2022-2025
Integrated Natural Resources Management Plan

Fort Harrison Training Area and Limestone Hills Training Area

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COVER PHOTOS

Clockwise from top left: Limestone Hills Training Area – SGM Mike Bailly; Mountain bluebird – Chris Denning; Fort Harrison Training Area – Jeff Stone; Bighorn sheep - unknown

SIGNATURE PAGE

Updated Integrated Natural Resources Management Plan
Fort Harrison and Limestone Hills Training Areas

This Updated Integrated Natural Resources Management Plan (INRMP) meets the requirements for INRMPs listed in the Sikes Act Improvement Amendments (16 U.S.C. 670a et seq.), and AR 200- 1. It has set appropriate and adequate guidelines for conserving and protecting the natural resources of Fort Harrison and Limestone Hills Training Areas.

Approving Officials

_____ Signature Date	Anthony Hammett Col, EN, Chief, U.S. Army National Guard G9
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LIST OF ACRONYMS

°F	Fahrenheit
ACUB	Army Compatible Use Buffer
ARNG-G9	Army National Guard G9
amsl	above mean sea level
AR	Army Regulation
ARNG-ILE	Army National Guard Environmental Division
BLM	Bureau of Land Management
BMP	Best Management Practice
BTPD	black tailed prairie dog
CEMML	Center for Environmental Management of Military Lands
CFMO	Construction and Facilities Management Office
CFMO-ENV	Construction and Facilities Management Office-Environmental Management Bureau
CFR	Code of Federal Regulations
cfs	cubic feet per second
CWA	Clean Water Act
DDESB	Department of Defense Explosives Safety Bureau
DOA	Department of Army
DoDI	Department of Defense Instruction
DoD	Department of Defense
DOJS	Director of the Joint Staff
DUSD	Deputy Undersecretary of Defense
EA	Environmental Assessment
EDRR	Early Detection and Rapid Response
EIS	Environmental Impact Statement
EPM	Environmental Program Manager
ESA	Endangered Species Act
ESG	Ecological Solutions Group
FAR	Functional At Risk
FH	Fort Harrison
FHTA	Fort Harrison Training Area
GYE	Greater Yellowstone Ecosystem
HUC	hydrologic unit code
IA	Implementation Agreement
INRMP	Integrated Natural Resources Management Plan
IPMP	Integrated Pest Management Plan
ITAM	Integrated Training Area Management
IWFMP	Integrated Wildland Fire Management Plan
G-3	Operations and Training Directorate
JFHQ-MT	Joint Forces Headquarters-Montana
LEIS	Legislative Environmental Impact Statement
LHTA	Limestone Hills Training Area

LRAM	Land Rehabilitation and Maintenance
MBMG	Montana Bureau of Mines and Geology
MBTA	Migratory Bird Treaty Act
MDA	Montana Department of Agriculture
MDEQ	Montana Department of Environmental Quality
MFISH	Montana Fisheries Information System
mi	mile
MTFWP	Montana Department of Fish, Wildlife and Parks
MTNHP	Montana Natural Heritage Program
MOA	Memorandum of Agreement
MTARNG	Montana Army National Guard
MTDMA	Montana Department of Military Affairs
NCDE	Northern Continental Divide Ecosystem
NEPA	National Environmental Policy Act
NF	Nonfunctional
NMRA	Northwest Montana Recovery Area
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRM	Natural Resources Manager
OHWM	Ordinary High Water Mark
PFC	Proper Functioning Condition
PPLT	Prickly Pear Land Trust
RA	Roadless Areas
REC/	Record of Environmental Consideration/Environmental Checklist
RCMP	Range Complex Master Plan
ROD	Record of Decision
ROW	Right-of-way
RPW	Relatively Permanent Waters
RTLA	Range and Training Land Assessment
SAIA	Sikes Act Improvement Act
SMZ	Special Management Zone
SPUL	State Pesticide Use List
SRA	Sustainable Range Awareness
STEP	Status Tool for the Environmental Program
SWANCC	Solid Waste Agency of Northern Cook County
TCHQ	Training Center Headquarters
TNW	traditional navigable waterways
TtEMI	Tetra Tech EMI
TRI	Training Requirements Integration
USACE	U.S. Army Corps of Engineers
USC	United States Code
USEPA	United States Environmental Protection Agency
USFS	U.S. Forest Service

USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UXO	unexploded ordnance
VA	Veterans Administration
WMA	Wildlife Management Area
WOTUS	Waters of the United States
WQC	Water Quality Certification
WRCC	Western Regional Climate Center

EXECUTIVE SUMMARY

This Integrated Natural Resources Management Plan (INRMP) is an update and consolidation of the most recent INRMPs that were developed for the Fort Harrison Training Area (FHTA) and the Limestone Hills Training Area (LHTA) in 2011 and 2014, respectively. Internal review of the 2011 FHTA INRMP and the 2014 LHTA INRMP determined that the two documents could be combined into one document which addresses both installations. As required by the Sikes Act "Conservation Programs on Military Reservations" (16 U.S.C. §670a et seq., as amended) and Army Regulation 200-1 (AR 200-1) *Environmental Protection and Enhancement*, this INRMP is being prepared consistent with the Sikes Act guidance, which requires federal military installations with significant natural resources and wildlife habitat to develop long-range integrated natural resources management plans and implement cooperative agreements with other agencies. This INRMP describes natural resource management activities planned between 2022 and 2025 and provides a foundation from which to build the program beyond 2025.

This INRMP was developed with cooperation and input from other federal and state government agencies. Developed using an interdisciplinary approach, information has been gathered from the Construction and Facilities Management Office – Environmental Management Bureau (CFMO-ENV) and other Montana Army National Guard (MTARNG) staff. The U.S. Fish and Wildlife Service (USFWS), Montana Fish Wildlife and Parks (MTFWP), and Army National Guard G-9 (ARNG G-9) have also reviewed this updated INRMP. All applicable comments received on the draft INRMP are addressed in the final INRMP.

FHTA encompasses approximately 6,692 acres located just west of Helena, Montana, and is under the command of the Montana Department of Military Affairs (MTDMA). The land within FHTA is comprised of federal military lands (Department of the Army), plus other leased Bureau of Land Management (BLM) and State of Montana land. FHTA serves as the headquarters for the MTARNG as well as a training installation. The primary purpose of FHTA is to support the mission of the MTARNG. The INRMP is designed to support and accommodate accomplishment of the military missions while providing for natural resource stewardship and management. Approximately 90.5 percent (6,056 acres) of the installation consists of undeveloped natural areas including grassland, shrubland/grassland, forest, wetland, and two intermittent streams.

The LHTA encompasses approximately 21,494 acres located just southwest of Townsend, Montana, and is under the command of the Department of Army with a license to MTARNG. Approximately 18,845 acres are federally administered land (Department of Army and BLM) and approximately 2,649 total acres are state-administered and private land. The primary purpose of the LHTA, which serves as a training installation, is to support the missions of the MTARNG. Most of the installation consists of undeveloped natural areas including grassland, shrubland/grassland, forest, wetland, and one perennial stream.

Using the Army's Environment, Safety, and Occupational Health Strategy 2025, DoDI 4715.03, and the Army Regulations described above, MTARNG natural resource managers have developed objectives for natural resource management to support training mission requirements as well as conserving natural systems. Goals and objectives as well as supporting plans and actions are found in the appendices.

The INRMP is a working document in which adaptive management principles are used to ensure goals, objectives, and projects, are realistic and effective. INRMP objectives and resultant projects may be adjusted based upon changes to the military mission, monitoring or survey results, new data, or regulatory changes. Based upon the annual review of INRMP projects, the MTARNG Environmental Program Manager may recommend modifications to the INRMP. The INRMP will be kept current on an annual basis, and will be reviewed and updated, if necessary, at least every 5 years.

1.0 INTRODUCTION

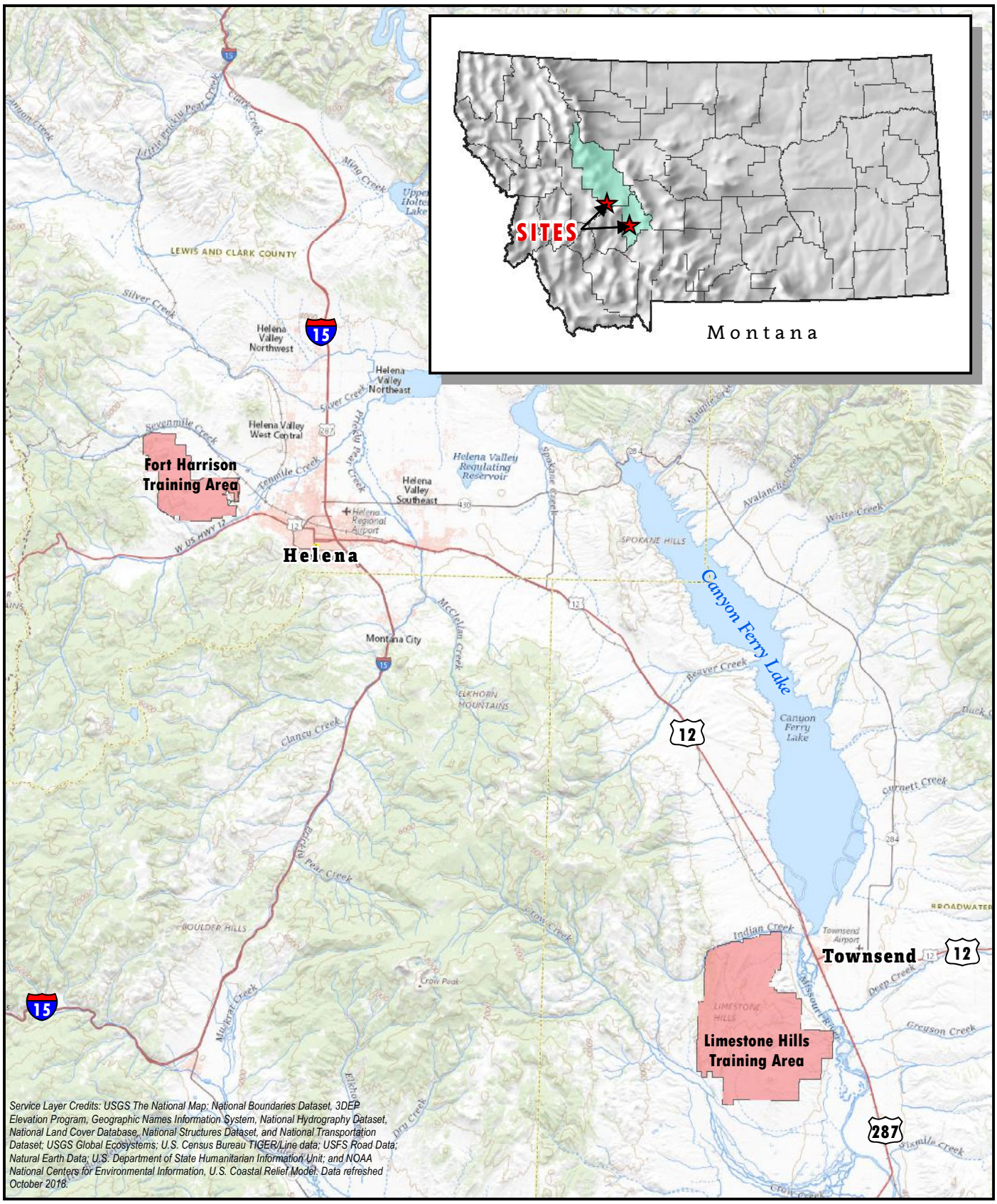
1.1 PURPOSE

The MTARNG maintains the FHTA and LHTA to support federal, state, and local training missions (**Figure 1**). The MTARNG manages land on its training sites with the goal that no net loss of training land results from training or natural resources management activities. In addition, the MTARNG intends to enhance training potential and natural resources to the greatest extent possible through its management practices. The overriding goals of this Integrated Natural Resource Management Plan (INRMP, or Plan) are to minimize impact on training lands, to effectively repair damage caused by training activities, to improve the mission-specific qualities of the training lands, and to protect and enhance the ecosystem value of the FHTA and LHTA.

This INRMP is the principle guiding document for MTARNG land management activities taking place on both the FHTA and LHTA; and is an update and consolidation of the previous FHTA and LHTA INRMPs that were developed in 2011 and 2014, respectively. Internal review of the 2011 FHTA INRMP and the 2014 LHTA INRMP determined that the two documents could be combined into one document which addresses both installations, while providing separate site-specific goals and objectives for each location. This INRMP describes natural resource management activities planned between 2022 and 2025 and provides a foundation from which to build the program beyond 2025. An INRMP for the FHTA and LHTA is required by the Sikes Act "Conservation Programs on Military Reservations" (16 United States Code [USC] §670a et seq., as amended and Army regulation, which requires federal military installations with significant natural resources and wildlife habitat to develop long-range integrated natural resources management plans and implement cooperative agreements with other agencies. The lands in the FHTA and LHTA are federal military lands, as well as other leased federal and state lands.

The Sikes Act Improvement Act (SAIA) requires a review "as to operation and effect," (See *Section 1.2*) no less than every 5 years to keep the INRMP current. Major changes require a revision be conducted, while minor changes can be incorporated with an update to the existing INRMP. The need for either a revision or update will be made based on the review for "operation and effect". In the past, the MTARNG has prepared separate INRMPs for each installation. The result of the combining of these separate INRMPs will be a living document to be reviewed annually and updated as needed.

As outlined above, this INRMP addresses the geographic area associated with the two major training installations of the MTARNG: FHTA and LHTA.



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Location Map
MTARNG INRMP
Limestone Hills Training Area
and Fort Harrison Training Area
Lewis and Clark and Broadwater
Counties, Montana
FIGURE 1

Natural resource management is an on-going, long-term process. This and subsequent INRMPs will serve to shape the direction of that process to support the military mission of the MTARNG, encourage sustainable management of natural resources, and ensure compliance with all relevant federal, state, and local laws. The ultimate goals outlined within this INRMP will not be achieved immediately but will be carried over into future documents and will continue to direct the focus of projects and management activities on both the FHTA and LHTA.

1.2 SCOPE

The goals of natural resources management on FHTA and LHTA are consistent with the Army's Environment, Safety, and Occupational Health Strategy 2025, Department of Defense Instruction (DoDI) 4715.03, and the Army Regulations described above, and include:

- Ensure no net loss in the capability of military lands to support the military mission of the MTARNG;
- Ensure the long-term sustainability of the lands to support the military mission;
- Maximize integration among natural resources programs, and integration of those resource management strategies with military operations;
- Ensure that all activities, including natural resource management activities, comply with federal and state laws, Department of Defense (DoD) Instructions, Army Regulations, National Guard Bureau guidance, and MTARNG policy related to natural resources;
- Manage natural resources according to an ecosystem management approach to maintain a healthy natural environment;
- Maintain or increase the abundance and diversity of native species; and
- Accommodate multiple uses of the land.

Maintaining optimal environmental conditions on training lands is essential for the success of the military mission. Therefore, the focus of this INRMP is to propose updated projects that will achieve the management goals and objectives set forth in this document. Unlike previous versions of the MTARNG INRMPs, the management goals and objectives for each natural resource program have been placed in individual appendices. This will allow the Construction and Facilities Management Office, Environmental Bureau (CFMO-ENV) staff to perform annual updates more easily without a complete rewrite of the entire document. Goals and objectives are described in **Appendix A** and specific projects are outlined in **Appendix B**. The updated INRMP is based on the philosophy of ecosystem management with the intention of demonstrating the interdependency between the military mission and natural resource management.

An INRMP describes the current conditions of natural resources at a military installation (**Appendices C, D, E, and F**) and provides management programs and guidance allowing for the performance of successful military training (**Appendices G through O**), while providing for the conservation of natural resources and long-term resource sustainability. Specific plan expectations include the following:

- Provide a comprehensive plan for the MTARNG to carry out its mission while promoting ecosystem health and biodiversity at the FHTA and LHTA and in the surrounding region;
- Document goals, objectives, guidelines, and the future direction for natural resource management;
- Establish a framework for implementing natural resource programs and ecosystem management;
- Provide centralized information on the natural resource program status;
- Identify environmental constraints to land use so that military training can be matched with the ecosystem carrying capacity;
- Identify mission-related impacts and options for conflict resolution;
- Address other MTARNG plans and programs and provide a summary of the key inter-relationship with the other plans that are relevant to natural resources conservation and management.
- Serve as a baseline of existing environmental conditions for defensible future Environmental Assessments (EA) and Environmental Impact Statements (EIS);
- Ensure the installation complies with legal requirements and conservation law enforcement mechanisms pertinent to natural resources management; and
- Identify, prioritize, and schedule long-term budget requirements.

The management programs addressed in this INRMP include training area management, land management, soil erosion management, wildlife management, terrestrial habitat management, wetlands management, special status species management, invasive plant management, fire management, and grazing management.

1.3 AUTHORITY

The preparation of this INRMP is in accordance with the provisions of the Natural Resource Management on Military Lands Act of 1960 (16 U.S.C. 670a *et seq.*), commonly known as the Sikes Act, as amended according to the SAIA of 1997. The Sikes Act requires that INRMPs be reviewed regularly, but not less than every 5 years. The SAIA specifically directs that INRMPs be reviewed "as to operation and effect," not less than every 5 years, emphasizing that the review is intended to determine whether existing INRMPs are being implemented to meet the requirements of the SAIA and contribute to the conservation and rehabilitation of natural resources on military installations. Furthermore, INRMPs must be reviewed and signed by the U.S. Fish and Wildlife Service (USFWS), and the state wildlife management agency, Montana Fish, Wildlife and Parks (MTFWP).

Consistent with the SAIA, this INRMP shall, to the extent appropriate and applicable, provide for:

A. Fish and wildlife management, land management, forest management, and fish- and wildlife-oriented recreation;

B. Fish and wildlife habitat enhancement or modifications;

C. Wetland protection, enhancement, and restoration, where necessary for support of fish, wildlife, or plants;

D. Integration of, and consistency among, the various activities conducted under the plan;

E. Establishment of specific natural resource management goals and objectives and time frames for proposed action;

F. Enforcement of applicable natural resource laws (including regulations);

G. No net loss in the capability of military installation lands to support the military mission of the installation; and

H. Such other activities as the Secretary of the military department determines appropriate.

The MTARNG is committed to the concept of integrating natural resource management with its mission activities. The MTARNG recognizes that successful execution of its mission is dependent upon the sustainable management of the environment. Therefore, the MTARNG is committed to the planned management of natural resources, supporting the installation's operational mission, meeting, or exceeding stewardship requirements, and enhancing the quality of training for its soldiers.

DoDI 4715.03, Natural Resources Conservation Program (2011), states that it is Department of Defense (DoD) policy that the principal purpose of DoD lands, waters, airspace, and coastal resources is to support mission-related activities. All DoD natural resource conservation program activities shall work to guarantee the DoD continued access to its land, air, and water resources for realistic military training and testing, as well as to sustain the long-term ecological integrity of the resource base. This is accomplished through management practices that facilitate long-term comprehensive range sustainability while demonstrating stewardship of natural resources by protecting and enhancing those resources for support of the military mission, and maintenance of ecosystem integrity to the greatest extent feasible.

This INRMP has been prepared pursuant to the following laws, regulations, and directives:

- Installations, Energy and Environmental Strategy 2025 (Department of the Army 2015);
- Department of Defense Instruction (DoDI) 4715.03, Natural Resources Conservation Program (2011);
- Department of Defense Manual (DoDM) 4715.03, Integrated Natural Resource Management Plan (INRMP) Implementation Manual, 25 Nov 2013;
- National Guard Bureau Memorandum, 20 March 2019: Army National Guard (ARNG) Installations and Environment (I&E) Directorate Policy for Integrated Natural Resource Management Plans (INRMP);

- Army Regulation (AR) 200-1, Environmental Protection and Enhancement, effective 27 December 2007;
- Environmental Effects of Army Actions, 32 Code of Federal Regulations (CFR) 651;
- AR 350-19, The Army Sustainable Range Program (2005);
- 32 CFR 190, Appendix – Integrated Natural Resources Management.

1.3.1 Federal and State Compliance

An ecosystem approach depends not only on the actions and practices of MTARNG, but also on those of neighboring public and private landowners. The MTARNG has formed partnerships with federal and state agencies to help facilitate the implementation of this INRMP. The following agencies are considered stakeholders and were afforded an opportunity to comment on a draft of this INRMP.

U.S. Fish and Wildlife Service

The USFWS provides guidance to private landowners, enforces federal wildlife laws, and administers the Endangered Species Act. The USFWS is a cooperator in the development and implementation of this Plan in accordance with the Sikes Act. The agency is responsible for reviewing the relevant natural resource portions of this INRMP and providing guidance on federally protected species and wetland management.

Montana Department of Fish, Wildlife and Parks

The MTFWP is the principal state agency responsible for conserving, protecting, and enhancing fish and wildlife and their habitats within the state of Montana. The MTFWP is a cooperator in the development and implementation of this Plan in accordance with the Sikes Act. This agency, along with the USFWS, will assist the CFMO-ENV in developing ongoing management plans relevant to natural resource use and review the relevant natural resource portions of this INRMP.

1.3.2 National Environmental Policy Act

An Environmental Assessment (EA) was completed for the original INRMP in 2001. The MTARNG reviewed the existing EA, per 32 CFR 651.5.g.2, to ascertain the adequacy of its analysis and see if it is still relevant. After examining the goals, existing conditions, projects, and environmental consequences of the original EA, MTARNG has determined there is no significant change since the original environmental assessment. Therefore, this updated INRMP can be treated as a tiering action and documented in a Record of Environmental Consideration (REC)/Environmental Checklist. This REC is attached in **Appendix Q**.

2.0 MTARNG OVERVIEW

Properties owned, controlled, and used by the MTARNG encompass approximately 37,697 acres, much of which (74 percent) are contained within FHTA and LHTA, respectively. The remainder of MTARNG lands are located throughout the state of Montana. The MTARNG maintains 16 readiness centers or reserve centers in 16 communities around Montana. This INRMP applies to only the two largest of the MTARNG training facilities – FHTA and LHTA.

