre-emergent fry. Turbidity pulses will affect juvenile feeding behavior. Therefore, NMFS expects sediment and turbidity will kill a very small number of eggs, alevins and fry from the UJDR, SFJDR, MFJDR, and NFJDR populations; and will disrupt the feeding behavior of a small number of juveniles from each of these populations.

Table 138. Information on when and where livestock grazing and Middle Columbia River steelhead presence overlap in each allotment grazed on the Malheur National Forest, and potential effects.

Allotment	Effects to Steelhead		
	Cattle Access to Redds during Incubation (redds)	Cattle Access to Stream during Spawning (adults)	Cattle Access to Stream during Juvenile Rearing
UJDR Population			
Beech	Y	N	Y
Dark Canyon	Y	N	Y
Deadhorse	Y	N	Y

Allotment	Effects to Steelhead		
	Cattle Access to Redds during Incubation (redds)	Cattle Access to Stream during Spawning (adults)	Cattle Access to Stream during Juvenile Rearing
Dixie	Y	N	Y
Fawn Springs	Y	N	Y
Hanscomb	N	N	Y
Herberger	N	N	Y
Hot Springs	N	N	Y
John Day	Y	N	Y
McClellan	N	N	Y
McCullough	Y	N	Y
Mt. Vernon	Y	N	Y
Rail	N	N	Y
Reynolds	N	N	Y
Roundtop	Y	N	Y
Seneca	N	N	Y
SFJDR Population			
Aldrich	Y	N	Y
Fields Peak	Y	N	Y
Murderers Creek	Y	N	Y
MFJDR Population			
Camp Creek	Y	N	Y
Long Creek	Y	N	Y
Lower Middle Fork	Y	N	Y
North Middle Fork	Y	N	Y
South Middle Fork	Y	N	Y
Slide Creek	Y	N	Y
York	N	N	Y
NFJDR Population			
Deer Creek	Y	N	Y
Fox	Y	N	Y

Effects on Critical Habitat

The effects of the proposed action on MCR steelhead CH PBFs for the 28 allotments as discussed in more detail in Section 2.4.3 above, are associated with cattle access to CH. The Rail Creek allotment is the only allotment included in the 2023–2027 Proposed Action that is anticipated to have no significant effects to the CH PBFs. The effects to MCR steelhead CH PBFs in the other 27 allotments, as noted in Section 2.4.3 above, are expected to be minor.

2.6. Cumulative Effects

“Cumulative effects” are those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR 402.02 and 402.17(a)). Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

Some continuing non-Federal activities are reasonably certain to contribute to climate effects within the action area. However, it is difficult if not impossible to distinguish between the action area’s future environmental conditions caused by global climate change that are properly

part of the environmental baseline versus cumulative effects. Therefore, all relevant future climate-related environmental conditions in the action area are described earlier in the discussion of status critical habitat (Section 2.2.2).

Cumulative effects that reduce the ability of a listed species to meet its biological requirements may increase the likelihood that the proposed action will result in jeopardy to that listed species or in destruction or adverse modification of a designated CH.

NMFS is not aware of any specific future non-Federal activities within the action area that would cause greater effects to a listed species or a designated CH than presently occur. The population of Grant County increased by 1.0 percent between 1990 and 2000. More recently, Grant County has exhibited a decreasing population trend, including a 6.2 percent decrease between 2000 and 2010, and a 3 percent decrease between 2010 and 2020 (U.S. Census Bureau 2020). Because of the recent decrease in population, NMFS assumes that the population will remain stable or decrease over the next 5 years. NMFS also assumes that since the human population in the action area will remain somewhat constant, future private and state actions will continue within the action area at approximately the same level at which they are occurring now; and demand for agricultural, commercial, or residential development will also remain somewhat constant.

The ODFW might choose to increase elk or deer populations in the future by further restricting harvest through hunting regulations, but NMFS has no information that ODFW intends to do this within the five year term of this consultation or beyond the term of this consultation. Thus, NMFS also expects elk and deer populations to remain fairly stable into the future, and the effects of elk and deer in the action area to be comparable to the effects of past and current elk and deer populations in the action area, which are described in the environmental baseline.

There is a history of some livestock trespassing onto Federal land from adjacent private land in the action area. The MNF has largely been successful addressing these issues. However, given the abundance of landowners grazing cattle adjacent to MNF land, it is likely that cattle may trespass in the future at similar levels. Recreational activities also occur in the vicinity of some allotments and are expected to continue at similar use levels in the future.

Because the action area is primarily Federal land, future population growth and development are not likely to cause greater effects within the action area than those previously described. Therefore, the overall conservation value of the habitat within the action area is likely to steadily increase, if natural recovery from the historic, less conservative land management continues. Thus, NMFS assumes that future private and state actions will continue within the action area, at roughly the same level. Due to MNF efforts, NMFS does not anticipate livestock trespassing will impede continuing habitat improvements across the allotments. The cumulative effects in the action area are not expected to further reduce the conservation value of the designated MCR steelhead CH, or the productivity, spatial distribution, or abundance of MCR steelhead populations within the action area.