The FHTA occupies approximately 6,692 acres in Lewis and Clark County. The lands in FHTA include federal military lands, plus other leased federal and state land. Approximately 3,010 acres are administered by the Department of the Army; 2,140 acres are administered by the State of Montana; and 1,541 acres are administered by the BLM.

The LHTA, located in Broadwater County, occupies approximately 21,494 acres, of which 18,845 acres are federal land and approximately 2,649 total acres are state and private land. The State of Montana lands are used for military training under lease agreements with the Montana Department of Military Affairs (MTDMA). Private lands located within the LHTA are off-limits for military training. The State of Montana lands are managed according to the details of the lease agreement regarding noxious weed management, land use, and grazing.

2.1 RELATIONSHIP TO THE MILITARY MISSION

The MTARNG has federal, state, and local missions. The MTARNG leadership recognizes that a healthy and viable natural resource base is required to support the military mission. To be effective, the natural conditions of the training areas must be maintained to provide realistic training opportunities. Areas negatively impacted by previous training activities may impair current and future training activity. This INRMP helps to ensure that environmental considerations are an integral part of planning activities at the FHTA and LHTA and natural resources are protected in accordance with state and federal laws, and Army regulations and policies.

2.2 MANAGEMENT PHILOSOPHY

DoD and Army Natural Resources policies, regulations, and programs are based on the concept that natural resources management is an integral component of the primary mission of military use. The MTARNG must train; therefore, the MTDMA will manage the FHTA and LHTA to conserve valuable training resources, including the natural environment. Management of natural resources on a landscape and ecosystem level ensures the sustainable use of training lands while considering the effects on the surrounding environment and public interest.

3.0 INRMP IMPLEMENTATION

FHTA and LHTA depend on natural resources and their sustainable use for the sustainability of installation training programs. This INRMP is not intended to impair the ability of the MTARNG to perform its mission. However, the INRMP does identify usage restrictions on sensitive attributes such as wetlands, and species of concern.

Implementation of this INRMP will be realized through the accomplishment of specific goals and objectives as measured by the completion of projects described within this INRMP. Because all INRMP projects may not be funded in accordance with levels of effort and schedules described in this plan, implementation of the INRMP is assessed based upon metrics established by the DoD. An INRMP is considered implemented if an installation:

- Actively requests, receives, and uses funds for "must fund" projects and activities;
- Ensures that sufficient numbers of professionally trained natural resource management staff are available to perform the tasks required by the INRMP; and
- Annually reviews the INRMP, documenting accomplishments completed each year and coordinating with public agencies as needed.

3.1 ROLES AND RESPONSIBILITIES

The Adjutant General of the MTARNG, located at FHTA in Helena, Montana, is directly responsible for the operation and maintenance of the FHTA and LHTA, which includes implementation of this INRMP. The Adjutant General ensures that all installation land users are aware of and comply with procedures, requirements, or applicable laws and regulations that accomplish objectives of the INRMP. The Adjutant General also ensures coordination of projects and construction among environmental, training, and engineering staff. Two key positions within the Adjutant General's office are the Deputy Director, who supervises the state military-supported office, MTDMA, and the Director of the Joint Staff (DOJS), who supervises all MTARNG programs.

The primary purpose of the MTARNG's Construction and Facilities Management Office (CFMO), also located at Fort Harrison, is to support the military mission through the construction, development, and maintenance of facilities used by the MTDMA. The CFMO supervises the operations of the Environmental Bureau.

The Environmental Bureau, also located at Fort Harrison, acting through its Environmental Program Manager (EPM), under supervision of the CFMO, is responsible for preparation and implementation of this INRMP. The Environmental Bureau develops projects, secures required permits, conducts field studies, provides environmental awareness materials, identifies natural resources, directs the NEPA process, and manages the development and update of the INRMP. The EPM designates to the Natural Resources Manager (NRM) the responsibility for the annual review of the INRMP. The EPM is also responsible for implementing the Integrated Training Area Management (ITAM) program. ITAM maintains the live maneuver training environment and sustains the Army's live training capability by repairing maneuver damage and creating a resilient and resistant training land base. ITAM fundamentally

supports installation compliance with the Sikes Act and is a critical component of installation natural resource management. Components of ITAM include:

- Land Rehabilitation and Maintenance (LRAM): Maintains, repairs, and reconfigures maneuver land.
- Range and Training Land Assessment (RTLA): Monitors maneuver land condition to determine how well it can support the Army maneuver training mission.
- Sustainable Range Awareness (SRA): Educates maneuver land users to prevent unnecessary maneuver damage.
- Geographic Information Systems (GIS): Geospatial data development, geospatial analysis, and cartographic support for Range Operations, Range Safety, Range Modernization, and ITAM.

The G-3 Operations and Training Directorate (G-3), located at FHTA, is responsible for the planning, coordination, organizational development, and integration of Joint Forces Headquarters-Montana (JFHQ-MT) operations to include the Joint Operations Center of the JFHQ-MT. The G-3 conducts this mission through planning, coordinating, information sharing and integrating all aspects of MTARNG Operations. These operations include, but are not limited to, training, force integration, readiness, mobilization, and domestic operations including congressionally mandated programs. The G-3 serves as a primary advisor to the Adjutant General and the Director of the Joint Staff for the formulation of plans, policies, and the programming/budgeting data pertaining to current and future training and operations.

The Training Center Headquarters (TCHQ) for the MTARNG, located at FHTA, is an office responsible for scheduling training events, participating in the execution of the ITAM program in conjunction with the Environmental Bureau, and providing billeting. TCHQ maintains operational control of MTARNG training areas including the FHTA and LHTA. TCHQ maintains liaisons with other military commands, and federal, state, county, and local agencies. TCHQ coordinates training activities, planning, and operations with the Environmental Bureau to ensure there are no conflicts with environmental or natural resource priorities or legal requirements.

Two ARNG directorates are involved in the management of natural resources: ARNG G-9 and ARNG Operations, Training, and Readiness (ARNG TRS). The ARNG G-9 is the directorate responsible for environmental matters. ARNG TRS is responsible for training and training site support to include sustainable range management and the ITAM program.

The Natural Resources Manager at ARNG G-9 is responsible for reviewing the INRMP and the Chief, ARNG G-9 approves the INRMP. ARNG G-9 is responsible for tracking funding, providing technical assistance, quality assurance, and execution of funds.

ARNG G-9 also provides policy guidance and resources to create, sustain, and operate facilities that support the Army National Guard. ARNG I&E coordinates proposed construction projects with ARNG TRS and provides design and construction support, as well as environmental management that is directly related to property maintenance (e.g., grounds maintenance, pest control).

3.2 FUNDING

Implementation of this INRMP is subject to the availability of annual federal funding. The installation requests project review and funding through the Status Tool for the Environmental Program (STEP), an online computer program managed by ARNG G9 developed for and accessible only to the ARNG G9. Funding for the Environmental Bureau staff and standard supplies come from direct funding sources. Funding sources for specific projects can be grouped into three main categories by source: Federal ARNG Funds, Other Federal Funds, and Non-Federal Funds. Each is discussed in the following subsections.

Where projects identified in the INRMP are not implemented due to lack of funding, or other compelling circumstances, the installation will review the goals and objectives of this INRMP to determine whether adjustments are necessary.

The following discussion of funding options is not an all-inclusive listing of funding sources. Since many funding sources rely on a variety of grant programs, award criteria and amounts can change considerably from one year to another. Funding through grant programs can occur as a one-time award, annually or in multiples of years.

3.2.1 ARNG/MTARNG/MTDMA Funding

The ARNG G9 is the primary source of federal funding to support the management of natural resources at the FHTA and LHTA through a master cooperative agreement with the MTDMA. This budget is managed by the MTARNG EPM. The ARNG provides funding for natural resource surveys, environmental monitoring projects, and compliance-related projects.

The ARNG G9 provides funding for the personnel, equipment, and supplies in support of the CFMO. This office is involved in planning, scheduling, maintenance of roads and trails, vegetation management, pest management, facilities infrastructure, and military construction planning, all of which are critical to the natural resource management program.

3.2.2 ITAM Funds

The ARNG G-3 provides federal funding to support the ITAM program. The installation requests project review and funding through the ARNG Range Complex Master Plan Tool, an online computer program managed by the ARNG G-3 Land Team. ITAM funding is not intended to address or correct statutory compliance or conservation requirements. These requirements continue to be funded through the ARNG G9. ITAM core capability resources are not intended to be used to perform routine range management. Instead, these requirements are funded through the Range and Training Land Program. Lastly, ITAM funding is not intended to replace normal base operations activities on training lands normally funded by CFMO.

3.2.3 Other Federal Funds

Cooperative agreements may be entered with states, local governments, non-governmental organizations, and individuals for the improvement of natural resources or to benefit natural resources research on federally managed training sites. Upon written concurrence of the FHTA and LHTA INRMP by

the USFWS and the MTFWP, these agencies become signatory cooperators of this Plan. Therefore, the potential for access to matching funds programs and services offered by these agencies may be available.

Program initiatives under the Clean Water Act (CWA) provide funding through several sources. The U.S. Environmental Protection Agency's (USEPA) Office of Water sponsors those projects related to the CWA. Available funding may support programs such as cost-sharing for overall water-quality management (e.g., monitoring, permitting, and enforcement), stream water quality assessments and mitigation measures, and implementation of non-point source pollution control measures.

The Legacy Resource Management Program provides financial assistance to DoD efforts to conserve natural resources on federal lands. Legacy projects could include regional ecosystem management initiatives, habitat preservation efforts, invasive species control, and/or flora or fauna surveys. Legacy funds are awarded based on national visibility.

3.3 Conditions for Implementation and Revision

The MTARNG EPM is responsible for directing the management of natural resources and for the development and implementation of the INRMP. Successful implementation of the INRMP will require:

- Administrative and technical support;
- Agency cooperation and technical assistance;
- Funding;
- Priorities and scheduling;
- Production of project scopes and budgets; and
- The ability to amend and revise this document as necessary.

Where projects identified in the Plan are not implemented because of lack of funding, or other compelling circumstances, the installation should review the goals and objectives of this INRMP to determine whether adjustments are necessary.

The INRMP is effective from the date of approval until a major change in mission or environment occurs. This INRMP update is being done to update the information in the previous FHTA and LHTA INRMPs and consolidate into one combined INRMP for both installations. There has been no major change in environment, management, or military mission to warrant a full revision. All participating stakeholders agree that an update is sufficient to achieve Sikes Act compliance. Page revisions can be made when major updates are unnecessary. Information such as that relating to the soils, natural vegetation, and environmental data, that do not require updating, will be retained in the Plan. Annual reviews, 5-year reviews for "operation and effect", and updates will be conducted by the NRM with input from the G-3, TCHQ, CFMO, MTDMA, USFWS, MTFWP, and other stakeholders. Refer to **Appendix P** for Plan specific review details.

4.0 REFERENCES

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Appendix A
Natural Resource Goals and Objectives

APPENDIX A. NATURAL RESOURCE GOALS AND OBJECTIVES

In accordance with DoD and U.S. Army Policy, the MTARNG Environmental Bureau manages natural resources at FHTA and LHTA using an ecosystem management approach. This approach is based upon establishing main goals and supporting objectives, implementing projects to reach objectives, and monitoring progress toward objectives. This appendix describes goals and objectives collectively established by MTARNG natural resource managers for both FHTA and LHTA. Goals and objectives are organized by resource and are designed to integrate the efforts of several programs in managing each resource. As outlined below, based upon a series of main goals, MTARNG natural resource managers have developed objectives to guide management, metrics to meet those objectives and a schedule of monitoring activities for the next 5 years. Specific projects designed to achieve each objective and, in some instances, measure ecosystem conditions and progress toward objectives are listed in **Appendix B** and further described by resource in **Appendices G through O**, respectively. Objectives and projects are described in as much detail as practicable, to facilitate implementation and progress monitoring.

1.1 SOILS MANAGEMENT GOALS AND OBJECTIVES

As outlined in **Appendix B** and detailed in **Appendix G**, soil erosion control management goals and objectives and associated projects within the FHTA and LHTA are included below.

Goals:

- 1A. Reduce erosion by remediating existing areas of bare/damaged soil.
- 1B. Prevent soil erosion and its potential impacts on water quality, habitat, and mission objectives.

Objective 1a: Implement the LRAM program to rehabilitate areas of bare/damaged soil.

- Monitoring Metric: Using RTLA procedures, monitor rehabilitated sites. Evaluate vegetative cover. Allow no more than 10% loss in native vegetative cover annually.
- Project 1: Annual survey to identify and rehabilitate bare soil areas within active training areas.

Objective 1b: Utilize RTLA procedures to conduct annual installation-wide surveys to identify areas that need rehabilitation to reduce the amount of soil movement and prioritize degraded or eroded areas requiring rehabilitation.

- Monitoring Metric: Soil erosion indicators (i.e., plant pedestalling, rills, gullies, wind scouring)
- Project 1: Identify training areas experiencing soil erosion and loss.

1.2 Fish and Wildlife Management Goals and Objectives

As outlined in **Appendix B** and detailed in **Appendix H**, wildlife management goals and objectives and associated projects within the FHTA and LHTA are described below.

Goal:

- 2A. Restore and maintain indigenous wildlife species using integrated ecosystem management principles while accommodating military training needs.

Objective 2a: Continue monitoring of nesting bird and big game species to determine if trends exist related to military training and/or land management practices.

- Monitoring Metric: Species richness and diversity
- Project 1: Survey to assess current fauna populations, distributions, and presence as well as the presence of T&E species.
- Project 2: Project will conduct point counts for landbirds to avoid future noncompliance with MBTA. Figures H-1 and H-2 show existing landbird monitoring plots at FHTA and LHTA, respectively.

Objective 2b (FHTA-Specific): Modify fence lines to be wildlife friendly per MTFWP guidelines and remove any unnecessary fence with approval from ENV.

- Monitoring Metric: Length (feet) of wildlife friendly fence and fence removed.
- Project 1: Project will entail inspection of the southern boundary fence and adjust wire spacing to facilitate wildlife movement.

Objective 2c (LHTA-Specific): Maintain water source protection barriers around all water sources to ensure a sustainable and reliable water source for livestock and wildlife.

- Monitoring Metric: Length (feet) of fence.
- Project 1: Project will include biannual inspections of wildlife water source protection barriers.

1.3 Habitat Management Goals and Objectives

As outlined in **Appendix B** and detailed in **Appendix I**, habitat management goals and objectives and associated projects within the FHTA and LHTA are described below.

Goal:

- 3A. Assess and monitor the health, vigor, diversity, and trend of native vegetation types on both FHTA and LHTA.

Objective 3a: Quantify the vegetation health of native plant communities.

- Monitoring Metric: Vegetation Score as detailed in Ecodata plot reports.
    - PFC (Proper Functioning Condition [Healthy]) = score rating from 80 to 100 percent
    - FAR (Functional At Risk [Healthy, but with Problems]) = score rating from 60 to 80 percent
    - NF (Nonfunctional [Unhealthy]) = score rating below 60 percent
- Project 1: Monitor a sample of existing Ecodata plots on an annual rotating basis.

Objective 3b (FHTA-Specific): Identify plant communities dominated by non-native vegetation for the most cost-effective locations to re-establish native vegetation as the dominant component.

- Monitoring Metric: Greater than 75% native vegetation.
- Project 1: Project will identify areas where the plant community is greater than 40% non-native and target these areas for native plant re-establishment.

Objective 3c (LHTA-Specific): Re-establish native shrubs, specifically Cercocarpus ledifolius, within suitable habitat where the shrub component has been removed due to historic fires.

- Monitoring Metric: Seedling density per acre/Percent cover native shrubs
- Project 1: Project will identify appropriate sites and install transplants or broadcast native shrub seed into these sites.

1.4 Wetlands and Water Management Goals and Objectives

As outlined in **Appendix B** and detailed in **Appendix J**, wetlands and water management goals and objectives and associated projects within the FHTA and LHTA are described below.

Goals:

- 4A. Protect and rehabilitate vegetative buffers on waterways.
- 4B. Minimize nutrient and sediment inputs from watersheds.
- 4C. Maintain functional, healthy wetlands that are resilient to minor, inadvertent encroachments and impacts.

Objective 4a: No net loss of wetland acreage, function, or value.

- Monitoring Metric: Monitor minimum area of 0.1 acres of wetlands and sensitive areas.
- Project 1: Annual monitoring to identify and prevent unauthorized activity into wetland buffer areas.
- Project 2: Site survey of LHTA to update potential wetland boundaries and avoid future non-compliance issues.

Objective 4b: Identify wetland and riparian buffer needs.

- Monitoring Metric: Area (square feet)
- Project 1: Annual monitoring to identify riparian areas in need of protection or restoration/repair.

1.5 Wildland Fire Management Goals and Objectives

As outlined in **Appendix B** and detailed in **Appendix K**, wildland fire management goals and objectives and associated projects within the FHTA and LHTA are described below.

Goal:

- 5A. Promote vegetation structure and fuel conditions that are fire-resilient and that do not contribute to severe fire conditions.

Objective 5a: Review and update the current Integrated Wildland Fire Management Plan (IWFMP) to better reflect the goals of the INRMP.

- Monitoring Metric: Integrated Wildland Fire Management Plan (IWFMP)
- Project 1: Finalize draft IWFMP.

Objective 5b: Develop and implement strategies to minimize the risk of fires that interrupt military training and/or that could negatively impact adjoining properties.

- Monitoring Metric: Collaboration with TCHQ and USFS.
- Project 1: Maintain existing fire breaks with total vegetation control while preventing erosion issues and manage cheatgrass and other fine fuels on active firing ranges.

Objective 5c (LHTA-Specific): Develop a fuels mitigation strategy.

- Monitoring Metric: Area (acres) of vegetation mitigated.
- Project 1: Increase fire break buffer through vegetation thinning and removal.

1.6 Special Status Species Management Goals and Objectives

As outlined in **Appendix B** and detailed in **Appendix L**, special status species management goals and objectives and associated projects within the FHTA and LHTA are described below.

Goal:

- 6A. Maintain accurate information about species of concern on FHTA and LHTA.

Objective 6a (FHTA-Specific): Identify State Species of Concern including areas of use and habitat on Fort Harrison and include State Species of Concern as part of the overall range management criteria.

- Monitoring Metric: Monitor percent cover of known populations of lesser rushy milkvetch to evaluate the effects of land use on the plant population.
- Project 1: Survey to identify MT plant species of concern to avoid future compliance issues.

Objective 6b (FHTA-Specific): Map and monitor areas where long-billed curlews have been observed; and work with MTFWP to sustainably manage long-billed curlew habitat on FHTA.

- Monitoring Metric: Area (acres) of long-billed curlew habitat; number of individual long-billed curlews observed.
- Project 1: Conduct Long-billed Curlew survey to locate and map populations and habitat.

Objective 6c (FHTA-Specific): Monitor likely habitat for burrowing owls and mountain plover.

- Monitoring Metric: Area (acres) of burrowing owls and mountain plover potential habitat; number of individual burrowing owls and mountain plover observed.
- Project 1: Conduct installation-wide survey to identify suitable habitat for burrowing owl and mountain plover that will inform potential future monitoring efforts for the species.

Objective 6d (LHTA-Specific): Identify places where road upgrades or relocations can mutually benefit troop travel and natural resources conservation.

- Monitoring Metric: Improved culverts and additional water bars for better water diversion and decreased soil erosion.
- Project 1: Project will identify and recommend areas benefitting from road and drainage upgrades to enhance troop travel and natural resources conservation.

Objective 6e (LHTA-Specific): Monitor percent cover of known populations of lesser rushy milkvetch and monitor populations of sword Townsend daisy when identified, to evaluate the effects of land use on the plant populations.

- Monitoring Metric: Area (acres) of lesser rushy milkvetch and sword Townsend daisy.
- Project 1: Survey to identify plant species of concern to avoid future compliance issues.

Objective 6f: Identify and monitor wildlife special status species and their areas of use and/or possible habitat on the FHTA and LHTA.

- Monitoring Metric: Area (acres) of wildlife special status species habitat; number of individual wildlife special status species observed.
- Project 1: Project will survey FHTA and LHTA for Little brown myotis and other state species of concern.

1.7 Invasive Species Management Goals and Objectives

As outlined in **Appendix B** and detailed in **Appendix N**, invasive species management goals and objectives and associated projects within the FHTA and LHTA are described below.

Goal:

- 7A. Control and/or eradicate invasive species on the installation.

Objective 7a: Analyze known locations of weeds and schedule more surveys to improve mapping of weed populations using GIS.

- Monitoring Metric: Area (acres) surveyed per year.
- Project 1: Analyze vegetation monitoring data to identify potential locations of weed populations.

Objective 7b: Evaluate current weed management strategies to determine success rate.

- Monitoring Metric: Change in percent cover of noxious weeds in a defined area between years.
- Project 1: Project will evaluate previously sprayed noxious weed populations to evaluate effectiveness of weed management strategies.

Objective 7c: Eradicate noxious weeds (2 acres per year at each installation)

- Monitoring Metric: Percent cover or stems/0.01 acre
- Project 1: Project to manage noxious weeds to increase resilience of training range vegetation and maintain training continuity and compliance with State of MT and Federal mandates.

Objective 7d: Increase successful, sustainable control and management of cheatgrass on FHTA and LHTA using herbicides and reseeding.

- Monitoring Metric: Area (acres) of cheatgrass in a defined area
- Project 1: Project will map, treat, and rehabilitate cheatgrass infestation areas to enhance range resilience, mitigate fire danger, and ensure mission continuity.

Objective 7e: Decrease the use of herbicides on FHTA and LHTA by introducing biological control agents to control noxious weeds.

- Monitoring Metric: Number of biocontrol introductions; and area (acres) of noxious weeds
- Project 1: Project will identify and map suitable sites for biocontrol release.

Objective 7f: Increase outreach to visiting units and soldiers to increase awareness of noxious weeds on FHTA and LHTA.