2.7. Integration and Synthesis

The Integration and Synthesis section is the final step in assessing the risk that the proposed action poses to species and critical habitat. In this section, we add the effects of the action

(Section 2.5) to the environmental baseline (Section 2.4) and the cumulative effects (Section 2.5), taking into account the status of the species and critical habitat (Section 2.2), to formulate the agency's biological opinion as to whether the proposed action is likely to: (1) reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution; or (2) appreciably diminish the value of designated or proposed critical habitat as a whole for the conservation of the species.

Species

The MCR steelhead populations occurring within the action area include the MFJD, SFJD, UJDR, and NFJD populations. The John Day River MPG-level recovery criteria from the MCR Steelhead Recovery Plan (NMFS 2009) require that the LJDR, NFJD, and either the MFJD or the UJDR populations should be viable; one of these populations should be highly viable; and the SFJD population must be at a maintained viability status (NMFS 2009). The LJDR and UJDR populations are both considered maintained, and do not meet the recovery plan viability criteria, while the NFJD population is "highly viable", and the MFJD and SFJD populations are viable (Ford 2022). For the John Day MPG-level recovery criteria to be met, the LJDR population needs to improve to viable status, and the other populations must remain at their current overall risk rating or improve.

As described in Sections 2.5.1 and 2.5.2, the proposed action will have effects on eggs, alevins, and pre-emergent fry, and juvenile steelhead from four populations in the John Day River MPG. The proposed action will result in disturbance of rearing juvenile steelhead. Disruptions to essential juvenile behaviors of feeding and sheltering are likely to be limited to stream reaches where cattle can easily approach or enter the water. Disruptions are not likely to occur in streams that are less accessible due to the occurrence of woody vegetation around the streambanks or the presence of large amounts of down woody debris near streams. The implementation of a variety of conservation measures, including extensive fencing in MSRA and other areas, placing mineral supplements away from streams, providing upland water sources, grazing sensitive areas early in the season when upland forage and water is available, or providing a full-time rider will reduce the amount of time cattle spend in riparian areas and the frequency of disruption to juvenile MCR steelhead. Disturbance of adult behaviors is unlikely because cattle spend little time in riparian areas during the early spring spawning period and the MNF proposes management measures designed to reduce the amount of time cattle spend in riparian areas.

The proposed action will occasionally result in cattle trampling MCR steelhead redds. Any redd trampling that occurs is likely to dislodge or destroy developing eggs or alevins in streams where spawning occurs within the action area. Trampling will result in the death or injury of MCR steelhead eggs, alevins, and pre-emergent fry. However, the total number of redds trampled is expected to be low; and the number of eggs, alevins, and pre-emergent fry killed is expected to be very low. This is because cattle spend significant amount of time in uplands during the time MCR steelhead redds are vulnerable and the MNF is proposing a number of measures to detect and protect redds.

Although the proposed action will result in some impacts to MCR steelhead habitat, such as minor streambank alteration, small reductions in shade due to removal of herbaceous vegetation, and introduction of fine sediments into streams, these impacts will be minimized by the

implementation of the full suite of management measures proposed by the MNF. In particular, the designation and more conservative management of MSRA will ensure that impacts of the proposed action are limited in areas where MCR steelhead and the habitat are most vulnerable. The monitoring and adaptive management components of the proposed action will ensure that these management measures are carried out as proposed. The MNF is starting to re-visit implementation of more progressive grazing management strategies such as rest rotation on some small riparian pastures that will reduce the impacts of grazing on riparian areas and stream habitat. However, NMFS still expects a very small number of eggs, alevins, and pre-emergent fry; and a small number of juvenile steelhead, from habitat impacts that result in increased sediment and turbidity.

The information presented in the environmental baseline section (Section 2.4) indicates that many streams and full subwatersheds within the action area are degraded, in part due to past land management practices. The information also indicates that herds of deer and elk can have some, albeit minor, effects to riparian areas and stream channels throughout the action area. Additional effects to riparian areas and stream channels can occur in those areas overlapping with wild horses. Recent information from effectiveness monitoring efforts indicates that some attributes of stream habitat quality are improving while habitat quality in some streams remains static. In some watersheds, certain stream habitat attributes, such as temperature and substrate embeddedness, are highly influenced by watershed road density and legacy effects from past land management practices. In these watersheds, improvements to stream habitat quality may be slow whether the proposed action is carried out as described, or not. Regardless of the current condition of stream habitat in the action area, the proposed action is expected to allow for a gradual improvement of riparian areas over time, albeit not at a 'near natural rate, which will in turn, allow for the improvement of stream habitat quality in the long term. Overtime, the proposed action, when implemented with all conservative measures and corrective actions, is expected to allow for the development of habitat conditions capable of supporting viable populations of MCR steelhead within the four affected JDR populations.

Information on end-of-grazing use endpoint indicator compliance presented in the environmental baseline section, shows that permittees have met endpoint indicators in most allotments over the last eleven years. However, some livestock use data were collected well after livestock were removed from the allotment, thereby creating question as to the true representation of livestock use these data present. The MNF is proposing a more definitive adaptive management process to respond to instances when endpoint indicators are not met. NMFS believes that the new adaptive management process provides greater certainty that the MNF can promptly identify and address any resource condition issues that may arise on the allotments and keep effects of the proposed action within the scope of this opinion. There remains the potential for occasional exceedances. The MNF's description of how they will promptly identify issues and implement corrective actions and adaptive management to address implementation concerns, however, will not inhibit development of fully functional riparian habitats within the action area.