- Monitoring Metric: Number of new infestations reported by Range users.
- Project 1: Project will create environmental awareness pamphlet for soldier distribution.

1.8 Grazing Management Goals and Objectives

As outlined in **Appendix B** and detailed in **Appendix O**, grazing management goals and objectives and associated projects within the FHTA and LHTA are described below.

Goal:

- 8A. Assess and monitor the health, vigor, diversity, and trend of native vegetation types on LHTA.

Objective 8a (LHTA-Specific): Maintain an active role in grazing management to include annual spring meetings to discuss grazing rotations, assistance in range improvement projects, and scheduling around major military training events.

- *Monitoring Metric:* Number of grazing meetings and collaborations; number of range improvement projects.
- *Project 1:* Maintain an active participatory role in annual spring grazer meetings as organized by the BLM to include providing suggestions on management activities related to wetland, riparian, and range health.

Appendix B
Proposed Projects and Implementation

APPENDIX B PROPOSED PROJECTS AND IMPLEMENTATION

A range of natural resources and training site improvement projects are planned for the years 2022-2025, for both the FHTA and LHTA. **Table B-1** lists all proposed natural resources projects for years 2022-2025 according to management area (e.g., native ecosystem restoration, water resources and wetland protection, invasive species, etc.) goal, and objective. Status indicates if the project will be conducted in-house, is ongoing or, if the field is blank, indicates the project has yet to be implemented.

Implementation of each project is subject to funding availability. The status column in **Table B-1** also identifies the funding source in accordance with the Sustainable Range/Installation Environmental Activities Matrix as either the Environmental Bureau ('in-house'), CFMO, or the ITAM Program. In certain cases, two entities (proponents) may be identified. For these projects, it is anticipated that funding will be provided by one source, and that the other proponent will provide subject matter expertise. SITE refers to Training Site and represents work to be done by the Training Site staff itself with funding provided by Training Site. TBD means 'to be determined' as projects are developed and funding sources are identified.

Goals, objectives, and projects are further described by resource within **Appendices G through O**, respectively. The CFMO-ENV must remain flexible to achieve long-term success. MTARNG natural resource managers employ adaptive management to ensure objectives and projects are realistic and effective. Monitoring activities provide data to evaluate progress toward management objectives. During the annual review of the INRMP, or more often as appropriate, natural resource managers evaluate the status of management objectives and progress toward objectives. Based upon results of monitoring and other new information (e.g., new scientific literature), natural resource managers may adjust management objectives to improve achievement of goals and continue support of the military mission. The natural resource management program may also be required to adapt to unforeseen changes in military mission or legal requirements.

Table B-1. Proposed Natural Resources Management Projects for Fort Harrison Training Area and Limestone Hills Training Area, 2022-2025 (Subject to Funding Availability)

Project Name	Project Description	INRMP Goal	INRMP Objective	STEP Catalog Number	STEP Project Number	Project Class Level (0 – 3)	Fiscal Year	Status
FHTA/LHTA Erosion Mitigation	Annual survey to identify and rehabilitate bare soil areas within active training areas.	1A, 1B	1a	TBD	TBD	TBD	TBD	Project conducted in-house with ITAM-RTLA/LRAM resources
FHTA Erosion Survey	Project will survey areas of soil erosion to prioritize for rehabilitation.	1A, 1B	1b	2908	MT655140004	3	2023	Proposed
LHTA Erosion Survey	Project will survey areas of soil erosion to prioritize for rehabilitation.	1A, 1B	1b	2908	MT816140004	3	2023	Proposed
FHTA Faunal Survey	Survey to assess current fauna populations, distributions, and presence as well as the presence of T&E species.	2A	2a	2909	MT655160001	1	2022	Proposed
LHTA Faunal Survey	Survey to assess current fauna populations, distributions, and presence as well as the presence of T&E species.	2A	2a	2909	MT655160001	1	2022	Proposed
FHTA Landbird Survey	Project will conduct point counts for landbirds to avoid future noncompliance with MBTA.	2A	2a	2908	MT655140001	2	2022	Proposed

Project Name	Project Description	INRMP Goal	INRMP Objective	STEP Catalog Number	STEP Project Number	Project Class Level (0 – 3)	Fiscal Year	Status
LHTA Landbird Survey	Project will conduct point counts for landbirds to avoid future noncompliance with MBTA.	2A	2a	2908	MT816140001	2	2022	Proposed
FHTA Wildlife friendly fences	Project will entail inspection of the southern boundary fence and adjust wire spacing to facilitate wildlife movement.	2A	2b	TBD	TBD	TBD	2022	Project conducted in-house
LHTA Water Resource Protection	Project will include biannual inspections of wildlife water source protection barriers.	2A	2c	TBD	TBD	TBD	TBD	Project conducted in-house with ITAM resources
FHTA Vegetation Monitoring	Project will monitor a sample of existing Ecodata plots.	3A	3a	2908	MT655140003	0	2022	Proposed
LHTA Vegetation Monitoring	Project will monitor a sample of existing Ecodata plots	3A	3a	2908	MT816140003	0	2022	Proposed
FHTA Native Ecosystem Restoration and Enhancement	Project will identify areas where the plant community is greater than 40% non-native and target these areas for native plant re-establishment.	3A	3b	TBD	TBD	TBD	2022	Project conducted in-house

Project Name	Project Description	INRMP Goal	INRMP Objective	STEP Catalog Number	STEP Project Number	Project Class Level (0 – 3)	Fiscal Year	Status
LHTA Shrub re-establishment	Project will identify appropriate sites and install transplants or broadcast native shrub seed into these sites.	3A	3c	2908	MT816140004	3	2023	Proposed
FHTA/LHTA Monitor and maintain wetland buffers	Annual monitoring to identify and prevent unauthorized activity into wetland buffer areas.	4A, 4B, 4C	4a	TBD	TBD	TBD	TBD	Project conducted in-house
LHTA Wetland Survey Update	Site survey of LHTA to update potential wetland boundaries and avoid future non-compliance issues.	4A, 4B, 4C	4a	2908	MT816140001	2	2024	Proposed
FHTA/LHTA Monitor and maintain wetland buffers	Annual monitoring to identify riparian areas in need of protection or restoration/repair.	4A	4b	TBD	TBD	TBD	TBD	Project conducted in-house
FHTA/LHTA IWFMP	Finalize the Draft IWFMP	5A	5a	TBD	TBD	TBD	2022	Project conducted in-house

Project Name	Project Description	INRMP Goal	INRMP Objective	STEP Catalog Number	STEP Project Number	Project Class Level (0 – 3)	Fiscal Year	Status
FHTA/LHTA Fire Management	Project will consist of annual maintenance of existing fire breaks using total vegetation control herbicide treatments while preventing erosion issues and manage cheatgrass and other fine fuels on active firing ranges.	5A	5b	TBD	TBD	TBD	TBD	Project conducted in-house utilizing ITAM and TCHQ resources
LHTA Fire Management	Project to increase fire break buffer where possible through vegetation thinning and removal.	5A	5c	TBD	TBD	TBD	2022	Project conducted in-house utilizing ITAM and TCHQ resources
FHTA Plant Species of Concern	Survey to identify MT plant species of concern to avoid future compliance issues.	6A	6a	2908	MT655140001	2	2024	Proposed
LHTA Plant Species of Concern	Survey to identify MT plant species of concern to avoid future compliance issues.	6A	6a, 6e	2908	MT816140001	2	2024	Proposed
FHTA Long-billed Curlew Survey	Conduct Long-billed Curlew survey to locate and map populations and habitat.	6A	6b	2908	MT655140001	2	2023	Proposed

Project Name	Project Description	INRMP Goal	INRMP Objective	STEP Catalog Number	STEP Project Number	Project Class Level (0 – 3)	Fiscal Year	Status
FHTA burrowing owl/mountain plover habitat survey	Conduct installation-wide survey to identify suitable habitat for burrowing owl and mountain plover that will inform potential future monitoring efforts for the species.	6A	6c	2908	MT655140001	2	2024	Proposed
LHTA Water conveyance and drainage survey	Project will identify and recommend areas benefitting from road and drainage upgrades to enhance troop travel and natural resources conservation.	6A	6d	TBD	TBD	TBD	2022	Project conducted in-house utilizing ITAM and TCHQ resources
FHTA Bat Survey	Project will survey FHTA for Little brown myotis and other MT state species of concern.	6A	6f	2908	MT655140001	2	2025	Proposed
LHTA Bat Survey	Project will survey LHTA for Little brown myotis and other MT state species of concern	6A	6f	2908	MT816140001	2	2025	Proposed
FHTA/LHTA Noxious weed mapping	Project will utilize existing vegetation monitoring data to identify weed populations to target for mapping.	7A	7a	TBD	TBD	TBD	2022	Project conducted in-house
FHTA Vegetation Management Strategy Monitoring	Project will evaluate previously sprayed noxious weed populations to evaluate effectiveness of weed management strategies.	7A	7b	2908	MT655140001	2	2023	Proposed

Project Name	Project Description	INRMP Goal	INRMP Objective	STEP Catalog Number	STEP Project Number	Project Class Level (0 – 3)	Fiscal Year	Status
LHTA Vegetation Management Strategy Monitoring	Project will evaluate previously sprayed noxious weed populations to evaluate effectiveness of weed management strategies.	7A	7b	2908	MT816140001	2	2023	Proposed
FHTA Weed Spraying	Project to manage noxious weeds to increase resilience of training range vegetation and maintain training continuity and compliance with State of MT and Federal mandates.	7A	7c	2908	MT655140002	1	2022	Proposed
LHTA Weed Spraying	Project to manage noxious weeds to increase resilience of training range vegetation and maintain training continuity and compliance with State of MT and Federal mandates.	7A	7c	2908	MT816140002	1	2022	Proposed
FHTA Cheatgrass Management	Project will map, treat, and rehabilitate cheatgrass infestation areas to enhance range resilience, mitigate fire danger, and ensure mission continuity.	7A	7d	2908	MT655140002	1	2022	Proposed
LHTA Cheatgrass Management	Project will map, treat, and rehabilitate cheatgrass infestation areas to enhance range resilience, mitigate fire danger, and ensure mission continuity.	7A	7d	2908	MT816140002	1	2022	Proposed
FHTA /LHTA Biocontrol	Project will identify and map suitable sites for biocontrol release.	7A	7e	TBD	TBD	TBD	2022	Project conducted in-house

Project Name	Project Description	INRMP Goal	INRMP Objective	STEP Catalog Number	STEP Project Number	Project Class Level (0 – 3)	Fiscal Year	Status
MTARNG Soldier environmental awareness	Project will create environmental awareness pamphlet for soldier distribution.	7A	7f	TBD	TBD	TBD	2022	Project accomplished utilizing ITAM-SRA funds
LHTA Grazing Coordination	Maintain an active participatory role in annual spring grazer meetings as organized by the BLM to include providing suggestions on management activities related to wetland, riparian, and range health.	8A	8a	TBD	TBD	TBD	TBD	Project conducted in-house annually

Appendix C
Installation Overviews

APPENDIX C INSTALLATION OVERVIEWS

1.1 FORT HARRISON TRAINING AREA

1.1.1 Location and Area

The FHTA is located approximately 1 mile west of Helena, Montana in Lewis and Clark County (**Figure C-1**). Helena is the state's sixth most populous city in Montana, the county seat, and the state capital. As of the 2010 census (US Census 2021) the city of Helena's population was 28,190. Helena is also the principal city of the Helena Micropolitan Statistical Area, which includes all of Lewis and Clark and Jefferson counties; with a population of 81,653 according to the 2019 Census Estimate (US Census 2021). Williams Street borders FHTA on the east; Barrett Road borders portions of FHTA on the north. The Veterans Administration (VA) Hospital borders FHTA on the south. The western boundary of FHTA adjoins largely undeveloped land.

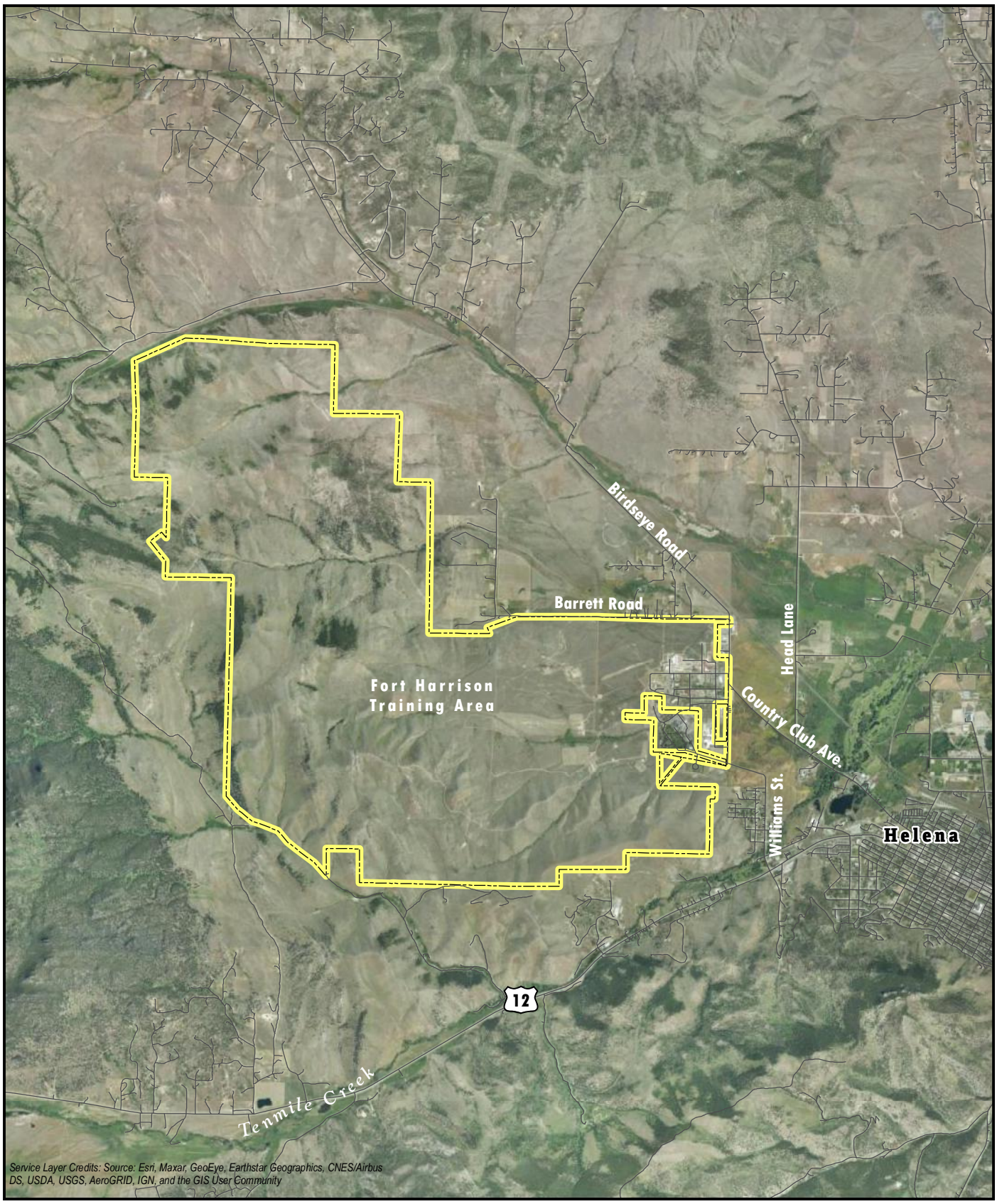
Helena is in the center of a 250-mile circle that encompasses over 70 percent of Montana's population. The next largest cities in the region are Great Falls located 90 miles northeast; Bozeman located 100 miles southeast; and Missoula located 110 miles west-northwest of the Helena area).

Access to FHTA occurs through a controlled access point. Persons accessing the installation must check-in with guards posted at an entrance located on the east side of the property.

1.1.2 Acreage and Ownership

Total land acreage of FHTA has fluctuated since acquisition of the site in 1892. Original land acreage totaled 1,040 acres with another 2,769 acres west of the fort reserved as a water supply area. The Head Ranch, located 1 mile northeast of the current FHTA, was acquired and added to the FHTA in 1910 and was used for various military training purposes from 1948 to 1995. In 1995, 664 acres of Head Ranch was exchanged for 1,099 acres of private land adjoining FHTA. This action provided a buffer of land surrounding small arms ranges and protected an important wintering area for mule deer and elk. The VA Hospital and State Veteran's cemetery occupies 43 acres adjacent to FHTA.

In 2017, the MTDMA acquired ranch lands adjacent to the west and northwest side of FHTA, referred to as the Burnham-RV Ranch. With ensuing disposals, corrected surveys, and audits reducing installation acreage and additional leased lands along Granite Creek and Cherry Creek, FHTA now encompasses 6,692 acres. The land within FHTA is comprised of federal military lands (Department of the Army), plus other leased BLM and State of Montana land (see **Table C-1** and **Figure C-2**).



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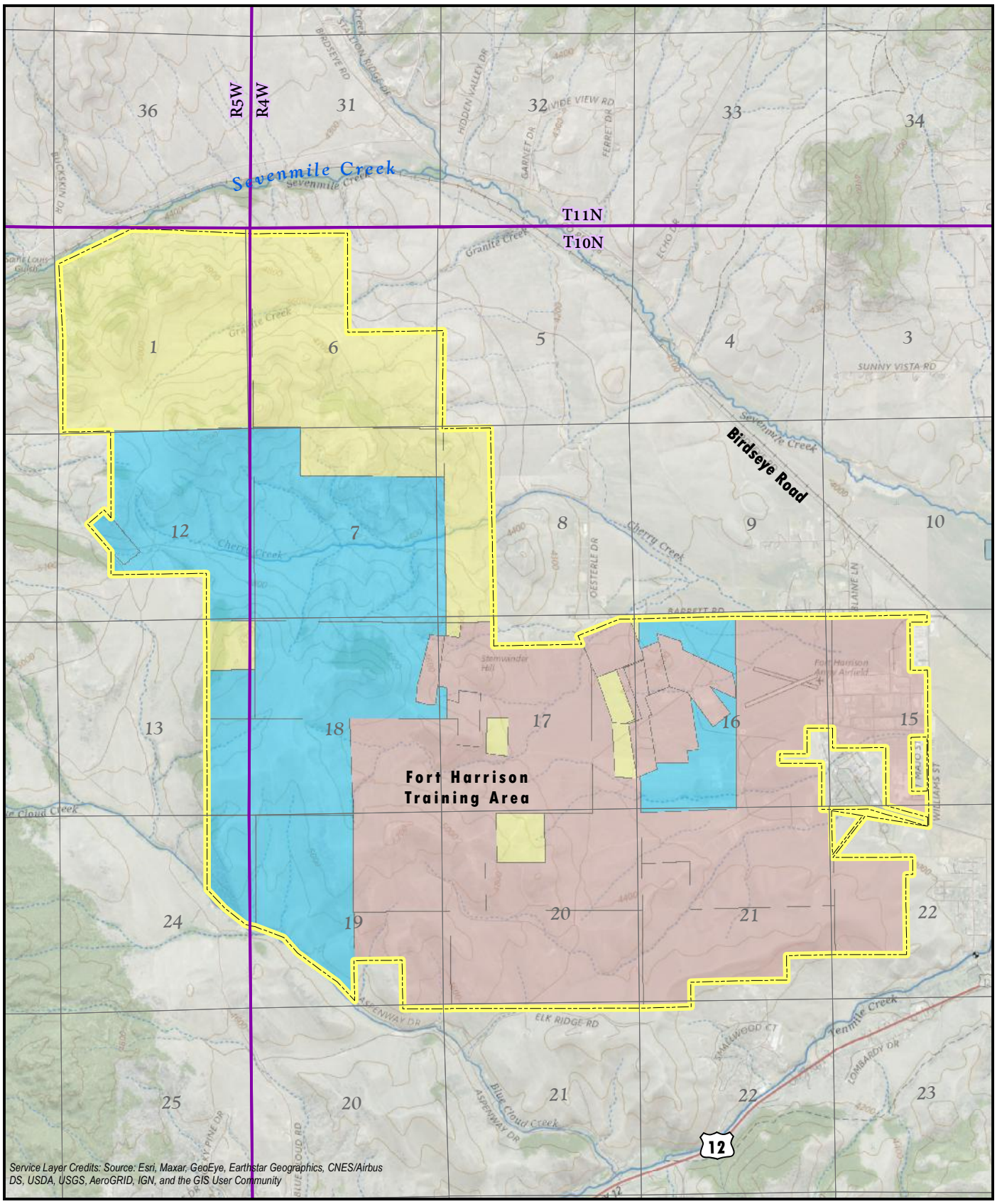
Miles

NewFields

Location Map
Fort Harrison Training Area
MTARNG INRMP
Lewis and Clark County, Montana
FIGURE C-1



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NewFields

Fort Harrison Training Area

State of Montana

USA-BLM

US Department of the Army

Land Ownership
Fort Harrison Training Area
MTARNG INRMP
Lewis and Clark County, Montana
FIGURE C-2

Table C- 1. FHTA Land Ownership

Owner	Acres
U.S. Department of the Army	3,010
U.S. Department of the Interior, Bureau of Land Management	1,541
State of Montana	2,140
Total	6,692

Source: MTDMA, CFMO 2021

Most of the land within FHTA consists of undeveloped natural areas. Natural areas on the site include grassland, shrubland/grassland, forest, wetland, and two intermittent streams.

1.1.3 Facilities and Developed Areas

Of the 6,692 acres within the FHTA's installation boundary, there are 281 acres not available for training, consisting of the 251-acre cantonment area, the 29-acre fenced wetland and wetland buffer and 1-acre fenced cultural site. The cantonment area houses most developed facilities, including an administrative building, TCHQ Support Facility with mess facilities and troop billets, Regional Training Institute (RTI) with classrooms, warehouse, Combined Support Maintenance Shop (CSMS), Unit Training Equipment Site (UTES), military museum, Naval Reserve Center, Post Exchange, Visiting Officers Quarters, Civil Support Team (CST), and numerous smaller buildings used as classrooms, barracks, and storage.

Facilities at each of the small arms ranges include support buildings, and observation towers used for range control operations and site maintenance. Four munitions bunkers are located east of the ranges.

1.1.4 Installation History

The original fort, Fort Benjamin Harrison, was named for the Civil War general and 23rd President of the U.S. (1889-1893) and was authorized by an act of Congress in 1892 to be established at or near Helena and permanent structures were completed between 1894 and 1896. These structures are now part of the VA Center and Hospital complex. In 1903 the War Department changed the name to Fort William Henry Harrison (Benjamin Harrison's grandfather and the 9th President of the U.S.) to eliminate duplication of the name Fort Benjamin Harrison, already assigned to a fort in Indiana (Command Historian 1990). From 1913 through 1919, the fort was periodically occupied by the Montana National Guard. In 1919, the U.S. Public Health Service took possession of the military reservation and operated a hospital there (Command Historian 1990). This ended the use of FHTA as a military post. Today, the VA still operates a hospital and regional administrative facility on the original fort site.

Since the Montana National Guard could no longer use the original fort, an expansion to the north was needed to support the needs of the Montana National Guard. In 1925, the state leased additional land and began establishing a permanent annual training site. From 1940-1946 the active Army took over the Fort, using it as a training base and further expanding its facilities. In 1947 the Montana National Guard was reconstituted as the 163rd Regimental Combat Team, and the annual training period was conducted in 1948. The Fort has been utilized for annual training ever since (Command Historian 1990).

1.1.5 Regional Land Use

Population growth in the Helena area in the last 25 years has caused many agricultural lands in the area to be converted to residential subdivisions and single-resident lots. Stallion Ridge and Big Block Subdivisions, which include more than 90 lots collectively, are located north of FHTA, but do not border the site. Portions of RV Ranch bordering FHTA to the west were acquired by the MTDMA in 2017 and are now part of the FHTA, although it continues to be leased by the state of Montana for cattle grazing. Federally managed land in the vicinity of FHTA is used for cattle grazing and various forms of public recreation.

In 2016, Prickly Pear Land Trust in partnership with MTARNG through Army Compatible Use Buffer (ACUB) Program funding, acquired Artisan Park, a 180-acre property located east of FHTA, across Williams Street. The site was later renamed Tenmile Creek Park and added to the local trails system in the area. Via the ACUB Program funding, Prickly Pear Land Trust also acquired the 350-acre (Nistler) property (renamed Sevenmile Creek Project Area) located northeast of FHTA and north of the Tenmile Creek area.

1.1.6 Local and Regional Natural Areas

There are no federal or state-designated "Natural Areas" near Helena. Nevertheless, relatively undeveloped natural lands are comparatively plentiful in the vicinity of FHTA. MTFWP owns and administers two Wildlife Management Areas (WMA) in the area: Canyon Creek WMA located 20 miles northwest of Helena and the Spotted Dog WMA located approximately 30 miles west-southwest of Helena. The Continental Divide of the Rocky Mountains, mostly located on land administered by the U.S. Forest Service (USFS), is approximately 8 miles to the west; the land between FHTA and the Continental Divide is mostly undeveloped forest and grassland of mixed private and public land ownership. The USFS manages two Roadless Areas (RA) including Nevada Mountain to the north and Jericho Mountain to the south. Spring Meadow Lake State Park, also administered by the MTFWP, is located approximately 1.2 miles east of FHTA. Canyon Ferry Lake, a reservoir administered by the Bureau of Reclamation on the Missouri River, is located 20 miles east of Helena.

1.2 Limestone Hills Training Area

1.2.1 Location and Area

The LHTA is located approximately 2 miles southwest of the town of Townsend, Montana in Broadwater County, 41 miles southeast of FHTA (**Figure C-3**). The eastern boundary of the LHTA lies just west of the Missouri River, and is roughly bounded by Indian Creek on the north, Crow Creek on the south and the Elkhorn Mountains on the west (**Figure C-3**). The area varies in elevation from about 3800 feet above mean sea level (amsl) along the Missouri River to about 5900 feet amsl along some ridges of the Limestone Hills.

As previously mentioned, the LHTA is located southwest of Townsend in Broadwater County. Townsend is the county seat of Broadwater County, and the county had a 2019 population estimate of 6,237 (U.S. Census 2021). Federally managed land, ranchland, and mining operations surround the LHTA.

1.2.2 Acreage and Ownership

The LHTA encompasses a total of approximately 21,494 acres, of which 18,845 acres are federally administered land and approximately 2,649 total acres are state-administered and private land. The State of Montana lands are used for military training under lease agreements with the MTDMA and are managed according to the details of the lease agreement regarding noxious weed management, land use, and grazing. Private lands located within the LHTA are off-limits for military training. **Figure C-4** shows the general land ownership within the LHTA. **Table C-2** lists the land ownership of the LHTA.

Table C-2. LHTA Land Ownership

Owner	Acres
U.S. Department of the Army (BLM manages and administers permits, authorizations, and leases for mining and grazing)	18,845
State of Montana	1,276
Private	1,373
Total	21,494

Source: MTDMA, CFMO 2021

The LHTA is traversed by three county roads: Old Woman's Grave Road runs north-south through the center of the LHTA, River Road runs north-south adjacent to the east boundary of the LHTA, and Indian Creek Road transects the far northwest corner of the LHTA adjacent to Indian Creek (**Figure C-3**). These county roads provide access to and from ranches, mine sites and recreational areas.

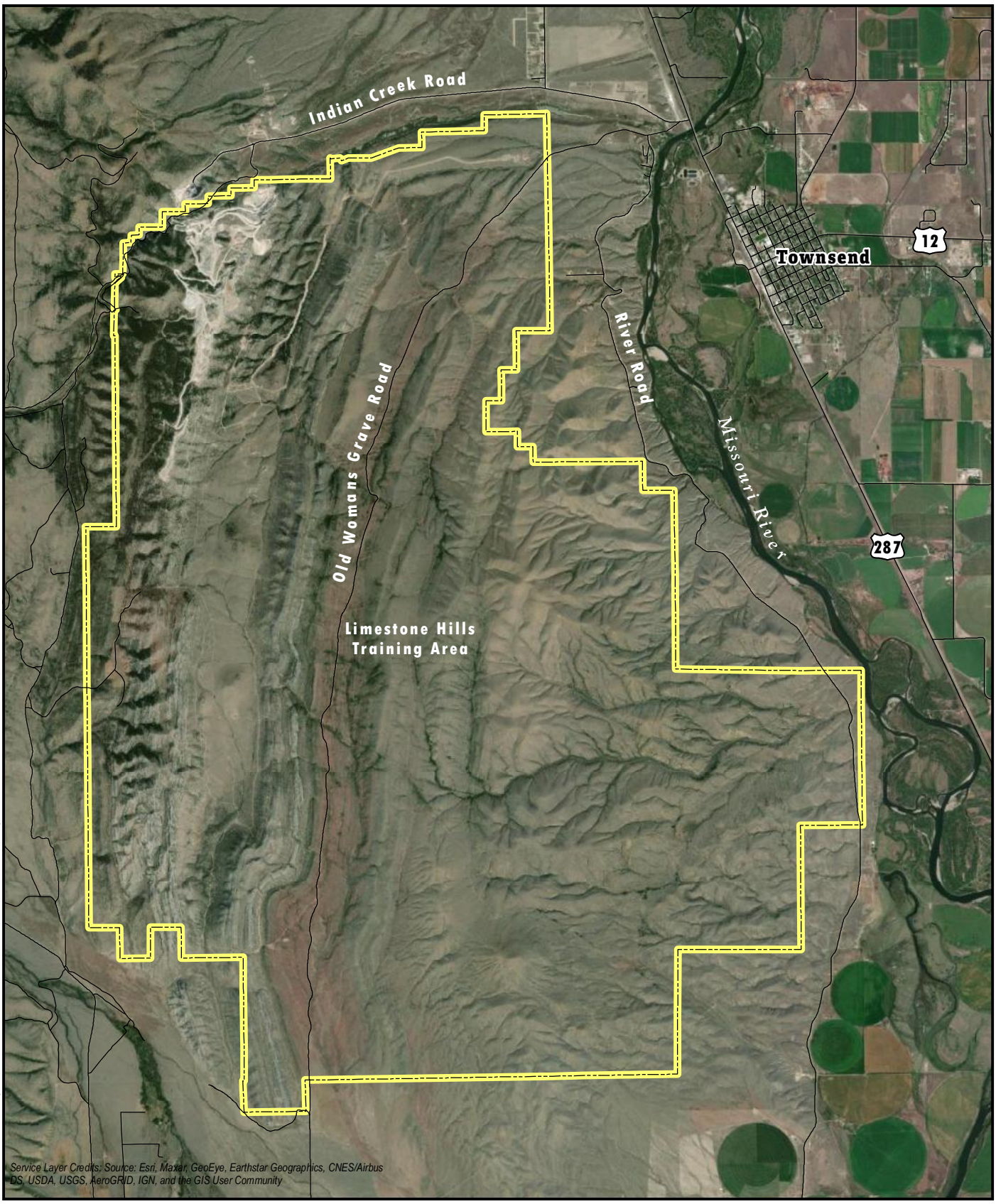
1.2.3 Facilities and Developed Areas

The cantonment area of the LHTA is semi-improved and there are some semi-improved areas associated with the range area. Various facilities are in the cantonment area and range area of the LHTA and include buildings, concrete and asphalt pads, fuel containment, and an above-ground storage tank. In addition to the facilities for the range area, each range may have some or all the following: bunkers, target emplacements, power and communication wiring, unpaved parking lots, access roads, bivouac areas, firing points, observation points, training pits, staging areas, and miscellaneous range equipment.

1.2.4 Installation History

Land area within the LHTA was historically used for mining and livestock grazing. The area has a long history of mineral exploration and mining and currently has one active limestone mine. There are many abandoned prospect holes and mines, and some streams within the vicinity of the LHTA still contain evidence of placer mining.

Grazing by sheep, cattle, and horses has occurred on the LHTA since the late 1880s. In 1934, under the Taylor Grazing Act, unclaimed federal lands such as federal land in the LHTA were put under the management of the Department of the Interior National Grazing Service. Livestock grazing continues on these federal lands today under a permit system regulated by the BLM. **Appendix O** further describes the livestock grazing allotments on the LHTA.



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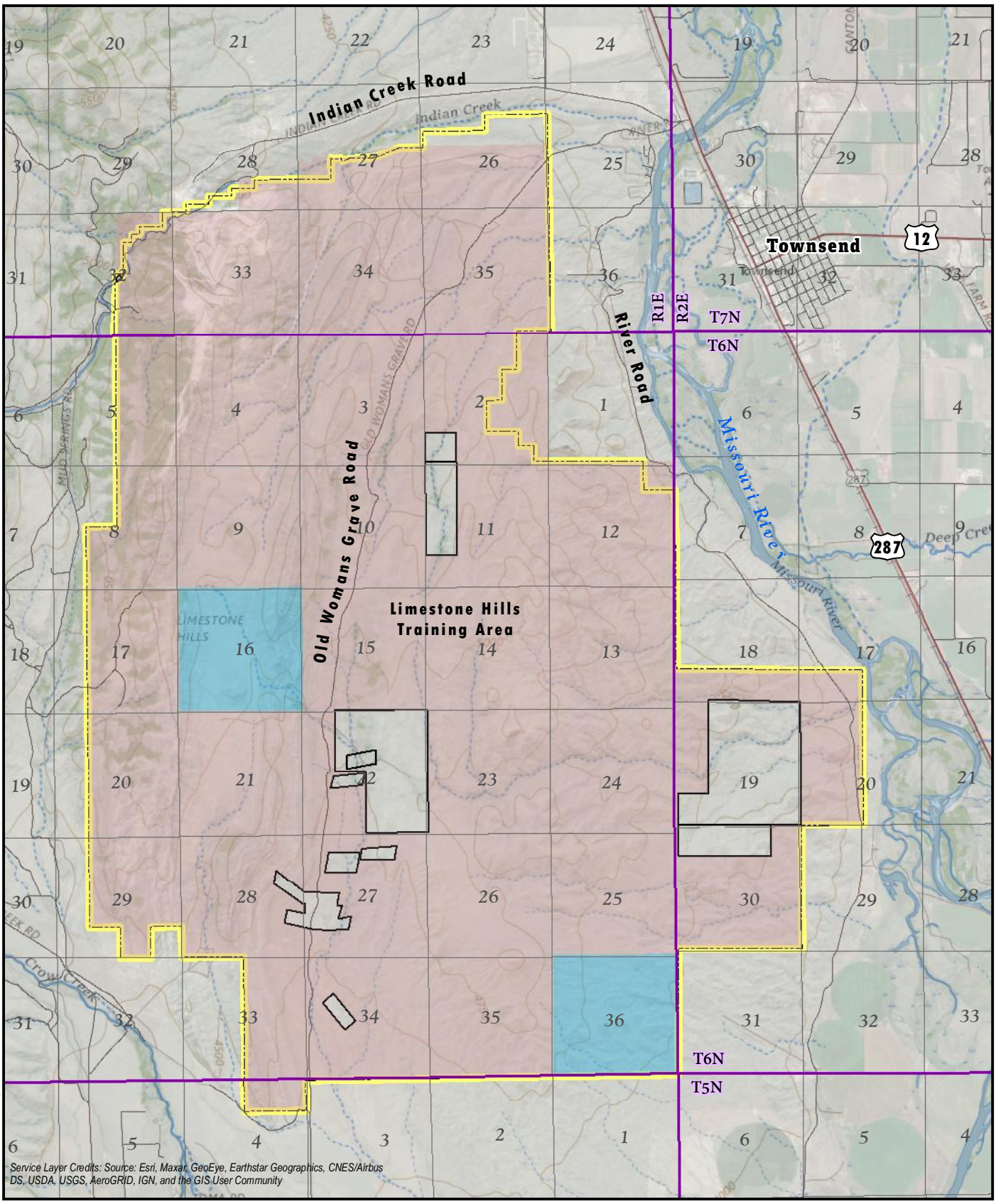
Location Map
Limestone Hills Training Area
MTARNG INRMP
Broadwater County, Montana
FIGURE C-3



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Limestone Hills Training Area

* US Department of the Army

State of Montana

Private

*Note: Lands reserved for use by the Secretary of the Army; BLM manages and administers land use permits, authorization and leases for mining and grazing.

NewFields

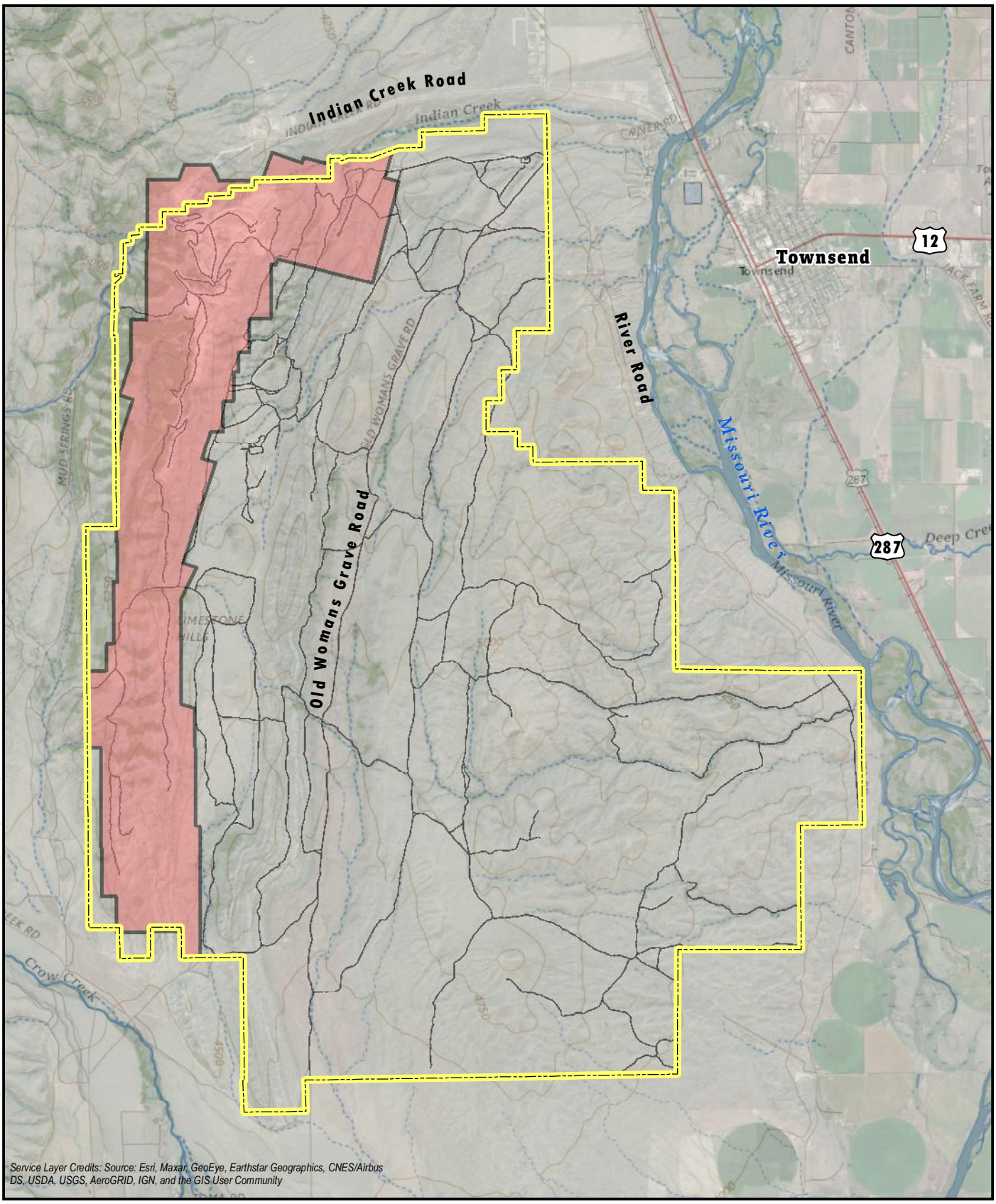
Land Ownership
Limestone Hills Training Area
MTARNG INRMP
Broadwater County, Montana
FIGURE C-4

The MTARNG has used the LHTA since the 1950s under special land use permits. In 1984, the BLM issued a 30-year right-of-way (ROW) grant to authorize the use of the LHTA to the MTARNG. Eighty-eight percent of the range was administered by the BLM, with the remainder under state and private ownership. Live fire training at the range has included helicopter, tank, artillery, mortar, and Bradley infantry vehicle gunnery. The types of weaponry ranged from small arms to 155 mm artillery, all of which have been fired into the historic impact area. Military training over the years has resulted in unexploded ordnance (UXO) contamination, particularly within the interior 5,000-acre historic impact area, although UXO has also been recovered outside that area. In 1993, U.S. Army Corps of Engineers (USACE) experts determined that the area south of the 2.75-inch rocket safety fan was "widely contaminated" with UXO. Based on BLM policy, the Butte Field Office implemented an emergency closure of the impact area. The BLM advised the MTARNG that its ROW for the range would not be renewed upon expiration in 2014, and the appropriate authority for continued military use of the area and transfer of jurisdiction to the Department of Army (DOA) would be a withdrawal that can only be authorized by Congress.

Under the Military Lands Withdrawal Act of 2013 (Title XXIX of the National Defense Authorization Act for Fiscal Year 2014, P.L. 113-66) (the Act), enacted December 26, 2013, Congress withdrew the LHTA from all forms of appropriation under the public laws, including the mining laws, the mineral leasing laws, and the geothermal leasing laws, subject to valid existing rights and except as otherwise provided in the Act. The Act reserved LHTA for use by the Secretary of the Army for military training and other defense related purposes. The MTARNG operates the LHTA pursuant to a license granted by the DOA.

Continental Lime (now Graymont Western U.S., Inc.) filed mining claim locations on public lands within the ROW area in the early 1980s and has operated a limestone mine at the north end of the range since 1981. In 1992 and 1995, Graymont filed mining plan amendments resulting in an approved expansion of its operations further into the rocket firing fan area. In a Memorandum of Agreement (MOA) developed in February 2005, the MTARNG agreed to clear UXO from the expansion area so that Graymont could continue mining under the current safety plan. The safety plan has been approved by the Department of Defense Explosives Safety Bureau (DDESB), which must release the area for mining before the BLM can authorize exploration. Graymont located 36 additional mining claims in September 2003 and in 2006 filed a plan of operations to expand farther south along the ridge into the training range. An Environmental Impact Statement (EIS) for this expansion was completed in January 2008 and BLM and Montana Department of Environmental Quality (MDEQ) signed a Record of Decision (ROD) on October 7, 2010, approving the Modified Pit Backfill Alternative for the mine expansion (BLM 2010). **Figure C-5** shows the boundary of the Graymont Western Mine Permit.

An Implementation Agreement (IA) was signed and entered into between the DOA, MTARNG, BLM, and Graymont Western US, Inc. (Graymont) on August 22, 2018. The IA sets forth the policies and procedures agreed to by the Parties and the respective roles and responsibilities of the Parties regarding the management of defense-related uses by the MTARNG, the exploration, development, mining and reclamation activities conducted by Graymont and other holders of mineral rights, and the administration of the public land laws by BLM, for the purpose of coordinating the joint and compatible use of the federal lands within the LHTA.



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Miles

NewFields

Limestone Hills Training Area

Graymont Western Permit Boundary

Boundary of Graymont Western Mine Permit
Limestone Hills Training Area
MTARNG INRMP
Broadwater County, Montana
FIGURE C-5

1.2.5 Regional Land Use

The region that encompasses the LHTA includes Broadwater, Lewis and Clark, and Jefferson counties. The major communities in the region of influence are, in order of size, Helena, East Helena, Montana City, Townsend, and Clancy. Broadwater County is included because the LHTA is located within its boundary. Lewis and Clark County is included because FHTA is located within its jurisdiction. Although training exercises are conducted at the LHTA, most personnel who administer and support the training are located at FHTA and live in Lewis and Clark, Broadwater, or Jefferson Counties.