As noted in Section 2.2, climate change is likely to affect MCR steelhead and their habitat in the John Day River basin. Although these effects are expected to be mostly negative, it is difficult to impossible to predict the specific changes that will result from climate change over the term of this consultation (2023–2027). Over the past several years, precipitation levels in the John Day

Basin have varied widely, with high waters years producing favorable conditions for MCR steelhead and low water years producing less favorable conditions. This has made it even more difficult to predict how short term changes in climate might affect MCR steelhead and their habitat. NMFS will update the environmental baseline and information on climate change in future consultations on the proposed action.

The ongoing implementation of large-scale vegetation management projects underway within the action area has the potential to improve watershed condition in the long-term and promote the recovery of MCR steelhead if they continue to be implemented. Close coordination for planning and implementing programs of work within the separate MNF program areas (e.g., timber, range, wildlife, recreation) will provide greater certainty that future desired ecological conditions and fully functional riparian habitats are achieved.

The cumulative effects of state and private actions within the action area are anticipated to continue at approximately the same level that they are now occurring and will cause no discernible change to habitat condition or trend since the action area consists almost exclusively of Federal land, and the population of Grant County does not appear to be growing.

In summary, the full implementation of the proposed action will result in injury and death of a very small number of eggs, alevins, and pre-emergent fry; and some disruption of a small number of juveniles sheltering and feeding, possibly forcing them into leaving near shore cover and entering open water where they are more vulnerable to predation. We expect these instances to be rare because of the conservation measures incorporated into the proposed action and being implemented by the MNF and the permittees. These effects will be dispersed among the affected four populations of MCR steelhead, and will not appreciably reduce or prevent the increase of abundance or productivity of these populations. The proposed action will cause minor effects to MCR steelhead habitat resulting in indirect effects to individual steelhead. These impacts to habitat will not appreciably reduce or prevent the increase of abundance or productivity of any of the populations addressed by this consultation. The proposed action will have no effect on population spatial structure or diversity. The NFJD population is currently highly viable and is viewed as necessary to maintain its viability status, but does not need significant habitat improvements, rather conservation and protection of existing conditions, in order to meet recovery goals. The proposed action affects only a small portion of this population's habitat (two allotments) and its contribution to recovery should not be adversely affected by the proposed action. The SFJD and MFJD populations have met their required recovery status in order to satisfy the recovery plan's goals, and the habitat improvement allowed for by the proposed action will help ensure this population maintains its current status. The abundance and productivity of the UJDR and LJDR populations need to improve for recovery goals to be met. By allowing for and promoting improvements to aquatic and riparian habitats over time, the proposed action should be consistent with the recovery strategy of promoting the increase of population abundance and productivity. Full implementation of the proposed action is consistent with a recovery scenario that allows the John Day MPG to reach viable status. This is a critical step toward recovery of the DPS of MCR steelhead. Thus the proposed action does not impede the survival and recovery of MCR steelhead.

Effects to Critical Habitat

Effects to CH PBFs include minor streambank alteration, small reductions in shade due to removal of herbaceous vegetation, introduction of fine sediments into streams, a small reduction in forage, and a minor reduction in overhead cover. These impacts will be minimized by implementation of the full suite of management measures proposed by the MNF.

As discussed earlier, baseline conditions have been degraded on the MNF due to past practices and legacy issues of timber harvest, range use, mining, water diversion and other land management activities of the past century. The current condition of CH within the action area ranges from degraded to highly functional. Through implementation of the full suite of management actions contained in the proposed action, the livestock management activities analyzed herein will have few effects on CH. Because of the significance of spawning and rearing habitats and the higher elevation cold water sources found within the action area, much of the CH is considered to be of high conservation value. The proposed action will have some minor effects on the quality and function of CH PBFs at the scale of the action area. The full suite of management measures proposed by the MNF will ensure that effects to PBFs are minimal. As improvements to habitat quality accrue over time, CH within the action area will be able to serve its intended important conservation role, promoting and supporting viable populations of MCR steelhead. Because of the scale and extent of the effects to PBFs, we do not expect a reduction in the conservation value of critical habitat in the action area. As we scale up from the action area to the designation area of critical habitat for each species, the proposed action is not expected to appreciably reduce the conservation value of the designated critical habitat.

2.8. Conclusion

After reviewing and analyzing the current status of the listed species and critical habitat, the environmental baseline within the action area, the effects of the proposed action, the effects of other activities caused by the proposed action, and the cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of MCR steelhead nor destroy or adversely modify CH designated for this species.

2.9. Incidental Take Statement

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined by regulation to include significant habitat modification or degradation that actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering (50 CFR 222.102). "Harass" is further defined by interim guidance as to "create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering." "Incidental take" is defined by regulation as takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or

applicant (50 CFR 402.02). Section 7(b)(4) and section 7(o)(2) provide that taking that is incidental to an otherwise lawful agency action is not considered to be prohibited taking under the ESA if that action is performed in compliance with the terms and conditions of this ITS.