Land use adjacent to the LHTA consists of low-density residential housing, ranches, mining operations, and public land managed by the BLM and State of Montana. Except for the Graymont Mine, development is not occurring to any significant degree on any boundaries. Many tracts of private land along the northern and northeastern borders of the LHTA have changed ownership from large ranches, controlled by only a few owners, to numerous smaller parcels (generally about 40 acres or less) that are individually owned. New residential subdivisions have also been constructed in the last 10 years north of the LHTA and along the eastern boundary at the north end of River Road.

1.2.6 Local and Regional Natural Areas

There are no Federal or state designated "Natural Areas" near the LHTA. Nevertheless, relatively undeveloped natural lands are comparatively plentiful in the vicinity of the LHTA. MTFWP manages the Canyon Ferry WMA under a long-term management agreement with the Bureau of Reclamation, which is approximately 3 miles northeast of the LHTA or about 2 miles north of Townsend. Most of the WMA is administered by the Bureau of Reclamation. Canyon Ferry Lake, a reservoir on the Missouri River administered by the Bureau of Reclamation is located 3 miles northeast of the LHTA. The Elkhorn Mountains, most of which are managed by the USFS, are approximately 2 miles to the west of the LHTA. The Elkhorn Wildlife Management Unit is within the Elkhorn Mountains and is the only USFS wildlife management unit in the country. The mountains are entirely contained within Hunting District 380, which is managed for larger bulls and is the most difficult elk permit to draw in all of Montana. A major focus of the work in the Elkhorns today is to manage livestock to expedite recovery from past intensive grazing. This is done by updating allotment management plans to reflect state of the art knowledge of riparian systems and uplands (USFS 2021).

1.3 MTARNG Military Mission

The overall mission of the MTARNG is to train and equip soldiers to meet readiness standards and conduct wartime and peacetime missions; to provide ready forces for state missions; and to participate in community activities that add value to Montana. The MTARNG mission includes responding and helping communities in Montana and other states with such emergencies like wildfires and flooding issues, if requested. In time of civil unrest, the MTARNG is also ready to respond, if needed.

At any given time, 25 percent of the MTARNG may be deployed to the federal mission and another 25 percent may be in training to prepare for deployment to meet the federal mission. The remaining 50 percent will serve on state missions as directed by the governor or in support of homeland defense operations.

The MTARNG maintains 16 readiness centers or reserve centers in 16 communities around Montana. The major commands of the MTARNG are:

- Joint Forces Headquarters
- 95th Troop Command
- Training Center Command
- 1889th Regional Support Group

1.3.1 Fort Harrison Training Area Military Mission

The mission of FHTA is to provide Inactive Duty for Training and Annual Training facilities first to the National Guard and Reserve Forces, second to all active components of the Armed Forces, and when possible, to other government and civilian organizations. Specific FHTA mission requirements include:

- Providing a training site for National Guard and Reserve Forces, including U.S. Army Reserves, U.S. Air Force Reserves, U.S. Marine Corps Reserves, U.S. Navy Reserves, and the Reserve Officers Training Corps;
- Providing a training site, when possible, for Active Component Forces, including U.S. Army, U.S. Air Force, U.S. Marine Corps, and U.S. Navy;
- Providing assistance for logistical support to units conducting inactive duty for training and annual training;
- Providing small arms and crew-served weapons qualification ranges and facilities;
- Providing maneuver areas suitable for training infantry and other personnel in conducting dismounted exercises;
- Providing or coordinating organizational and direct support maintenance facilities for units conducting training at FHTA; and
- Providing training areas and facilities to local law enforcement agencies, civil defense organizations, Reserve Officers Training Corps departments, public education institutions, and other civilian activities if no interference occurs with existing military training activities.

1.3.2 Limestone Hills Training Area Military Mission

The LHTA provides a challenging, realistic training environment necessary for retaining battle-ready soldiers by providing world-class training at both the individual and unit level. The primary mission of the LHTA is to train soldiers of the MTARNG and other units. The LHTA provides the following training needs:

- A training area for National Guard and Reserve Forces;

- A training area, when needed, for active component forces including the U.S. Army, U.S. Air Force, U.S. Marine Corps, and U.S. Navy;
- Assistance for logistical support to units conducting inactive duty training and annual training;
- A venue for the inactive duty training gunnery program to meet operating requirements;
- Small arms and crew-served weapons qualification ranges and facilities;
- Maneuver areas suitable for training infantry and other personnel in conducting dismounted exercises;
- Organizational support maintenance facilities for units conducting training; and
- Training areas and facilities to local law enforcement agencies, civil defense organizations, public education institutions, and other civilian activities as long as no interference occurs with existing military training activities.

1.3.3 Support of Military Mission by Natural Resources Management

The primary purpose of natural resource management at FHTA and LHTA is to support the military mission by maintaining sustainable natural resources as an important asset upon which to accomplish the mission of the MTARNG. Overall goals of natural resource management at FHTA and LHTA include:

- Ensure no net loss in the capability of installation lands to support existing and future military operations at FHTA and LHTA;
- Ensuring military operations are not interrupted due to non-compliance with applicable laws;
- Ensure that military training lands support present and future training requirements while preserving, improving, and enhancing ecosystem integrity; and
- Improve the vigor and diversity of the native habitats on FHTA and LHTA.

1.4 References

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Appendix D
Physical Environment

APPENDIX D PHYSICAL ENVIRONMENT

1.1 FORT HARRISON TRAINING AREA

1.1.1 Climate

The climate of the Helena valley, inclusive of the FHTA area, is semi-arid with long, cold, and moderately snowy winters. Snowfall has been recorded in every month of the year but is usually absent from about May 15 to about September 15, and on the rare occasion that it does occur in these months, it normally only accumulates in small amounts. Subzero cold is recorded on average 23 nights per year, but such cold periods are rarely extended. Winters usually have periods of moderation, partly due to the warming influence from chinook winds. Summers are generally warm and dry, while spring and autumn are comparatively short and cool. Precipitation mostly falls in the spring and is generally sparse, averaging 11.85 inches annually (WRCC 2021a).

The National Climate Data Center's Cooperative weather station, Helena WSO (number 244055) is located at the Helena Regional Airport, approximately 5 air miles east of FHTA. Average monthly rainfall and temperatures recorded from 1 April 1938 through 9 June 2016 at the Helena WSO weather station are shown in **Table D-1** below.

Table D-1. Average Monthly Rainfall, Snowfall, and Temperatures for Helena, Montana, 1938-2016

Month	Average Total Precipitation (inches)	Average Total Snowfall (inches)	Average Temperature (°F)	
			Min	Max
January	0.59	8.8	11.5	29.9
February	0.46	7.1	15.5	35.0
March	0.70	8.2	22.6	43.6
April	0.97	5.1	31.8	55.3
May	1.92	1.6	40.4	64.4
June	2.12	0.1	47.7	72.7
July	1.10	0.0	53.6	83.1
August	1.00	0.1	51.8	81.4
September	1.09	1.1	42.6	69.6
October	0.73	3.0	33.4	57.3
November	0.60	6.6	22.6	42.1
December	0.58	8.1	14.6	32.5
Total	**11.85**	**49.5**	**32.3**	**55.6**

Source: WRCC 2021a

Most of the total precipitation falls between the months of May and October. July is the warmest month, averaging 83°F, and January is the coldest month, with average highs of approximately 30°F.

The average growing season in the area of the FHTA is 123 days. The average date of the last killing frost is May 19. The average date of the first killing frost in autumn is September 20 (National Water and Climate Center 2021).

1.1.2 Topography and Physiography

FHTA is located near the boundary of the Townsend Basin Level IV ecoregion in the northeast portion of the Middle Rockies Level III ecoregion in the Middle Rocky Mountain Steppe, and the Eastern Divide Mountains Level IV ecoregion. The Townsend Basin is a broad, semiarid, nearly treeless, intermontane valley with floodplains, stream terraces, alluvial fans, and areas of treeless hills. The physiography of the Eastern Divide Mountains is described as unglaciated, mostly forested hills and mountains east of the Continental Divide which are underlain by metasedimentary and volcanic rocks (Woods et al. 1999).

FHTA is located at the west edge of the Helena Valley, a northwest-trending, oval-shaped basin of about 875 square miles. Mountains bound the valley on all sides, including the Scratchgravel Hills to the north, the Rocky Mountains to the west, the Elkhorn Mountains to the south, and the Spokane Bench and Big Belt Mountains to the east.

Elevation within FHTA ranges between about 3950 feet amsl in the southeast to about 5330 feet amsl on the western boundary.

1.1.3 Geology

FHTA is located on the eastern foothills of the Continental Divide. This portion of the Continental Divide was formed by the uplift of the Boulder Batholith. FHTA consists of basin fill in the lower elevations and Belt sedimentary rocks in the higher elevations (Alt and Hyndman 1986).

The northern half of FHTA is underlain by layers of stream deposits (Quaternary alluvium) ranging between 1-20 feet thick. These gravel layers are made up of fragments of quartzite, shale, and limestone, separated by layers of clay and silt.

The southern half of the FHTA is underlain by sedimentary bedrock (sandstone, shale, limestone, and dolomite) from the Late Cretaceous age to the Middle Proterozoic age. This rock layer can be several thousand feet thick. Forces that helped form the Rocky Mountains caused this layer to bend and tilt to moderate and steep angles.

Plutonic rock from the Early Tertiary age to the Late Cretaceous age underlies the southeastern part of FHTA, and it is found scattered throughout the rest of the installation. Most of these rocks are granite, gabbro, and diorite. Deep erosion has caused these rocks to become exposed (CTA Architects Engineers 1998).

1.1.4 Seismicity

One of the largest fault zones in the Helena area is known as the Lewis and Clark line, which is 6-30 miles wide. The zone separates areas of plutonic, sedimentary, and volcanic rocks south and west of the Helena Valley from an area of sedimentary deposits in the area north of the Helena Valley (CTA Architects Engineers 1998).

Bald Butte Fault also runs through the Helena area. Vertical displacement along the fault has been recorded between 650 feet and 14,400 feet. Presently, the fault moves horizontally instead of vertically. Several small earthquakes occurred along this fault in 1973, and this fracture is thought to be the most seismically active in the area. Other faults running through FHTA include an unnamed branch of the Bald Butte Fault, running through the north-central section of the installation. Other unnamed faults can be found 0.5-2 miles west and southwest of FHTA (CTA Architects Engineers 1998).

1.1.5 Soils

Many soil units and typical soil properties of Lewis and Clark County are described in a soil survey conducted by the Natural Resources Conservation Service (NRCS) (NRCS 2003). Soils in the Helena Valley are formed in alluvial terraces, or fans in deposits of primary sands and gravels, or weathered directly from rocky material. Soils in FHTA are complex because of varying parent material, drainage patterns, and slopes (**Figure D-1**). The surface layer of loam extends only to a depth of about 4 inches, and gravelly to very gravelly loams and sandy loams extend to a depth of 40 to 60 inches. Soils in FHTA have a moderately low runoff potential, and permeability is considered moderate to a depth of 20 inches and moderately rapid below this level. Depth to water table is greater than 60 inches. The hazard for wind erosion is slight and the hazard of water erosion is slight in areas of gentle slopes (FaunaWest 1997). **Table D-2** lists the acres of highly erodible soils at FHTA. **Figure D-2** shows highly erodible and hydric soils within the FHTA.

Table D-2. Acres of Highly Erodible Soils at Fort Harrison Training Area

Wind Erodibility Group (WEG) by Soil Types[1]	Acres	Percent of Total
3 (most susceptible)	89.92	1.37
4L	356.32	5.42
5	2,814.64	42.79
6	570.86	8.68
7	2,965.88	40.98
8 (least susceptible)	50.32	0.76
Total	**6,577.94**	**100**

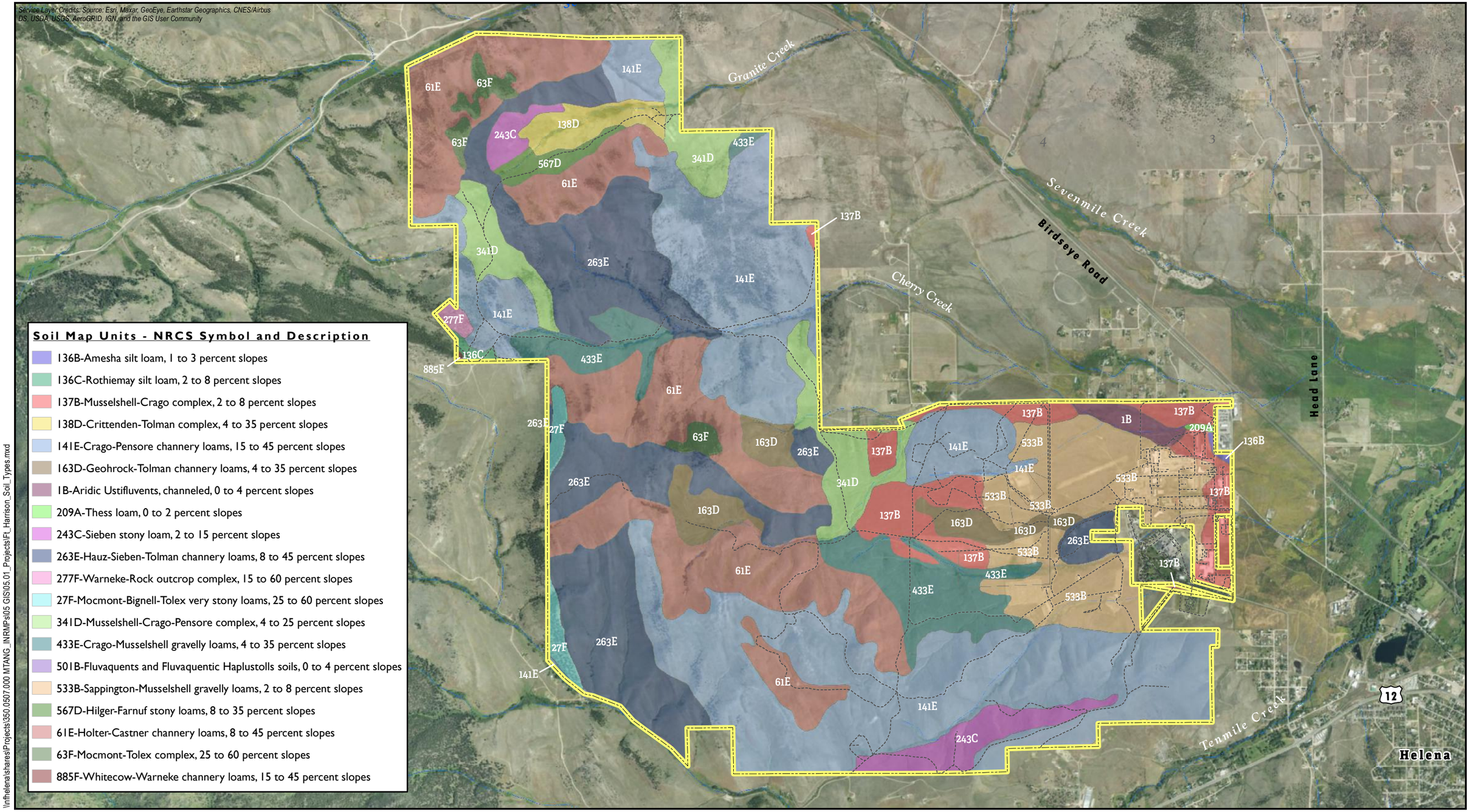
Source: NRCS 2003

[1]WEG consists of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 3 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.

1.1.6 Hydrology

FHTA is located within the Lower Tenmile Creek Watershed. Tenmile Creek is a perennial, fourth order stream which drains approximately 200 square miles of mountainous and valley terrain of the Upper Missouri River Basin. The upper part of the Tenmile Watershed starts on the east side of the Continental Divide and flows approximately 12 miles through a steep, forested canyon of about 50 square miles. It is the municipal watershed for the city of Helena. The upper watershed has a 100-year history of hardrock mining with numerous inactive mines and waste-rock piles that have affected water quality within the watershed (USGS 2001).

Land use in the Lower Tenmile Creek Watershed is dominated by forest, irrigated hay and small-grain production, livestock grazing, and residential and commercial development. Land ownership in the Lower Tenmile Watershed is predominantly private (about 60 percent), with the Helena-Lewis and Clark National Forest lands concentrated on the western mountainous side with several parcels of BLM lands and FHTA comprising approximately the other 40 percent of ownership (USGS 2001).



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N

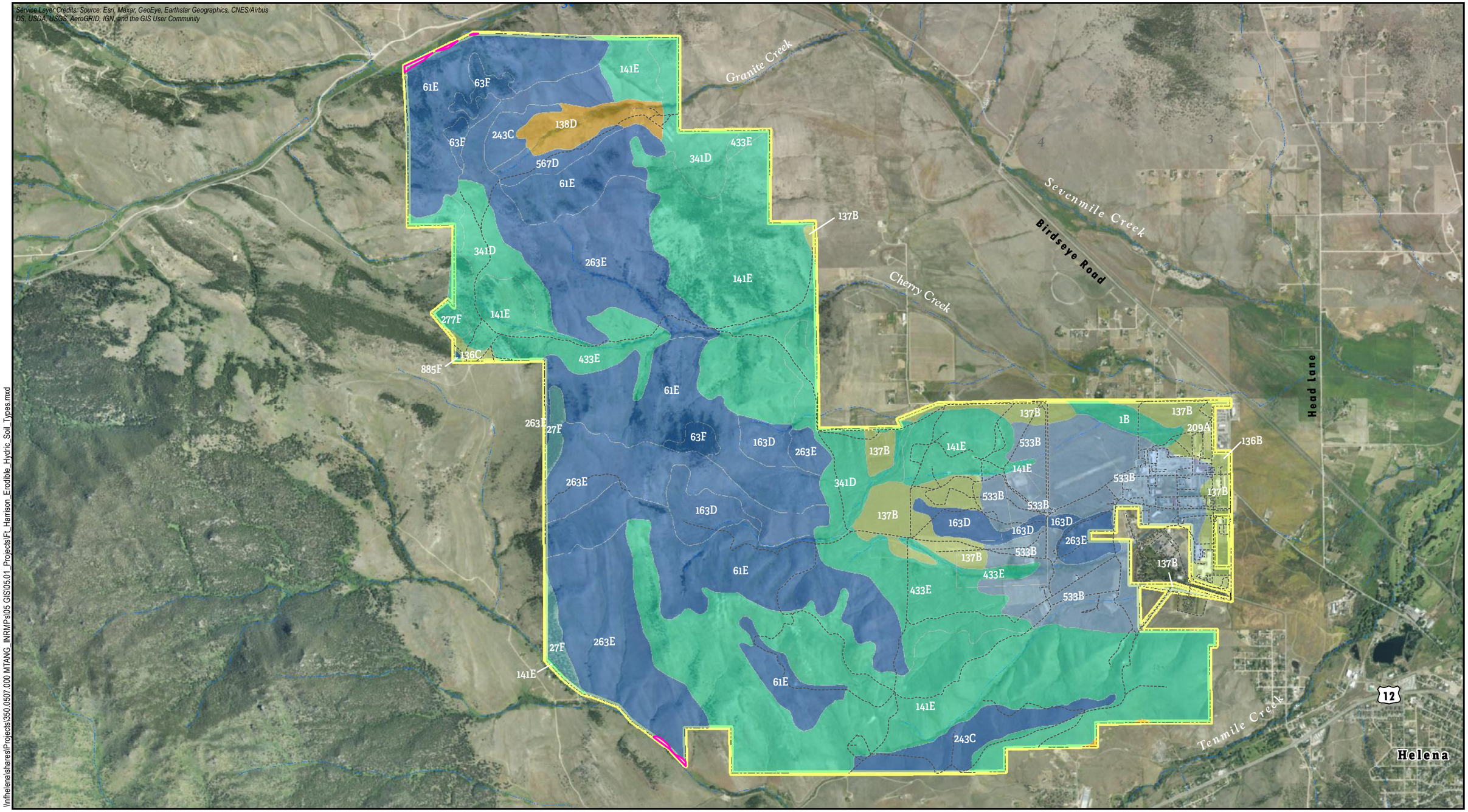
0 3,000
Feet

NewFields

Fort Harrison Training Area

Roads

Soil Mapping Units
Fort Harrison Training Area
MTARNG INRMP
Lewis and Clark County, Montana
FIGURE D-1



0 3,000 Feet

NewFields

Wind Erodibility Groups (WEG) by Soil Types (NRCS)

3 4L 5 6 7 8

Note: Wind erodibility group (WEG) consists of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 3 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.

Hydric Soils (NRCS)

Hydric Soils (501B)

NRCS - Natural Resources Conservation Service

Fort Harrison Training Area

Roads

Highly Erodible and Hydric Soils
Fort Harrison Training Area
MTARNG INRMP
Lewis and Clark County, Montana
FIGURE D-2

1.1.6.1 Surface Water and Springs

As shown on **Figure D-3**, two streams flow east through the FHTA.

- Granite Creek (2.3 miles long; intermittent stream) is a first order tributary of Sevenmile Creek, which is a tributary of Lower Tenmile Creek. Granite Creek flows northeast through the northern third of FHTA. Streamflow data have not been collected from Granite Creek, but peak flow is well below 1 cubic foot per second (cfs). Bank vegetation includes a dense stand of aspen and mesic shrubs, such as rose and chokecherry.

- Cherry Creek (5.3 miles long; intermittent stream) is a small first order stream that flows east through the center of FHTA and is a tributary of Sevenmile Creek. Streamflow data has not been collected from Cherry Creek, but peak flow is well below 1 cfs. Bank vegetation varies widely from open grassland to Rocky Mountain juniper and mesic shrubs and finally large, mature cottonwoods. East of FHTA, this stream appears to be totally diverted for irrigation and other purposes.

All other drainages within FHTA are ephemeral.

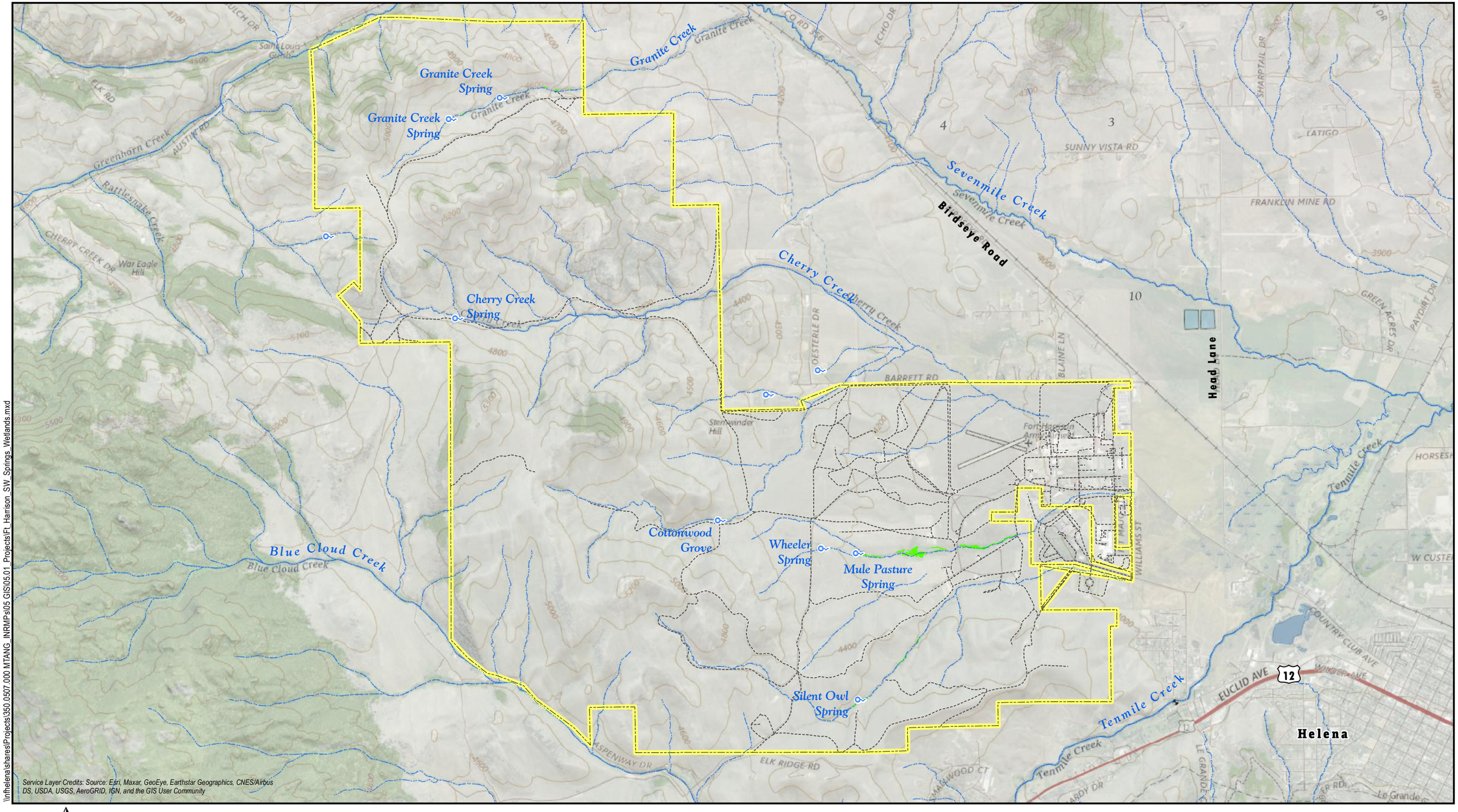
In addition, three developed springs are present in FHTA:

- Silent Owl Spring is located in the southern portion of FHTA (the majority of this drainage burned in 2007);

- Cottonwood Spring, as the name implies, is surrounded by cottonwood trees west of the cantonment area; and

- Mule Pasture Spring, which was developed by the U.S. Army in the mid-1920's for Army mule pasture.

All three springs have been modified to retain water to benefit cattle and/or wildlife. Surface water quality is not monitored on FHTA (CTA Architects Engineers 1998). **Figure D-3** shows the location of surface water and wetlands on FHTA, including undeveloped springs.



Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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0 3,000 Feet

NewFields

- Fort Harrison Training Area
- Roads
- Streams
- 2020 Mapped Wetlands
- Springs

Surface Water, Springs, and Wetland Areas
Fort Harrison Training Area
MTARNG INRMP
Lewis and Clark County, Montana
FIGURE D-3

1.1.6.2 Wetlands

The U.S. Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency (USEPA) define wetlands as:

> "Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

Executive Order 11990, *Protection of Wetlands*, requires Federal agencies to take action to minimize the destruction, loss or degradation of wetlands, and to conserve and enhance the beneficial values of wetlands.

Both Federal and state laws and regulations protect waters of the state, which includes wetlands. The Clean Water Act (CWA) is the primary law protecting U.S. waters. Section 404 of the CWA (33 USC 1344) prevents the discharge of dredged or fill material into waters of the U.S. without a permit from the USACE. Generally, whenever a Section 404 permit is required, a Section 401 Water Quality Certification (WQC) issued by the State of Montana is also required.

An updated inventory of delineated wetland areas within the FHTA was conducted in September 2020. Nineteen (19) wetlands were delineated within the FHTA (**Figure D-3**) (NewFields 2020). Areas of the individual wetlands range from 0.002 acre to 1.748 acres. The largest wetland (1.748 acres) is located in the broad ephemeral drainage (referred to as Cottonwood Spring Drainage) in the middle of FHTA. Total area for all 19 delineated wetlands in FHTA is 4.077 acres. A pond, present in a wetland area in Granite Creek, is included in the calculation of wetland areas.

The streams and springs that support wetlands within FHTA provide habitat for a diversity of wildlife species and the terrace above Granite Creek is heavily grazed by cattle. Browse utilization of shrubs along Granite Creek is relatively high and patches of noxious weeds occur in the area.

The hydrophytic vegetation of drainages and sub-drainages in FHTA are comprised of emergent wetland types that originate at and are supported by springs. The wetland areas along the broad, ephemeral drainage in the middle of FHTA and along the Blue Cloud Training Area drainage are in good condition, unaffected by training activities, and are not accessible for livestock grazing (NewFields 2020).

Sevenmile Creek, Blue Cloud Creek, and Tenmile Creek are relatively permanent waters (RPW) (i.e., perennial flow), but are not located within FHTA. Granite Creek has intermittent or at least seasonal flow throughout its main channel reach and is a tributary of Sevenmile Creek.

The broad, ephemeral drainage in the middle of FHTA (Cottonwood Spring Drainage) and the Blue Cloud Training Area drainage are both mainly fed by springs and have no surface connection with Tenmile Creek (located outside FHTA). Aerial photographs and field observations show that these ephemeral drainages infiltrate into uplands east of FHTA. This infiltrated surface water then mixes with groundwater in alluvium along the Tenmile Creek valley bottom, and some of this groundwater may discharge to Tenmile Creek. For FHTA, the nearest traditional navigable water (TNW) is the Missouri River which is located approximately 12.5 air miles to the northeast.

Approximately 3 percent or 0.133 acre (WET-1, -2, -3, and -4 along Granite Creek) of the total delineated wetlands in FHTA (4.077 acres) have a surface connection to a RPW and TNW. Many of these wetlands function as a stream with the presence of defined channels (i.e., bed/bank and OHWM).

1.1.6.3 Groundwater

The Helena Valley-Fill Aquifer System underlies most of the Helena valley and part of FHTA. Fine-grained and course-grained sediments fill the valley to a depth of about 6,000 feet. The sediment is overlain with 100 feet of alluvium. Upper layers of the valley are made up of cobbles, gravel, and fine-grained sediments, such as sand, silt, and clay. Lateral discontinuity in fine-grained layers allows hydraulic interconnection between the water-yielding zones that function together as an aquifer (CTA Architects Engineers 1998).

Recharge to Helena area bedrock primarily occurs by direct infiltration of precipitation, although recharge by infiltration of streamflow, infiltration from saturated overlying unconsolidated deposits, leakage from irrigation canals, and infiltration of applied irrigation water can be significant locally (Thamke 2000). Discharge of the aquifer occurs through leakage to streams and drains, upward leakage to Lake Helena, and withdrawals from wells (CTA Architects Engineers 1998).

The Helena Valley-Fill Aquifer System is the major source of domestic water used by area residents. Most water wells in the area are less than 70 feet deep (CTA Architects Engineers 1998). Water from Helena area bedrock is used by an increasing number of residents as the primary source of domestic water supply and provides a large part of the annual recharge to the Helena Valley-Fill Aquifer System. As demands on the water supplies within the Helena area bedrock increases, public concern has been expressed regarding potential depletion or contamination of this water resource (Thamke 2000).

1.2 LIMESTONE HILLS TRAINING AREA

1.2.1 Climate

The LHTA is located in southwestern Montana among the foothills and eastern valleys of the Rocky Mountain range. The LHTA sits primarily in the valley of the Missouri River, but includes foothill areas with elevations ranging from about 3900 feet amsl near the Missouri River to 5859 feet amsl at the highest point in the Limestone Hills. The area has a semi-arid climate characterized by low rainfall, moderate to low humidity, and wide temperature variations. Climate records from the Western Regional Climate Center for Townsend, Montana dating from 1948 to June 2016, were used for this summary. Townsend data are most representative of the LHTA, since the town is located within a few miles of the facility. Average total precipitation, snowfall, and temperatures recorded from 1 July 1948 through 10 June 2016 at the Townsend weather station are shown in **Table D-3**.

Table D-3. Average Monthly Rainfall, Snowfall, and Temperature for Townsend, Montana, 1948-2016.

Month	Average Precipitation (inches)	Average Snowfall (inches)	Average Temperature (°F)	
			Min	Max
January	0.38	5.2	10.8	32.9
February	0.25	3.5	15.6	39.2
March	0.54	3.9	21.9	47.5
April	0.80	1.6	30.1	58.0
May	1.76	0.4	38.5	67.1
June	2.19	0.0	45.9	74.4
July	1.25	0.0	50.5	83.4
August	1.17	0.0	48.2	82.5
September	0.93	0.2	39.6	71.6
October	0.61	0.8	30.9	60.1
November	0.42	3.0	21.3	44.5
December	0.35	4.8	13.3	35.0
Total	10.65	23.3	30.5	58.0

Source: WRCC 2021b

Almost two-thirds of the precipitation total, 6.4 inches, falls between the months of May and August. July is the warmest month, averaging 83°F, and January is the coldest month, with average highs of 33°F.

The average growing season in the area of the LHTA is 108 days. The average date of the last killing frost is May 27. The average date of the first killing frost in autumn is September 13 (National Water and Climate Center 2021).

1.2.2 Topography and Physiography

The LHTA is located in the Middle Rocky Mountain physiographic province, a region that includes portions of northeastern Oregon, central Idaho, and basins and ranges of southwestern Montana. The LHTA is located in the Townsend-Horseshoe-London-Sedimentary Hills Level IV ecoregion of the Middle Rockies Level III ecoregion in the Middle Rocky Mountain Steppe. The Townsend-Horseshoe-London-Sedimentary Hills are partially wooded, often rugged, rather dry, carbonate-rich hills and low mountains. Caverns and dry valleys also occur in this ecoregion (Woods et al. 1999). The area includes two distinct physiographic areas located in the folded, sedimentary foothills of the eastern slopes of the Elkhorn Mountains. These areas include a series of long, linear, north-south trending ridges called the Limestone Hills to the west; and an area of steep-sided, smooth, and rounded hills of the western Townsend Valley that borders the Missouri River to the east. Elevation varies between 3900 feet amsl along the Missouri River and 5900 feet amsl along the highest ridges of the Limestone Hills. Indian Creek and Crow Creek are the only streams within or adjacent to the LHTA.

1.2.3 Geology

The LHTA derives its name from predominate hills that are formed mostly of soils derived from limestone. Pre-Cambrian sea sediments settled, became lithified into rock, and were finally covered with Flathead sandstone, shales, and limestones. The sea advanced and retreated many times until the late Cretaceous period, and each time a layer of sediments was deposited. After the last sea retreat, a period of volcanic activity began in the Elkhorn Mountains. After the volcanic period, tectonic activity created a series of north and northwest folds and faults that produced the Limestone Hills. Later tectonic activity lowered the Townsend Basin and raised the Limestone Hills (Douglas and Smith 1997).

The Limestone Hills area occurs within a regional tectonic province called the Northern Cordilleran overthrust belt where older rocks have been intensely folded, faulted, and thrust faulted into imbricated layers of locally very complex structure. The Limestone Hills occur as the upper plate of the Lombard thrust that can be traced regionally from Three Forks through Lombard, Montana, and is believed to join thrust faulting on the west slopes of the Big Belt Mountains, east of Canyon Ferry Reservoir. In the vicinity of the LHTA area, structure is relatively uncomplicated and consists of a series of rugged, massive, north/south-trending limestone and sandstone ridges along the western flank of a broad, northward plunging anticlinal fold (MTARNG 2008).

1.2.4 Soils

The LHTA is located on the western edge of the Townsend basin between the Big Belt and Elkhorn mountains. The terrain consists of steep north-south trending limestone, igneous, argillite, and tertiary sediment ridges and valleys in the western half of the LHTA, while the eastern half is characterized by steep-sided hills and dissected east-west trending drainages underlain by the Spokane shale formation (MBMG 1958). Alternating beds of limestone, argillite, and intrusive igneous materials have been chemically and physically altered, uplifted, and eroded to create the Limestone Hills geomorphic terrain. Most soil within the LHTA developed from limestone bedrock, calcium and clay-rich (argillic) sediment, fractured igneous rock, and unconsolidated rock transported downslope by water and gravity. The various soil types developed from the difference in these parent materials.

Many soil units and typical soil properties of Broadwater County are described in a soil survey conducted by the NRCS (NRCS 2007). **Figure D-4** shows the general soil units within the LHTA. The soils of the LHTA are part of a complex landscape consisting of smooth-and-round to sharp-and-narrow ridgetops and side slopes. Slopes are generally steep (10 to 60 percent) and rock outcrops are common. Most soils in the LHTA area (90 percent) have developed from limestone bedrock and are typically less than 20 inches thick.

Soils derived from limestone bedrock are generally alkaline from the calcium carbonate in limestone constantly mixing with the soil. Alkaline soils are clay soils with high pH (>8.5), a poor soil structure and a low infiltration capacity. Alkaline soils are difficult to take into plant cultivation/agricultural production. Due to the low infiltration capacity, rainwater stagnates on the soil easily and, in dry periods, cultivation requires large amounts of irrigation water and good drainage. The flora found in alkaline soils on relatively flat areas is limited to plants tolerant of surface waterlogging. In contrast, plants found on slopes with alkaline soils must be drought-tolerant because surface water runoff is high due to the low infiltration capacity. Soils in the LHTA generally have high erosion hazard ratings, i.e., there is a high probability of soil erosion damage occurring because of site preparation and the aftermath of cutting operations, fires, and overgrazing. **Table D-4** lists acres of highly erodible soils at the LHTA. **Figure D-5** shows highly erodible and hydric soils or hydric soil inclusion soils on Limestone Hills.

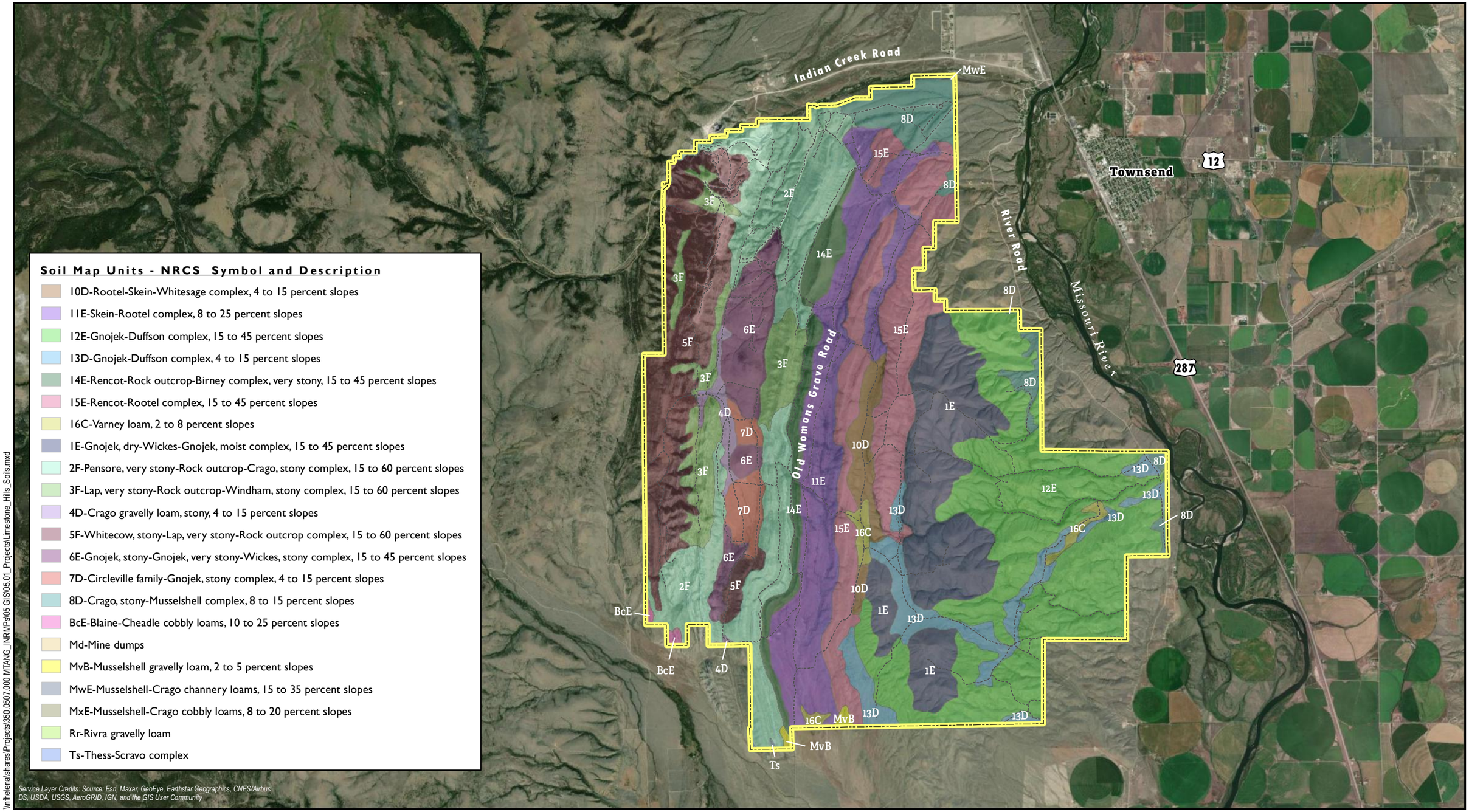
Table D-4. Acres of Highly Erodible Soils in the Limestone Hills Training Area

Wind Erodibility Group (WEG) by Soil Types[1]	Acres	Percent of Total
No Designation	3.76	0.02
4L (most susceptible)	367.25	1.72
5	3,624.55	17.02
6	6,585.52	30.93
7	2,361.47	11.09
8 (least susceptible)	8,352.45	39.22
Total	**21,295.00**	**100**

Source: NRCS 2003

[1]WEG consists of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 3 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.

In the LHTA, hydric soils are primarily associated with the wetland fringe along drainageways. The presence of hydric soils is one of three required criteria used to identify wetland areas. The LHTA contains approximately 4.3 acres of potential wetland areas with hydric soils. Hydric soils and wetlands are further described in **Section 1.2.5.2**.