2.9.1. Amount or Extent of Take

In the biological opinion, NMFS determined that incidental take is reasonably certain to occur in the form of harassment, harm, injury and death as follows:

- 1) Behavioral changes and injury or death from predation of a small number of juvenile steelhead from cattle accessing streams – Juvenile steelhead can be startled by cattle and displaced from preferred sheltering and feeding areas (harass) when cattle enter streams where fish are present, entering open water where they are more vulnerable to predation (injury and death).
- 2) Injury and death of a very small number of eggs, alevins, and pre-emergent fry from trampling – Trampling will occur when redds containing eggs, alevins, or pre-emergent fry are stepped on by cattle entering streams where redds are present. Cattle walking on the redd is reasonably likely to cause eggs, alevins, or pre-emergent fry to be crushed.
- 3) Harm, injury and death of a very small number of eggs, alevins, and pre-emergent fry from smothering – Sediment and turbidity generated by livestock impacting streambank conditions or removing riparian bank vegetation in a manner that allows exposure of bare soils or overland movement of fine sediment into the stream can smother redds when suspended sediment settles out; and can alter juvenile feeding behavior in sediment plumes.

The proposed action will permit grazing in allotments adjacent to streams that are occupied by juvenile and adult MCR steelhead. In addition, grazing will occur along streams where spawning habitat and redds are present in the action area.

There is no practicable means to monitor or observe the number of juvenile steelhead harassed or eggs, alevins, or pre-emergent fry injured or killed as a consequence of livestock walking in streams. It is, however, possible to count the number of redds trampled by cattle, or a subset of those redds. Thus, we will use the number of redds trampled as a direct measure of redd trampling and also as a surrogate for harassment, injury and death of MCR steelhead from cattle accessing the streams. This is a rational surrogate for take from cattle accessing the stream because: (1) trampled redds have the most biological impact in numbers of individuals seriously injured per episode; (2) trampled redds are indicative of cattle presence and activity at times and places where the other most sensitive MCR behaviors of spawning and early rearing take place; and (3) trampled redds lend themselves to being observed by a monitoring program because redds, unlike individual fish, are stationary and retain evidence of trampling, while individual fish are mobile and unless disturbance is viewed when it occurs it is impossible to know if a fish has been disturbed by cattle at other times.

NMFS, however, recognizes that it is not practicable to monitor all stream reaches within the action area for redd trampling. Thus, the extent of take related to the presence of cattle grazing along streams is:

- (1) Three trampled redds per year using protocols described below in the Terms and Conditions.

NMFS will consider this extent of take exceeded if more than three trampled redds are observed per year using this monitoring protocol.

In the biological opinion, NMFS also determined that incidental take is reasonably certain to occur due to habitat impacts of the proposed action (harm), injury and death of steelhead. These effects are detailed in Section 2.5 above. The habitat effects can cause eggs to pre-emergent fry to suffocate and reduce MCR steelhead forage. The number of individual MCR steelhead harmed, injured or killed by these mechanisms cannot practically be counted, nor are there practicable methods to monitor or observe steelhead. So, NMFS provides extent of take indicators as surrogates for the take caused by habitat impacts. NMFS will use well-established habitat condition indicators that are currently used by the MNF to monitor livestock impacts. These are rational surrogates because of the established relationship between the habitat condition indicators and the likelihood of take and can be measured using standardized and repeatable methodology.

NMFS believes percent bank alteration, woody browse, and greenline stubble height are the three best indicators for the habitat pathways of incidental take because: (1) The habitat effects of cattle grazing increase with cattle proximity to streams; (2) all habitat pathways of take will vary in proportion to bank alteration, bare ground present, and associated residual vegetation to include shade, channel geometry, and run-off; (3) measured streambank alteration and end-of-grazing use and associated DMA monitoring results are a function of within-season grazing, as opposed to other indicators that might require long-term trend monitoring; and (4) LB and RB bank alteration, woody browse, and greenline stubble height are measured by a standardized and repeatable methodology. It is important to point out here that NMFS is not stating that bank alteration and/or stubble height is, in itself, take, rather they are surrogates that represent identifiable effects of livestock grazing on important habitat features of CH. In and of themselves, bank alteration, woody browse, and to some extent stubble height, does not necessarily and directly cause take of steelhead in every case. Rather, NMFS believes that the overall aquatic and riparian habitat effects of grazing cattle on MNF will cause incidental take, and that measured bank alteration, woody browse, and/or greenline stubble height are the best indicators available that represents proportional effects.

It is also important to point out that, largely due to NMFS' use of bank alteration as an extent of take indicator in the prior opinions for MNF grazing, some recent research has challenged the standardized "MIM" measuring methodology. None of that research has shown that the established measurement methodology underestimates bank alteration, so any purported imperfections do not increase risk to MCR steelhead. And the research has not yet provided a practical and proven alternative measurement methodology nor has it provided adequately reliable data or findings on the extent of any overestimation. The MNF will continue to apply a

bank alteration standard with MIM measuring methodology. Accordingly, NMFS continues to support and adopts the MIM methodology for its extent of take indicator.

To best link the data collected from the MIM indicators to the proposed livestock grazing activity, and any identified adverse impacts of livestock grazing, it is important to collect data promptly after cattle are removed from the pasture; MIM protocol recommends within one week of cattle removal. To ensure that the MIM data collected at the DMA sites for implementation and compliance monitoring can be tied directly to the proposed action, NMFS limited its review to the activity occurring within the proposed permitted use dates. As move triggers and endpoint indicators are reached, actual use dates may be modified or seasonally adjusted (usually a reduction in time of use) to ensure indicators are not exceeded.