Soil Map Units - NRCS Symbol and Description

- 10D-Rootel-Skein-Whitesage complex, 4 to 15 percent slopes
- 11E-Skein-Rootel complex, 8 to 25 percent slopes
- 12E-Gnojek-Duffson complex, 15 to 45 percent slopes
- 13D-Gnojek-Duffson complex, 4 to 15 percent slopes
- 14E-Rencot-Rock outcrop-Birney complex, very stony, 15 to 45 percent slopes
- 15E-Rencot-Rootel complex, 15 to 45 percent slopes
- 16C-Varney loam, 2 to 8 percent slopes
- 1E-Gnojek, dry-Wickes-Gnojek, moist complex, 15 to 45 percent slopes
- 2F-Pensore, very stony-Rock outcrop-Crago, stony complex, 15 to 60 percent slopes
- 3F-Lap, very stony-Rock outcrop-Windham, stony complex, 15 to 60 percent slopes
- 4D-Crago gravelly loam, stony, 4 to 15 percent slopes
- 5F-Whitecow, stony-Lap, very stony-Rock outcrop complex, 15 to 60 percent slopes
- 6E-Gnojek, stony-Gnojek, very stony-Wickes, stony complex, 15 to 45 percent slopes
- 7D-Circleville family-Gnojek, stony complex, 4 to 15 percent slopes
- 8D-Crago, stony-Musselshell complex, 8 to 15 percent slopes
- BcE-Blaine-Cheadle cobbly loams, 10 to 25 percent slopes
- Md-Mine dumps
- MvB-Musselshell gravelly loam, 2 to 5 percent slopes
- MwE-Musselshell-Crago channery loams, 15 to 35 percent slopes
- MxE-Musselshell-Crago cobbly loams, 8 to 20 percent slopes
- Rr-Rivra gravelly loam
- Ts-Thess-Scravo complex

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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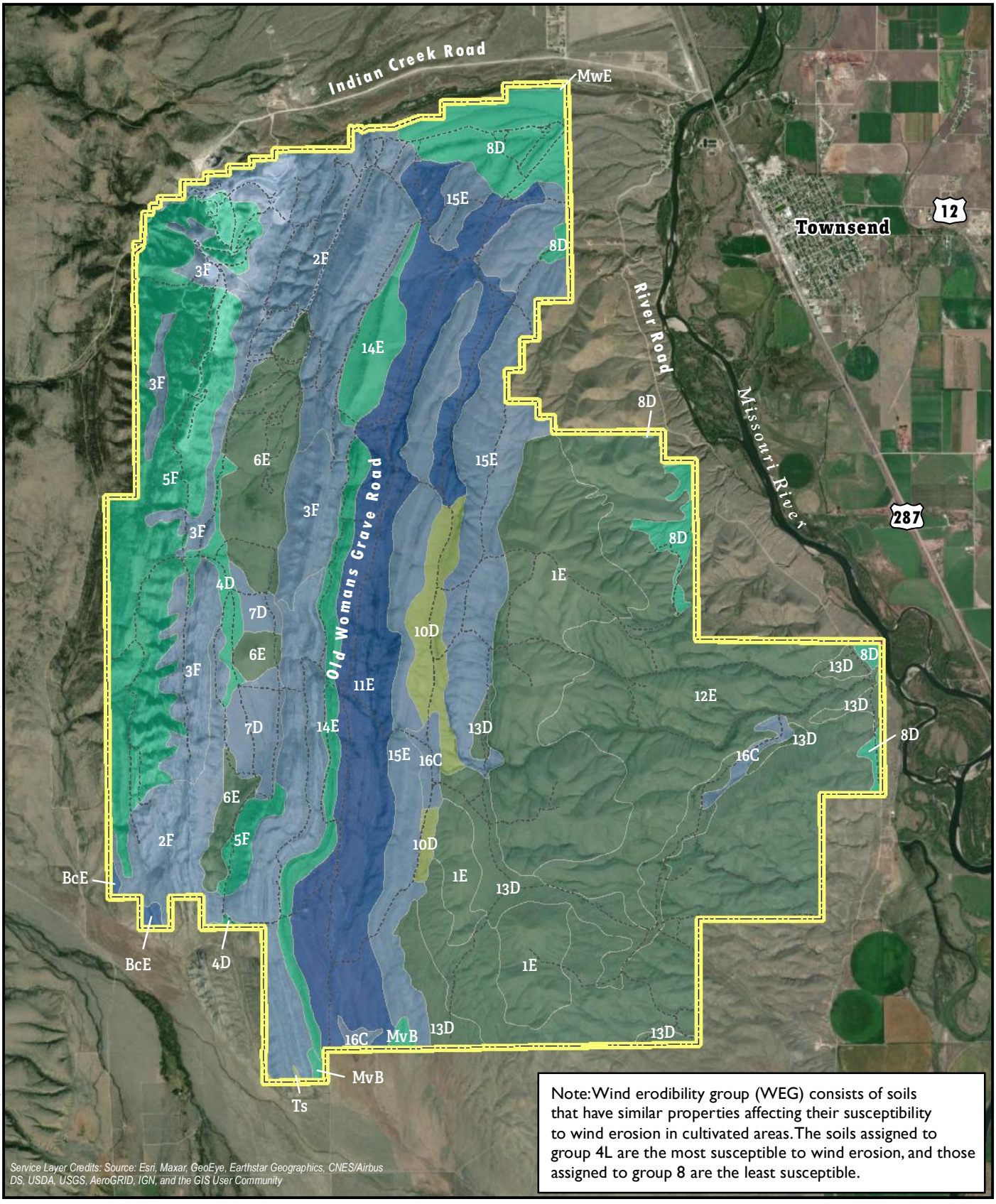
0 Miles 1.5

NewFields

- Limestone Hills Training Area
- Roads

Soil Mapping Units
Limestone Hills Training Area
MTARNG INRMP
Broadwater County, Montana
FIGURE D-4



Note: Wind erodibility group (WEG) consists of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 4L are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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N

0 1.5 Miles

NewFields

Wind Erodibility Groups (WEG) by Soil Types (NRCS)

- 4L
- 5
- 6
- 7
- 8

NRCS - Natural Resources Conservation Service

Hydric Soils (NRCS)

- Hydric Soils (Rr)
- Limestone Hills Training Area
- Roads

Highly Erodible and Hydric Soils
Limestone Hills Training Area
MTARNG INRMP
Broadwater County, Montana
FIGURE D-5

1.2.5 Hydrology

The LHTA is within the Upper Missouri River Basin (4th level hydrologic unit code (HUC) 10030101). This river basin extends from Three Forks, Montana, downstream to the outlet of Holter Lake. Two streams flow near or through the LHTA (Crow Creek and Indian Creek), both of which are tributaries to the Missouri River. Crow Creek is located south of the LHTA; Indian Creek is located along the northern boundary and flows through the northwestern-most portion of the LHTA (**Figure D-6**). The Missouri River is located outside the LHTA boundary within 0.25 mile of River Road and the LHTA boundary. There are no Wild and Scenic River designations in the vicinity of the LHTA.

1.2.5.1 Surface Water and Springs

Runoff from the mountain slopes and foothill areas around the boundaries of the Upper Missouri River basin flow down small drainages and discharge into Indian Creek, Crow Creek, or the Missouri River. These small drainages are mostly small intermittent and ephemeral streams which generally only flow seasonally and during periods of heavy or prolonged storms, respectively. In most cases, precipitation infiltrates or is lost to evapotranspiration prior to reaching a surface water body.

Crow Creek is a perennial stream originating in the Elkhorn Mountains west of the LHTA and discharging to the Missouri River approximately 2 miles north of Toston, Montana. Surface water statistics for Crow Creek are available from 1901 through 1990. During this time period, mean annual flow in Crow Creek near Radersburg was 49 cfs. Low mean monthly flow occurred in January at 8 cfs. High mean monthly flow occurred in June at 168 cfs (USGS 2021). Crow Creek is used as a source of irrigation water; however, most irrigated lands in the Crow Creek Pump Unit which is located south of the LHTA and near Radersburg, are irrigated by surface water pumped from the Missouri River (USBR 2021).

Indian Creek also originates in the Elkhorn Mountains and discharges to the Missouri River approximately 1.25 miles north of Townsend. Indian Creek is usually dry as it flows along the northern border of the LHTA. Loss of surface water in Indian Creek by infiltration occurs north and west of the LHTA in a portion of the stream channel possibly due to disturbance from past placer mining activity. Stream flow in Indian Creek west of Townsend above the confluence with West Fork of Indian Creek ranges from 0.24 to 10.6 cfs. Flow in the West Fork of Indian Creek near the confluence with Indian Creek ranges from 0.03 to 0.89 cfs (MDEQ 1996).

In 2000, the BLM reclaimed approximately 2,400 lineal feet of Indian Creek previously disturbed by placer mining. Reclamation was achieved by construction of a hydraulically and geomorphologically stable channel for perennial flows capable of supporting a riparian plant community and habitat for brook trout. The reclaimed stretch is located within and adjacent to the north ROW boundary (MTARNG 2008).

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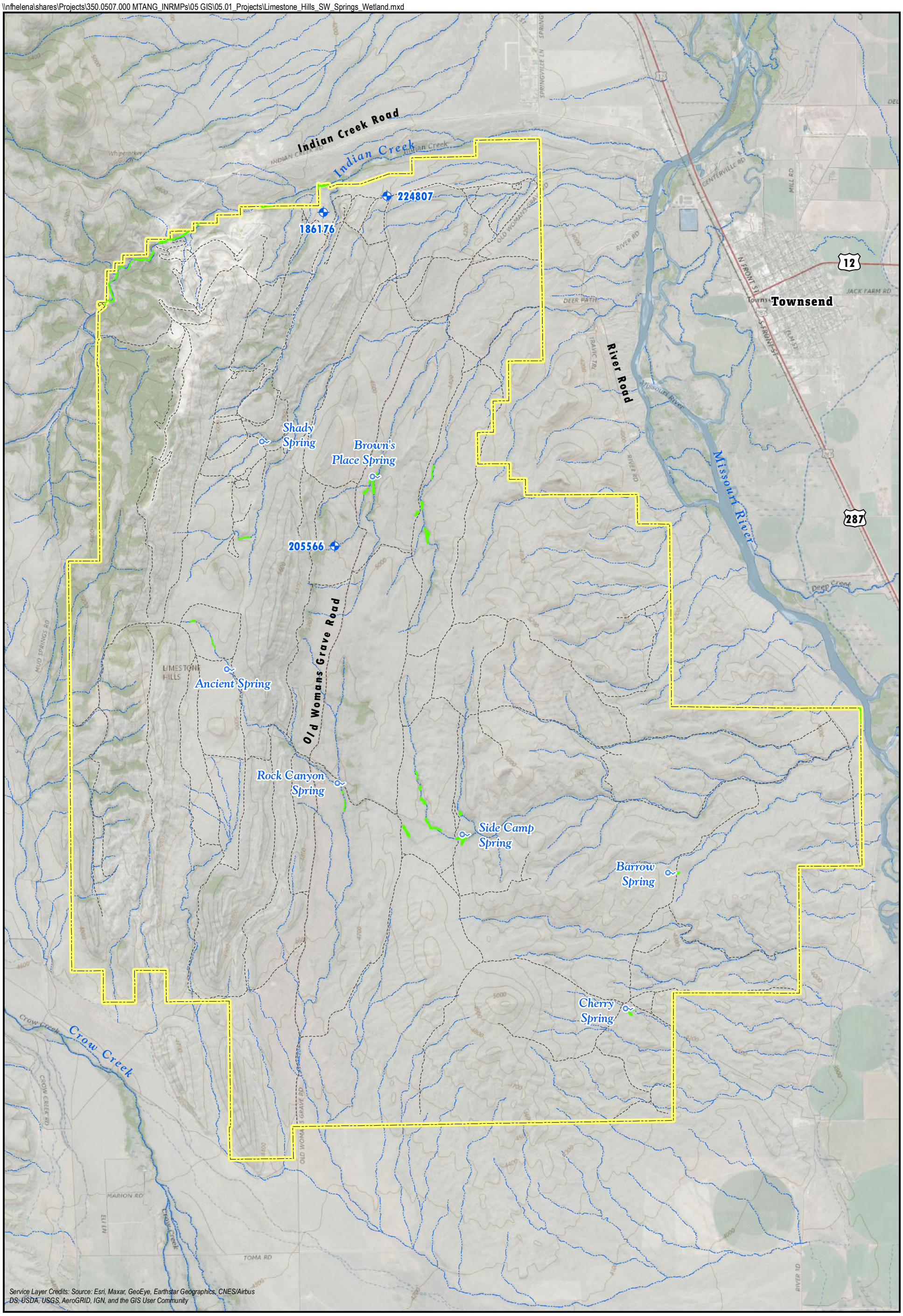

0 1
Miles

NewFields

- Limestone Hills Training Area
- Roads
- Streams
- Groundwater Well and Well Number (GWIC)
- Wetlands (MTARNG)
- Spring

Surface Water, Springs, Groundwater Wells and Wetland Areas
Limestone Hills Training Area
MTARNG INRMP
Broadwater County, Montana
FIGURE D-6

The Missouri River flows from south to north outside the LHTA within 0.25 mile of River Road and the LHTA boundary. **Figure D-6** shows surface water resources in the LHTA.

Both Crow Creek and Indian Creek are listed by the Montana Department of Environmental Quality (MDEQ) as impaired water bodies (303(d) list, MDEQ 2018). Both Crow and Indian creek's stream impairments are primarily due to sediment and metals associated with agriculture and resource extraction. A summary of impaired water bodies in the LHTA is provided in **Table D-5**.

Table D-5. Impaired Water Bodies in the Limestone Hills Training Area, Upper Missouri River Basin

Stream Segment & Years on 303(d) List	Segment Length (miles)	Impairment Causes	Impairment Sources
Crow Creek (1996, 1998, 2000, 2002, 2004, 2008, 2010, 2012, 2014, 2016, 2018)	15.89	Alteration in stream-side or littoral vegetative covers; Flow Regime Modification; Nitrogen, Total; Phosphorus, Total; Physical substrate habitat alterations; Sedimentation/Siltation	Agriculture; Irrigated crop production; Grazing in Riparian or Shoreline Zones; Habitat Modification – other than hydromodification
Indian Creek (1996, 1998, 2000, 2002, 2004, 2008, 2010, 2012, 2014, 2016, 2018)	8.01	Arsenic; Cadmium; Lead; Mercury	Acid Mine Drainage; Dredge Mining; Impacts from Abandoned Mine Lands; Mine Tailings

Source: MDEQ 2018

Some ephemeral stream channels in the LHTA have been developed as small stock water holding ponds with berms on the downstream sides of the pond to temporarily hold surface water following snowmelt or a heavy precipitation event. Ranchers historically have captured and developed surface water for livestock in these streams (Montana State Engineers Office 1956). Under normal conditions, drainages in the LHTA are not tributaries to larger streams. Since Indian Creek is the only perennial stream flowing through the LHTA, stock water is the primary use of surface water that might be available in the drainages.

The number of springs identified in the LHTA varies from four to more than 24, depending upon the source of information and the time of the spring survey. The cultural resource study completed by Davis et al. (1980) identified at least 24 springs scattered throughout the LHTA based on field evidence. The 1980 study also used the geology and groundwater study completed by the USGS (Lorenz and McMurtrey 1956) to document the location of springs in the area. However, only four springs are identified in the Montana National Hydrography Dataset (2005), and all four are located in the southern portion of the training area. The discrepancy regarding the number of springs in the LHTA is likely a result of the ephemeral nature of most of the springs and the relative drier climatic conditions recently experienced in the area. Seven main spring locations are shown in **Figure D-6**.

1.2.5.2 Wetlands

The LHTA contains approximately 4.3 acres of potential wetland areas with hydric soils and approximately 76.3 linear miles of Waters of the U.S. (TtEMI 1998). Hydric soils are primarily associated with the wetland fringe along drainageways in the LHTA. The presence of hydric soils is one of three required criteria used to identify wetland areas. **Figure D-6** shows the location of wetland areas on the LHTA as identified in 1998 (TtEMI 1998).

1.2.5.3 Groundwater

The occurrence of groundwater in the LHTA is primarily controlled by bedrock fractures in faulted and folded sedimentary and igneous rocks. Aquifers in the LHTA are recharged from rainfall and snowmelt. Thin deposits of sediment found in ephemeral channel bottoms in the LHTA are generally dry, have limited storage, and do not yield a reliable source of groundwater (with the exception of springs) (MTARNG 2008). Reported yields for wells drilled in the bedrock units are typically less than 50 gallons per minute. A well drilled by the MTDMA in the northern portion of the LHTA is located in fractured Madison Limestone that is reported to yield 70 gallons per minute. Well depths for all wells in the LHTA range from 18 feet to 291 feet below ground surface. Static water levels range from 3 to 141 feet below ground surface (MBMG 2021). Most groundwater wells and developed springs in the LHTA are used for stock water and wildlife.

The MTDMA has three wells on record in the LHTA (**Figure D-6**) (MBMG 2021). One well (186176) was completed in 2000 and was drilled to a depth of 235 feet. The well is in the northern portion of the LHTA and was completed in fractured limestone bedrock and is used to supply a new stock watering tank adjacent to the well. The well yields 70 gallons per minute. The well is pumped during the spring, summer, and fall grazing seasons, and a timer system controls the discharge demand. Overflow from the stock water tank is conveyed to an adjacent ephemeral stream channel that feeds into Indian Creek. Water in the channel provides a periodic source of water for wildlife and aquatics prior to infiltrating into the channel bottom sediments. The amount of overflow water from the stock tank is of insufficient quantity to develop a reliable flow in the ephemeral channel (MTARNG 2008). The second well (205566) was completed in 2003 at a total depth of 180 feet with a static water level of 16 feet. A third well (224807) was completed in 2006 at a total depth of 291 feet with a static water level of 115 feet.

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Appendix E
Flora and Fauna

APPENDIX E FLORA AND FAUNA

1.1 FORT HARRISON TRAINING AREA

1.1.1 Ecosystem Classification

FHTA is in the northern portion of the U.S. Ecoregion – Dry Domain – Temperate Steppe Regime Mountains – Middle Rocky Mountain Steppe Province – Townsend Basin ecosystem land classification. The Townsend Basin subregion occupies a broad, nearly treeless, intermontane valley with floodplains, stream terraces, alluvial fans, and areas of treeless hills. Foothills prairie typify the natural vegetation dominating the Townsend Basin including grama-needlegrass-wheatgrass vegetation communities. FHTA is also on the eastern edge of the Eastern Divide Mountains ecosystem land classification. The Eastern Divide Mountains are described as unglaciated, mostly forested hills and mountains east of the Continental Divide which are underlain by metasedimentary and volcanic rocks (Woods et al. 1999).

1.1.2 Vegetation

Thirteen habitat types have been mapped within FHTA as defined by Mueggler and Stewart (1980), Pfister et al. (1977) and Hansen et al. (1995) (**Figure E-1**) (WESTECH 2001). General vegetation types within the FHTA are described in **Table E-1**. A list of plant species recorded within the FHTA, including scientific and common names, are included in **Attachment E-1**.

The following habitat types are some of the more ecologically important that occurs on FHTA (ESG 2020):

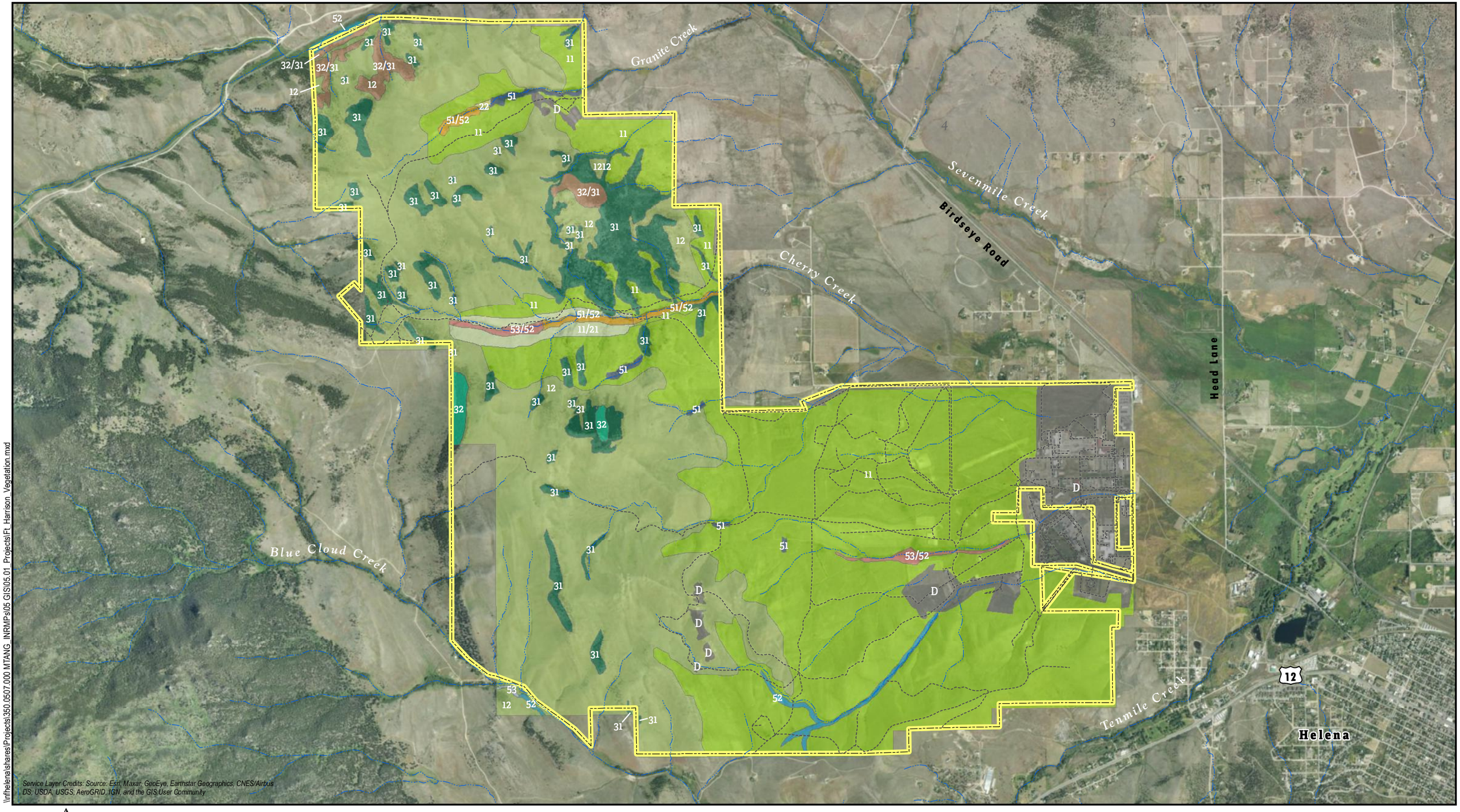
- Bluebunch wheatgrass/prairie Junegrass (*Agropyron spicata/Koeleria macrantha*) habitat type;
- Big sagebrush/bluebunch wheatgrass (*Artemisia tridentata/Agropyron spicata*) habitat type;
- Idaho fescue/bluebunch wheatgrass (*Festuca idahoensis/Agropyron spicata*) habitat type; and
- Rocky Mountain juniper/bluebunch wheatgrass (*Juniperus scopulorum/Agropyron spicata*) habitat type.

These habitat types provide important cover and forage to many wildlife species. They provide structural diversity for both thermal and hiding cover (Hansen et al. 2008) in addition to providing valuable forage and browse material for ungulates. These communities are also important for small mammals and a wide variety of birds.