Use of the MIM end-of-grazing use endpoint indicators, as presented in the proposed action, for MSRA and non-MSRA designated CH has developed over 11 years of collected field data. At present there exists no known alternative to using the MIM protocol to assess the seasonal impacts to aquatic and riparian habitat from livestock grazing.

NMFS will consider the extent of take exceeded if any of the following occur:

- 1) Measured bank alteration exceeds the end-of-use endpoint indicator at the same DMA site in any successive years through the duration of the proposed action, or
- 2) Measured exceedance of the 6-inch greenline stubble height end-of-use endpoint indicator at the same DMA site in any successive years through the duration of the proposed action.
- 3) Measured woody browse exceeds the end-of-use endpoint indicator at the same DMA site in any successive years through the duration of the proposed action.

Exceeding any of these limits would constitute an exceedance of anticipated take that would trigger the reinitiation provisions of this opinion.

The required three short-term indicators of the MIM protocol monitored at each DMA site established for ESA compliance monitoring since 2012 provides a large body of information collected by the MNF. An information void was identified that is important to linking the end-of-grazing use data to on-the-ground riparian habitat conditions at DMAs. As part of the reasonable and prudent measures and implementing terms and conditions, NMFS is adding two modifications to the past short-term indicator data collection to better assess the effect of livestock grazing in stream courses designated as CH and therefore assist in minimizing incidental take of the proposed action.

The current reporting of “average” for the greenline (GL) stubble height and bank alteration, as called for by the MIM protocol, misses the significance that one side of a stream can be severely impacted (readily accessible with gentle slope) while the other side of the stream (maybe steep or overlaid with a large amount of woody debris) is only slightly impacted by cattle grazing activity. Cattle accessing a stream may highly impact one side (right bank or left bank) and not the other. For these few sites, NMFS is adjusting through terms and conditions, the reporting of

the data collected to obtain a more accurate representation of grazing on an established MIM DMA when the ‘averaged data’ would not identify a heavily impacted streambank. Reporting bank alteration and stubble height metrics using separate averages for each bank (not in total) through reporting of the left-bank (LB) and right-bank (RB) data will more accurately represent livestock use in CH for these two indicators. Data is already collected in this manner when using the MIM protocol, and can readily be reported out as average stubble height LB and average stubble height RB, bank alteration LB and bank alteration RB. For those scenarios where, heavy browse occurs on only one bank, the Level 1 Team can also require that, woody browse be reported LB and RB as where a notable difference is observed at the MIM DMA site.

A more complete description of existing riparian habitat condition is garnered through recording both the “greenline stubble height” (LB and RB when a difference is observed) along with “greenline composition”, as a component of the MIM monitoring protocol. The MNF and Level 1 Team found that collecting only the stubble height at the greenline does not give important information necessary to accurately represent habitat features of CH and riparian conditions observed at DMA locations. Recording of the “greenline composition” (LB and RB descriptions), along with the greenline stubble height, will best describe the riparian condition observed and explain CH conditions post-grazing activities. Greenline composition records the condition of the whole bank length within the DMA, not just the sites with hydric species (GL stubble height, as currently done on the MNF). The GL vegetation composition includes percentages of hydric species (those preferred deep-rooted sedges and rushes), other grass/grass-like species (annual and perennial), and embedded wood and rock material (often important bank-stabilizing features) for each of the measurement frames. The data will also enable one to discern the percent of bare ground. Bare ground is important in the concern of bank stability, sediment input into streams, or riparian vegetation associated with shade.

NMFS believes that collecting the GL vegetation composition indicator from the MIM protocol to the DMA site data collected, and reporting data in LB and RB format, a more accurate understanding and full description of what the current habitat conditions are with regard to documenting annual impacts from livestock grazing on CH. Over time, it may also enable identification of progress toward achieving stream recovery from the current conditions. This data will also aid in identifying the rate of riparian and stream recovery in accordance with Forest Plans.

2.9.2. Effect of the Take

In the biological opinion, NMFS determined that the amount or extent of anticipated take, coupled with other effects of the proposed action, is not likely to result in jeopardy to the species or destruction or adverse modification of its critical habitat.

2.9.3. Reasonable and Prudent Measures

“Reasonable and prudent measures” are measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02).

The MNF shall:

- 1) Minimize incidental take caused by livestock grazing along streams resulting in trampling of MCR steelhead redds and disturbing incubating/rearing juveniles by performing spawning surveys and protecting redds.
- 2) Minimize incidental take caused by habitat impacts of the proposed action.
- 3) Implement a program of annual monitoring, reporting, and responsive action to ensure that the amount and extent of take limits are not exceeded.

2.9.4. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the Federal action agency must comply (or must ensure that any applicant complies) with the following terms and conditions. The MNF or any applicant has a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this ITS (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse.

1. The following terms and conditions implement RPM 1: (redd trampling and juvenile disturbance). In all pastures grazed before July 1, the MNF shall:
 - a. Each year perform two-pass spawning surveys, separated by 2 weeks, before livestock turnout on all spawning reaches within the most sensitive riparian areas (MSRA), and single-pass spawning survey on non-MSRA CH that contains spawning habitat (lower-gradient, spawning gravels, spring water flow, etc.), to annually locate and map steelhead redds. Conduct annual spawning surveys using a fisheries biologist and/or survey personnel trained by a fisheries biologist with more than one year of redd identification and data collection experience. Use the spawning survey protocol for MCR steelhead (ODFW).
 - b. Develop annually, and share with NMFS before April 1, a spawning survey schedule identifying which streams, or stream segments, of any pasture with CH are to be surveyed that season. Schedule surveys to maximize the likelihood of detecting redds. The purpose of this effort is to identify redds that are vulnerable to trampling and therefore, require protection.
 - c. Conduct rotational spot-check of non-MSRA CH streams with potential spawning reaches for any spawning activity will ensure existing spawning reaches are identified and mapped for repeat, annual spawning surveys. These survey results may be used to inform future adjustments to the survey effort.
 - d. Because some eggs or embryos may survive a single trampling event, measures should be taken to prevent further losses when trampling has occurred. Thus, when trampling is discovered, take appropriate measures to prevent further trampling. In addition, photo-document and determine the precise location of the affected redd(s) and survey the associated pasture for additional redds.
 - e. As soon as practicable, assess the circumstances that contributed to any redd trampling and identify measures to prevent future redd trampling in that pasture.

2. The following terms and conditions implement RPM 2: (habitat effects). The MNF shall apply the following measures:
 - a. If range conditions are already at move trigger standards, cattle shall not be turned out for that year in that pasture. MNF is to provide monitoring data sheets, photos, and any data reports electronically to NMFS prior to turnout of livestock for that year—currently, before May 15. This shall always be completed in several pastures within the Murderers Creek allotment that contain wild horse populations.
 - b. Notify the permittee and NMFS if a compliance check reveals an exceedance of any MIM endpoint indicator. Notification to the permittee should occur according to MNF grazing handbook guidelines and notification to NMFS should occur in the next Level 1 Team discussion or the EOY report, whichever comes first.
 - c. For those pastures that contain steelhead CH, implement and document, in full, the Common-to-All strategies of the proposed action of the BAs (included in Section 6 of each BA) including:
 - i. Monitoring protocols including effectiveness monitoring, ecological condition of riparian areas, and spawning survey monitoring shall be conducted and documented as stated.
 - ii. Adaptive management protocols shall be documented and implemented as stated.
 - iii. Fence maintenance protocols and non-compliance issues shall be documented, implemented, and addressed as stated.
 - iv. Compliance strategy for the streambank alteration endpoint indicator shall be documented and implemented as stated.
 - v. Compliance strategy for the stubble height endpoint indicator shall be documented and implemented as stated.
 - vi. Excess use in any enclosure, pasture, or allotment containing CH shall be documented, corrected, and further deterred as stated.
 - vii. Winter and spring meetings, and key communication between the MNF and permittees shall occur as stated. The MNF will review and explain both the “Common-to-All” section of the BAs and the Terms and Conditions of this opinion to each permittee, each year of this consultation. MNF will document these conversations on the Annual Spring Permittee Meeting Checklist and provide this documentation to NMFS if requested.
 - d. Develop and share with NMFS the framework and MNF’s schedule for determining ecological condition and/or seral status of each CH stream riparian area, as specified in Section 6 of the BAs. Use these data to inform livestock management for the remainder of this consultation period and subsequent consultations in accordance with recommendations from “Enclosure B” (USDA FS 1995c).
 - e. Working with the Level 1 Team, identify priority sites each year to assess ecological condition and/or seral status and develop plans for remediation as warranted.

3. To implement RPM 3 (monitoring and reporting), the MNF shall:
 - a. Conduct an interagency meeting annually prior to livestock turnout between NMFS and MNF staff (including District Rangers, Range Staff, Level 1 Team members, and any other MNF staff deemed appropriate) to review this opinion, and inform all staff of the requirements contained within the proposed action and these Terms and Conditions. NMFS recommends that this meeting be held prior to spring meetings with permittees, so that MNF staff can adequately explain, in detail, the proposed action and the Terms and Conditions of this opinion to permittees.
 - b. Establish and ensure an appropriate DMA exists in each grazed MCR steelhead CH pasture, regardless of the timing or duration of grazing. Pastures without a DMA may not be grazed until a DMA is established using the following guidelines:
 - i. The MIM protocol will be used to measure Bank Alteration, Greenline Stubble Height, and Woody Browse, as grazing is authorized or resumed in these pastures. The identification of the monitoring location for each of these pastures will be determined using the MIM protocol for selecting the DMA (MIM TR1737-23). If no site exists that fits the MIM site selection protocol, the Level 1 Team may approve alternate sites as an exception to the rule. Any exceptions to a standard DMA selection (e.g., photo point, short segment DMA) must be reviewed and approved by the Level 1 Team.
 1. Greenline stubble height (LB and RB) will be measured in adherence to the MIM protocol which defines key species as *“plants that are important in the plant community, are relatively palatable to livestock use, and serve as indicators of change.”* Step 1 of the procedure notes that palatable hydric graminoids are preferred, however, if palatable hydric graminoids are severely lacking or absent, palatable mesic graminoids are chosen. For this opinion, to accurately reflect the stubble height at each DMA, the MNF will use hydric graminoids when present, and all other graminoid species when hydric species are absent.
 2. Greenline composition (LB and RB) will be measured according to the MIM protocol and will include, at a minimum, percentage of foliar cover, and embedded rock/anchored wood, and other (consisting of bare ground). If survey personnel can accurately identify to the genus level, percentages should be broken out. The total greenline composition must sum to 100 percent, or detailed accurate notes should be included describing any bare ground, anomalies or discrepancies.
 3. Woody species browse utilization and age class will be measured according to the MIM protocol and will include percentages of seedling (by species), young (by species), mature (by species), and rhizomatous woody.

4. Where cattle access to one side of a stream is limited (e.g., due to steepness, large wood downfall, etc.), and grazing activity appears concentrated on one bank, greenline stubble height, bank alteration, woody browse, and greenline composition will be determined per MIM protocol for both LB and RB, and reported separately for LB and RB averages, along with total average. The MNF Level 1 Team will assist with identifying those MIM DMA sites requiring data collection and separate reporting for each bank for these indicators.
 - ii. Established sites must be identified and designated by an interdisciplinary team which consists of a fisheries biologist, a hydrologist, and a rangeland specialist to ensure all metrics can be measured. DMA sites that are of questionable placement or validity (as determined by the Level 1 Team), will be reviewed by Level 1 Team personnel through field visits to ensure the appropriate site selection criteria are met.
 - iii. Monitored sites must be GPS-ed, archived, mapped, monumented, and re-monitored at the same location every year or monitoring event.
 - iv. Each monitored site must use photo points in addition to measuring and recording the MIM metrics. The Protocol for Required Photo Point Monitoring of DMAs and Photo Point Sites shall be used and is attached as Appendix A of this document.
 - v. Established DMA sites must be: located in every pasture with CH; accessible by livestock (i.e., not fenced); and the most sensitive stream reach within the pasture and located within a MSRA, if designated for the pasture, or in the highest quality, most sensitive riparian habitat in the pasture if no designated MSRA exists.
 - vi. Each year, all DMAs must be geo-referenced and provided to the Services in a GIS shapefile before livestock turnout. Shapefile updates shall be provided each year with the annual DMA monitoring schedule as noted below in subpart (b).
 - vii. Relocating or creating an alternate monitoring site due to natural disasters, establishment of permanent exclosures, or unforeseen circumstances will be conducted by an ID team and reviewed by Level 1 Team during the year of establishment.
- c. Provide the Service with an annual DMA monitoring schedule (tied to proposed/scheduled pasture off-dates, as adjusted by annual move trigger data collected) and updated GIS shapefile by May 15 of each grazing season beginning in 2023. All DMA sites must meet the criteria as described in subpart 3(b) above.
- d. Monitor, document, and report annual indicator metrics using the following procedure:
 - i. Monitor each DMA in every livestock-grazed pasture with CH quickly enough after livestock are removed from the pasture to ensure monitoring results reflect the conditions present at round up. The livestock off date and associated monitoring date is potentially modified and moved earlier

- vi. Provide, in tabular format: administrative action, compliance notices (or permittee letters) issued and date, and running count of notices issued to permittee for tracking purposes of Term and Condition #2.
- vii. Any additional available information relevant to grazing permit compliance, move trigger and endpoint indicator data, amount and extent of take conformance or exceedance, ESA-listed fish distribution or abundance data on the MNF, and any long-term trend or effectiveness monitoring data or reports for MNF.
- viii. The spawning survey data should include dates, locations, and results of surveys (redds/mile) for all reaches with turnout date overlapping the ESA-listed fish spawning incubation period. Along with the results and any mitigation measures taken, include a discussion of the effort made to identify redd trampling, suspected or confirmed, that may have occurred during the grazing season.
- ix. Identification of any vegetation treatment or restoration actions planned or being implemented for the coming year that overlap with the grazing action, and an assessment of whether the grazing will be affected by the other action and vice versa. The assessment should, for example, consider whether the other action will change cattle access or use patterns or whether measures are needed to keep cattle from impeding the purpose of the other action.

2.10. Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Specifically, “conservation recommendations” are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR 402.02). The following conservation recommendations are a discretionary measures that NMFS believes is consistent with this obligation and therefore should be carried out by the Federal action agency:

- To promote the conservation of listed fish and their CH, while gathering information on current riparian habitat condition and status (seral stage as outlined in PacFish and MIMs) and ecological potential are determined, re-evaluate current grazing strategies of repeated yearly utilization of most all pastures on the forest. This annual maximized annual use restricts the ability to allow recovery of known existing degraded conditions of many of the stream and riparian corridors. The MNF currently does not incorporate a grazing management “buffer or safety net” of grass banks or emergency-use rested pastures. This is becoming more important given the inevitable years of severe fire, drought, or other declared emergency needs for livestock grazing that will require abbreviated or curtailment of livestock use on affected allotments.
- Further, study the watershed-scale effects of grazing, including possible modification of hydrograph, suppression of palatable tree species, increased sediment yield, and changes in microclimate variables of humidity, air temperature and near-surface wind speed.
- Assess the impacts of, and incorporate into livestock grazing strategies, the changing climatic conditions that may change vegetative species distribution and availability for grazing on MNF allotments, particularly in those upper watersheds that will likely be most affected by a change in the hydrograph (more rain and less snow).
- Integrate livestock management analysis into the large-scale vegetation treatment projects, and vice versa, such that the objectives of the two dissimilar programs are integrated during planning with resultant complimentary implementation and outcomes, rather than after-the-fact coordination of two very separate NEPA planning efforts and potentially conflicting on-the-ground impacts to aquatic and riparian resources.
- Evaluate grazing management strategies for season long grazing allotments and consider if modifications or updated environmental analysis regarding livestock use may be appropriate to minimize or avoid adverse effects of such activities on listed species or their CH.

The MNF should notify NMFS if it carries out any of these recommendations so that we will be kept informed of actions that are intended to improve the conservation of listed species or their designated CH.

2.11. Reinitiation of Consultation

This concludes formal consultation for the Administration of the Aldrich, Beech, Camp Creek, Dark Canyon, Deadhorse, Deer Creek, Dixie, Fawn Springs, Fields Peak, Fox, Hanscomb, Herberger, Hot Springs, John Day, Long Creek, McClellan, McCullough, Mount Vernon, Murderers Creek, Lower Middle Fork John Day, North Middle Fork John Day, South Middle Fork John Day, Rail, Reynolds Creek, Round Top, Seneca, Slide Creek, and York Allotments for 2023-2027 on the Malheur National Forest.

Under 50 CFR 402.16(a): “Reinitiation of consultation is required and shall be requested by the Federal agency or by the Service where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and: (1) If the amount or extent of taking specified in the incidental take statement is exceeded; (2) If new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion or written concurrence; or (4) If a new species is listed or critical habitat designated that may be affected by the identified action”.

3. DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

The Data Quality Act (DQA) specifies three components contributing to the quality of a document. They are utility, integrity, and objectivity. This section of the opinion addresses these DQA components, documents compliance with the DQA, and certifies that this opinion has undergone pre-dissemination review.

3.1. Utility

Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users. The intended users are the Malheur National Forest and their applicants, the permittees. Other interested users could include citizens of the surrounding areas and other users of the public lands.

An individual copy of this opinion was provided to the MNF. This document will be available within two weeks at the NOAA Library Institutional Repository [<https://repository.library.noaa.gov/welcome>]. The format and naming adhere to conventional standards for style.

3.2. Integrity

This consultation was completed on a computer system managed by NMFS in accordance with relevant information technology security policies and standards set out in Appendix III, ‘Security of Automated Information Resources,’ Office of Management and Budget Circular A-130; the Computer Security Act; and the Government Information Security Reform Act.

3.3. Objectivity

Information Product Category: Natural Resource Plan.

Standards: This consultation and supporting documents are clear, concise, complete, and unbiased; and were developed using commonly accepted scientific research methods. They adhere to published standards including the NMFS ESA Consultation Handbook, ESA Regulations, 50 CFR 402.01, et seq.

Best Available Information: This consultation and supporting documents use the best available information, as referenced in the Literature Cited section. The analyses in this opinion contains more background on information sources and quality.

Referencing: All supporting materials, information, data and analyses are properly referenced, consistent with standard scientific referencing style.

Review Process: This consultation was drafted by NMFS staff with training in ESA and MSA implementation, and reviewed in accordance with Northwest Region ESA quality control and assurance processes.

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APPENDIX A
Photo Point Monitoring Protocol at DMA Sites for Livestock Grazing on the Malheur National Forest

Livestock Grazing Photo Point Monitoring Protocol

Objective (why, where, what, when): To photo monitor the effects of livestock grazing on a stream and riparian area over time to demonstrate the trend (upward or downward). Photo points will be compared and analyzed to show habitat trends and conditions, and to assist in making future management decisions.

- Feature photo point method documents visual changes occurring at a fixed point through time, with photos replicated periodically to demonstrate the long-term effectiveness of livestock grazing.

Tasks:

1. Identify photo monitoring site; at a minimum, use MIM DMA associated with the pasture, or PIBO site.
2. Identify what time of the year to take photos (season?); recommend photos taken during normal grazing times of use, preferably in mid- and/or late-season grazing period, without snow on the ground.
3. Ensure that enough photo points at a site are established to adequately document changes that are expected to occur (upstream and downstream views).
4. Mark or confirm photo points with stake and/or other type of identifiable marking.
5. Record GPS coordinates for each photo point location.
6. Record detailed directions for locating and taking photo points.
7. Construct a photo point map if not completed.

Equipment List:

- Camera with backup battery and adequate memory, date stamped on photos
- GPS with compass
- Clipboard and pens
- Note sheets
- Marker board with markers
- Hammer and stakes or tree markers
- Photo point maps/allotment maps
- Prior photos to replicate with new photos

Technique (avoid taking photos when visibility is poor, due to light, fog, heavy rain or snow, or when snow on the ground obscures visual results, monument markers, or habitat changes):

1. Take photos with sun at your back.
2. Choose camera settings that give greatest depth in the field “landscape” setting on digital cameras.

3. Fill out marker board with: photo point ID, date, direction of photo, stream, pasture, and allotment, or keep a notebook to record information that will correspond to the photos taken and transferred to permanent records at office.
4. Hold camera at eye level (include one-third skyline in photo) include landmarks or monuments (trees, mountains, rocks, fence lines, marker stakes) for replicating photos.
5. If replicating a photo point, ensure that the image viewed is the same as in the original photo. Look for landmarks, rocks, trees, mountains, fence lines, marker stakes, etc.
6. Save images in a consistent, designated location with identifying information (e.g., allotment, pasture, stream, DMA location data, and year).
7. Print photos and attach a photo point map/allotment map and include in allotment/pasture field record fold.