Table E-1. Description of General Vegetation Types Occurring on FHTA

General Vegetation Type	General Description
Grassland	The most common vegetation type on FHTA. Lower elevation grasslands are usually dominated by bluebunch wheatgrass and blue grama; however, Idaho fescue and rough fescue can be found at moderate to high elevations.
Shrub/Grassland	A minor vegetation type on FHTA. Primarily silver sagebrush and needle-and thread grass. Co-dominant species include plains reedgrass, western wheatgrass, and thickspike wheatgrass. Some big sagebrush and bluebunch wheatgrass also occur.
Upland Forest	Occurs mainly on foothill slopes and ridges of the installation. Vegetation types include limber pine and Douglas-fir. Co-dominant species include Kentucky bluegrass, plains reedgrass, and western needlegrass.
Deciduous Forest	Occurs on sub-irrigated drainages or along upland perennial streams, such as Cherry Creek and Granite Creek. Plant species include quaking aspen, narrow-leaf cottonwood, and red-osier dogwood. Smaller shrubs include common chokecherry, serviceberry, and golden currant.
Willow Shrub	Occurs mainly along portions of Cherry Creek. Common plant species include Bebb willow, Scouler willow, chokecherry, Kentucky bluegrass, and golden currant.
Non-willow Shrub	Occurs in mesic drainage sites. Common plant species include western snowberry, Kentucky bluegrass, golden currant, and common chokecherry.
Sedge Herbaceous	Found mainly in an alkaline meadow wetland of the VA hospital and along streams on the installation. Common plant species include American bulrush, Baltic rush, Kentucky bluegrass, silverweed, field mint, showy milkweed, and common cattail.
Non-sedge Herbaceous	Occurs in mesic drainage communities. Dominated by weedy forbs. Common plant species include redtop, poverty weed, silverweed, and Baltic rush.

Source: Adapted from Scow 2001a, WESTECH 2001



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NewFields

Fort Harrison Training Area
Roads
Streams

Vegetation Types - (Westech 2001)

- 11-Prairie Grassland
- 11/21-Grassland
- 12-Foothills Grassland
- 22-Big Sagebrush/Basin Wildrye
- 31-Limber Pine Forest-Savannah
- 32-Douglas-Fir Forest
- 32/31-Douglas Fir-Limber Pine Forest
- 51-Deciduous Forest Drainage Bottom
- 51/52-Deciduous Forest/Shrub Drainage Bottom
- 52-Shrub Drainage Bottom
- 53-Herbaceous
- 53/52-Herbaceous/Shrub Drainage Bottom
- D-Disturbed Vegetation

Vegetation Types
Fort Harrison Training Area
MTARNG INRMP
Lewis and Clark County, Montana
FIGURE E-1

1.1.3 Noxious Weeds

The presence of noxious weeds on FHTA was first identified during a 1997 vegetation inventory of the area (TtEMI 1998a). Surveys of noxious weeds are now scheduled annually and sometimes more frequently.

Effective June 21, 2019 noxious weeds in Montana are assigned to a series of five priority categories depending on their abundance, threat, and distribution: Priority 1A, Priority 1B, Priority 2A, Priority 2B, and Priority 3. Certain categories may be subject to eradication, sale prohibition, and/or other control measures.

Priority 1A weeds are not present or have a very limited presence in Montana. Management criteria will require eradication if detected; education; and prevention.

Priority 1B weeds have limited presence in Montana. Management criteria will require eradication or containment and education. No Priority 1B weeds are present at FHTA.

Priority 2A weeds are common in isolated areas of Montana. Management criteria will require eradication or containment where less abundant. Management shall be prioritized by local weed districts. No Priority 2A weeds are present at FHTA.

Priority 2B weeds are abundant in Montana and widespread in many counties. Management criteria will require eradication or containment where less abundant. Management shall be prioritized by local weed districts. **Table E-2** identifies Priority 2B weeds present at FHTA.

Priority 3 plants are regulated plants and are NOT considered Montana listed noxious weeds. However, these regulated plants have the potential to have significant negative impacts. They may not be intentionally spread or sold other than as a contaminant in agricultural products. The Montana Department of Agriculture recommends research, education, and prevention to minimize the spread of the regulated plant. Two Priority 3 regulated plants are present at FHTA and are discussed below.

Table E-2. Priority 2B Noxious Weeds Present at FHTA.

Scientific name	Common name	Notes
Cardaria draba	Whitetop	Limited presence
Centaurea stoebe or *maculosa*	Spotted knapweed	Primarily along roads and drainages
Cirsium arvense	Canada thistle	Located in drainages below perennial springs
Cynoglossum officinale	Houndstongue	Primarily Cherry Creek in areas of heavy cattle use
Euphorbia esula	Leafy spurge	Significant coverage in limited areas
Linaria dalmatica	Dalmatian toadflax	Significant coverage in limited areas

Source: Scow 2001b, ESG 2020

Cheatgrass (*Bromus tectorum*) and Russian olive (*Elaeagnus angustifolia*) are the two Priority 3 regulated plants present at FHTA. Russian olive is primarily found within the fenced wetland area referred to as Cottonwood Drainage in the central part of FHTA.

Counties in Montana may maintain county noxious weed lists that are separate from the state noxious weed list. **Table E-3** identifies Lewis and Clark County noxious weeds known to occur at FHTA.

Table E-3. Lewis and Clark County Noxious Weeds Present at FHTA.

Scientific name	Common name	Notes
Arctium lappa, A. minus	Great burdock, Lesser burdock	Limited presence
Carduus nutans	Musk thistle	Limited presence
Verbascum thapsus	Common mullein	Actively managed but not considered a problem

Source: Scow 2001b, ESG 2020

1.1.4 Fish and Wildlife

A reconnaissance of FHTA was conducted in autumn 2009 to identify wildlife habitat types in the area. Five habitat types were identified and expanded to 16 habitat subtypes. These subtypes were defined by dominant vegetation, physical features or land use. The majority of FHTA consists of bunchgrass, but woodlands and riparian areas in drainages are also present. The greatest limiting factor in fish and wildlife species richness at FHTA appears to be the small number of surface water sources (WESTECH 2010).

A list of wildlife species potentially found in the region encompassing FHTA are provided in **Attachment E-2**.

1.1.4.1 Fish

Ten species of fish have been reported from the region encompassing FHTA. USGS topographic maps indicate that two perennial streams (Granite and Cherry Creeks) flow through FHTA (**Figure E-2**), but these streams are intermittent within FHTA, and Cherry Creek has been channelized in its lower reach. Granite and Cherry Creeks are tributaries of Sevenmile Creek (located just outside FHTA's northern border), while Sevenmile and Blue Cloud Creeks (located just outside FHTA's southern border) are tributaries of Tenmile Creek, a perennial stream that is sometimes dewatered where its lower reaches cross the Helena Valley. The Montana Fisheries Information System (MFISH; MTFWP 2021) shows that Sevenmile Creek supports mottled sculpin, rainbow trout, brook trout and brown trout, while Tenmile Creek supports these four species and longnose dace. Both creeks are managed as trout streams and both have final Fisheries Resource Values of "moderate" (MTFWP 2021). Neither Tenmile nor Sevenmile Creeks are considered valuable spawning sites for spring spawners (rainbow trout) (WESTECH 2010). Cherry and Granite Creeks have not been surveyed. While it is possible that fish from Sevenmile and Tenmile Creeks could move upstream into Granite and Cherry creeks during periods of high water (WESTECH 2010), it seems unlikely that the portions of these streams in FHTA could support fisheries over time. Consequently, fish and fish habitat are a very minor component of the FHTA faunal assemblage.

1.1.4.2 Reptiles and Amphibians

Six reptile species potentially occur in FHTA. Preferred and/or breeding habitat is available in FHTA for five species, all of which are snakes including rubber boa, eastern racer, gopher snake, terrestrial gartersnake, and western rattlesnake. Western rattlesnake and eastern racer have been observed by WESTECH and MTARNG personnel. Habitat for terrestrial gartersnakes, which is usually restricted to moist drainage bottoms, is limited in FHTA. Rubber boas and gopher snakes have not been recorded in FHTA, but their preferred habitat is available, and it seems likely that these species are present at least occasionally (WESTECH 2010).

Amphibians require aquatic habitat for reproduction and early life stages. The scarcity of surface water in FHTA may limit amphibian species richness in FHTA. Six species of amphibians potentially occur in FHTA. Preferred and/or breeding habitat for five of the six species (long-toed salamander, plains spadefoot, western toad, boreal chorus frog, and Columbia spotted frog) is seasonally available in some years in FHTA. WESTECH surveyed for amphibians in FHTA in 1996 but none were found (1997). The long-toed salamander has been recorded within 2 miles of FHTA (MTNHP 2021). While no amphibian species likely occurs in abundance in FHTA, some probably occur in low-to-moderate numbers (WESTECH 1997).

1.1.4.3 Macroinvertebrates

Invertebrates provide food for numerous vertebrate species and act as pollinators for many plant species. Stream dwelling invertebrates are also an important component of ecosystems. Because stream dwelling invertebrates are affected by physical, chemical, and other biological variables in their localized environment, they can be used as biological indicators and provide a historical, site-specific view of a stream's health. A survey was conducted in 2009 that focused primarily on finding seven invertebrate Species of Concern on FHTA. Most of these seven species are found in aquatic habitats.

The 2009 survey concluded that FHTA did not support viable populations of any of the Species of Concern targeted by the survey. However, dispersing adult caddisflies were collected in late June 2009. It is possible that interbreeding between known populations of this species from Tenmile Creek and Sevenmile Creek may be facilitated by the lack of light pollution and high-speed, high-density vehicle traffic in FHTA (Marshall 2010).

The absence of the other target Species of Concern was attributed to a lack of habitat in FHTA; these species may have never occurred in FHTA. The most noteworthy aquatic invertebrate habitats in FHTA are the three developed springs; Silent Owl Spring contains the best potential habitat. The most likely of the seven Species of Concern to occur in FHTA is the Last Best Place Damselfly, and it will most likely be found in the Silent Owl Spring or hunting among the cattails of the Mule Pasture Spring wetland area (Marshall 2010).

One specimen of a butterfly, the Northern Blue, was observed at Silent Owl Spring. It is not a state Species of Concern. However, its conservation status is unknown and the USFWS is researching studies of basic biology and monitoring existing populations (Marshall 2010).

1.1.4.4 Birds

Under the definition of "preferred and/or breeding habitat," FHTA contains preferred and/or breeding habitat for 151 species of birds (WESTECH 2010). A total of 138 species have been observed within 2 miles of FHTA. About 123 species of landbirds could be expected to occur in the habitats present within FHTA. Of these, 21 are migrants/winter residents and would not be expected to nest in FHTA, and FHTA provides only marginal habitat for about 36 species meaning their nesting would be doubtful. Given this, about 79 species might be realistically expected to nest in FHTA.

Forty-eight species were recorded on the landbird monitoring plots within FHTA in 2016; all could potentially nest in the training area. Therefore, approximately 61 percent of the species that could reasonably be expected to nest in FHTA were recorded in 2016 (WESTECH 2016).

1.1.4.5 Mammals

A total of 67 species of mammals have been recorded in the region encompassing FHTA (**Attachment E-2**). Some mammals are highly mobile and can utilize a wide variety of habitats, while others are habitat specific. "Preferred habitat," for the purposes of the WESTECH 2010 analysis, was defined to be habitat in which a given species could be reasonably expected to be found at least seasonally. Using this definition, FHTA contained preferred habitat for 52 species, of which 23 have been recorded within 2 miles of FHTA (WESTECH 2010).

1.1.4.5.1 Small Mammals

The 2009-2010 wildlife habitat mapping survey conducted by WESTECH defines small mammals as including the orders Lipotyphla (shrews), Lagomorpha (rabbits and hares) and Rodentia (rodents). Most of the animals are small, weighing from a few grams to 1-2 pounds. A few species, such as the beaver and porcupine, may be considerably larger.

Twenty-five species of small mammals have preferred habitat in FHTA. Of these, eight species have been recorded within FHTA and four other species have been recorded within 2 miles of FHTA. Mountain cottontail, white-tailed jackrabbit, porcupine, northern pocket gopher, deer mouse, house mouse, and red squirrel have all been recorded in FHTA, and more species are probably present but are difficult to observe due to their small size and/or habits (WESTECH 2010).

1.1.4.5.2 Bats

Preferred foraging or roosting habitat for 10 bat species occurs in FHTA. Western small-footed myotis and little brown myotis have been recorded within 2 miles of FHTA (MTNHP 2021). WESTECH (1997) surveyed bats in summer 1997 and recorded bat passes within the 40 MHZ range, suggesting *Myotis* species.

Bats roost in rock crevices, caves, mines, trees, and buildings. FHTA lacks rock outcrops and caves, although 15 abandoned mine sites were located within FHTA during WESTECH field studies (1997). FHTA potential roosting habitat also includes buildings, large cottonwood trees, and mature coniferous trees.

1.1.4.5.3 Carnivores

Eighteen species of the order Carnivora (carnivores) are known from the region encompassing FHTA. FHTA contains preferred and/or breeding habitat for 13 species including coyote, gray wolf, red fox, mountain lion, bobcat, striped skunk, American marten, short-tailed weasel, least weasel, long-tailed weasel, badger, raccoon, and black bear (WESTECH 2010). Black bears and mountain lions are considered big game species and are discussed in the next section.

Gray wolves reached biological recovery goals for the Northern Rocky Mountains at the end of 2002 and were delisted under the Endangered Species Act of 1973 (ESA) in May of 2009 (74 FR 15123 15188). However, they were relisted as Endangered/Experimental Nonessential on August 5, 2010 by federal court order. Then, on May 5, 2011, they were again removed from the ESA by the Secretary of the Interior at the direction of the President of the United States and Congress under a rider associated with the DoD and Full-Year Appropriations Act of 2011 (76 FR 25590-25592).

MTFWP is the lead agency for gray wolves, including population monitoring, resolving wolf-livestock conflicts, research, and public outreach. Federal regulations continue to guide MTFWP management practices. FHTA is within Wolf Management Unit (WMU) 390 and within the Northwest Montana Recovery Area (NMRA). Wolf population data is no longer reported by packs, but rather on a state-wide basis due to the changing numbers of packs. Patch occupancy is monitored instead of individual packs. There are known packs in the vicinity of FHTA, but no confirmed dens on the FHTA (N. Lance, MTFWP Wolf Management Specialist, personal communication, 21 January 2021). Gray wolf tracks have been recorded in a Douglas-fir and grassland habitat type and two separate scats were found in grasslands in FHTA. In April 2010, a wildlife video recorder located in FHTA recorded a gray wolf feeding on a deer carcass.

Coyote sightings and evidence (tracks and scats) have been recorded in several habitat subtypyes in FHTA. Bobcat, badger and long-tailed weasel tracks were recorded during 2009-2010 winter track surveys. The striped skunk and red fox are considered common and widespread in the region encompassing FHTA.

FHTA is not considered preferred habitat for grizzly bears; however, FHTA is within the area where grizzly bears may be present (J. Martin, USFWS, personal communication, 8 June 2021). Grizzly bears may use the mountains west of FHTA as a linkage corridor between the Northern Continental Divide Ecosystem (NCDE) Recovery Area and the Greater Yellowstone Ecosystem (GYE) Recovery Area (MTARNG 2008). FHTA is approximately 30 air miles south of the NCDE and about 100 air miles north of the GYE and adjoins this wildlife corridor. Grizzly bear activity has been verified in several locations east of the Continental Divide (Mitchell Mountain, Elk Park, Lyons, Little Prickly Pear Creeks.) An increase in verified reports has occurred in the last several years up and down the Continental Divide and in the Elkhorn Mountains including verified reports just north of FHTA and south of Helena in the Travis Creek/Park Lake area (J. Sika, MTFWP Wildlife Biologist, personal communication, 23 December 2020).

1.1.4.5.4 Big Game

Nine species of big game have been recorded in the region encompassing FHTA. Four species of the order Artiodactyla and two of the order Carnivora could potentially occur in FHTA. Of these, only black bear have not been documented in FHTA.

WESTECH (1999a, 2010) prepared an assessment of big game use of FHTA. That assessment is still applicable and is summarized below combined with recent data from MTFWP and MTARNG's ongoing monitoring effort. The two primary big game species in the FHTA are mule deer and elk.

Mule deer are common in FHTA during all seasons, although the highest number of mule deer occur in the winter and the smallest number are present in summer. Mule deer winter range encompasses the entire FHTA, extending into the Helena Valley and to the west and south edges of Helena (**Figure E-2**). Mule deer are more common in the steeper topography which includes the western and northern portions of the area and are less common in the lower elevations and gentler topography of the eastern portion of the area (Harting 1996; WESTECH 2010).

Elk are present in FHTA in all seasons, but primarily in winter. FHTA is part of a much larger elk range that extends north and south along the east side of the Continental Divide. Consequently, elk numbers and seasonal distribution may vary considerably between years. Elk winter range and elk general distribution in relation to FHTA is shown in **Figure E-3**. Elk tend to leave the FHTA area between late March and April (WESTECH 1997). In winter, elk are generally found on the higher windswept ridges and adjoining steep slopes, which provide a refuge and security from human-caused harassment found outside of the FHTA (WESTECH 1999a) but may also venture into the low elevations of the training range (WESTECH 2010). In most winters, elk may be using FHTA at any given time. FHTA is an important transitional range that elk use to travel over a much larger area.

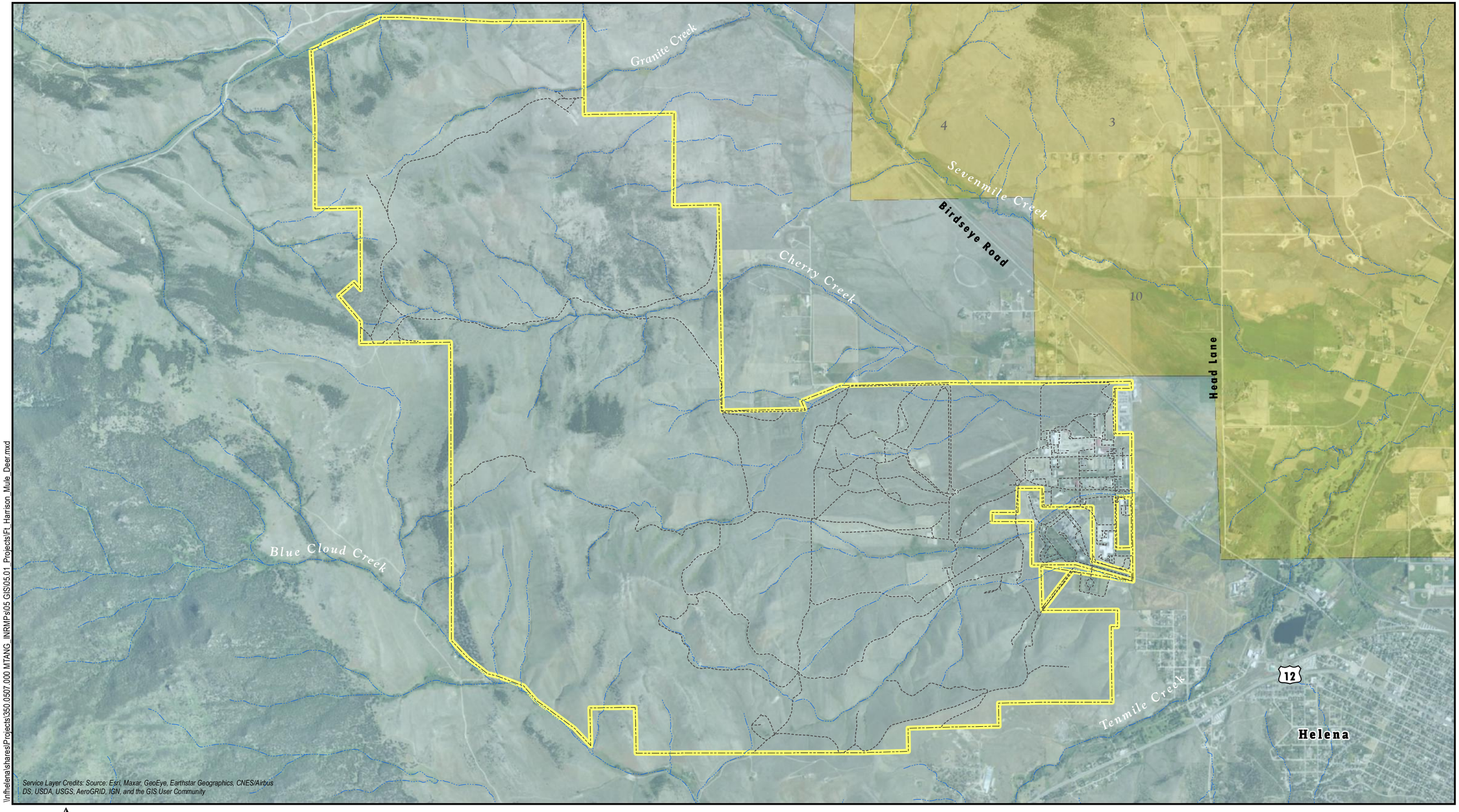
White-tailed deer are present along Tenmile Creek both south and east of FHTA and along Sevenmile Creek north of FHTA. MTARNG personnel reported use by occasional white-tailed deer in the eastern portion of FHTA. However, preferred habitat (riparian drainages) is comparatively limited and white-tailed deer numbers tend to be low.

Two pronghorn females were consistently seen using the grassland habitat within the lower elevation portion of FHTA. Beginning in 2014, MTARNG began removing fence and modifying fence per MTFWP guidelines. As of 2020, pronghorn numbers have increased to 16 individuals (J. Stone, MTARNG Natural Resource Manager, personal communication, 5 January 2021). The pronghorns reported in FHTA are assumed to come from the Scratchgravel Hills herd.

Mountain lion tracks were recorded in FHTA bunchgrass habitat subtype during December 2009 (WESTECH 2010). Mountain lions often have smaller home ranges during winter in response to concentration of their prey (mule deer) on winter ranges (Murphy 1983). Mule deer are more concentrated in FHTA during winter; therefore, mountain lions are more likely to be present during this season. It is unlikely that FHTA could consistently support resident individual mountain lions due to their large individual home ranges.

Black bear evidence was not recorded during the 2010 field reconnaissance. West and south of FHTA, black bears are common in the mountainous habitats, and it is possible that black bears occasionally travel through and/or forage in the FHTA. Most of this use would probably occur in spring, when herbaceous forage is succulent, and carrion might be present. Black bears have large individual home ranges, and it is unlikely that FHTA could provide either the forage or security to support endemic black bears.

A moose cow and calf were observed by MTARNG personnel travelling from east to west across FHTA in winter 2011.



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0 Feet 3,000

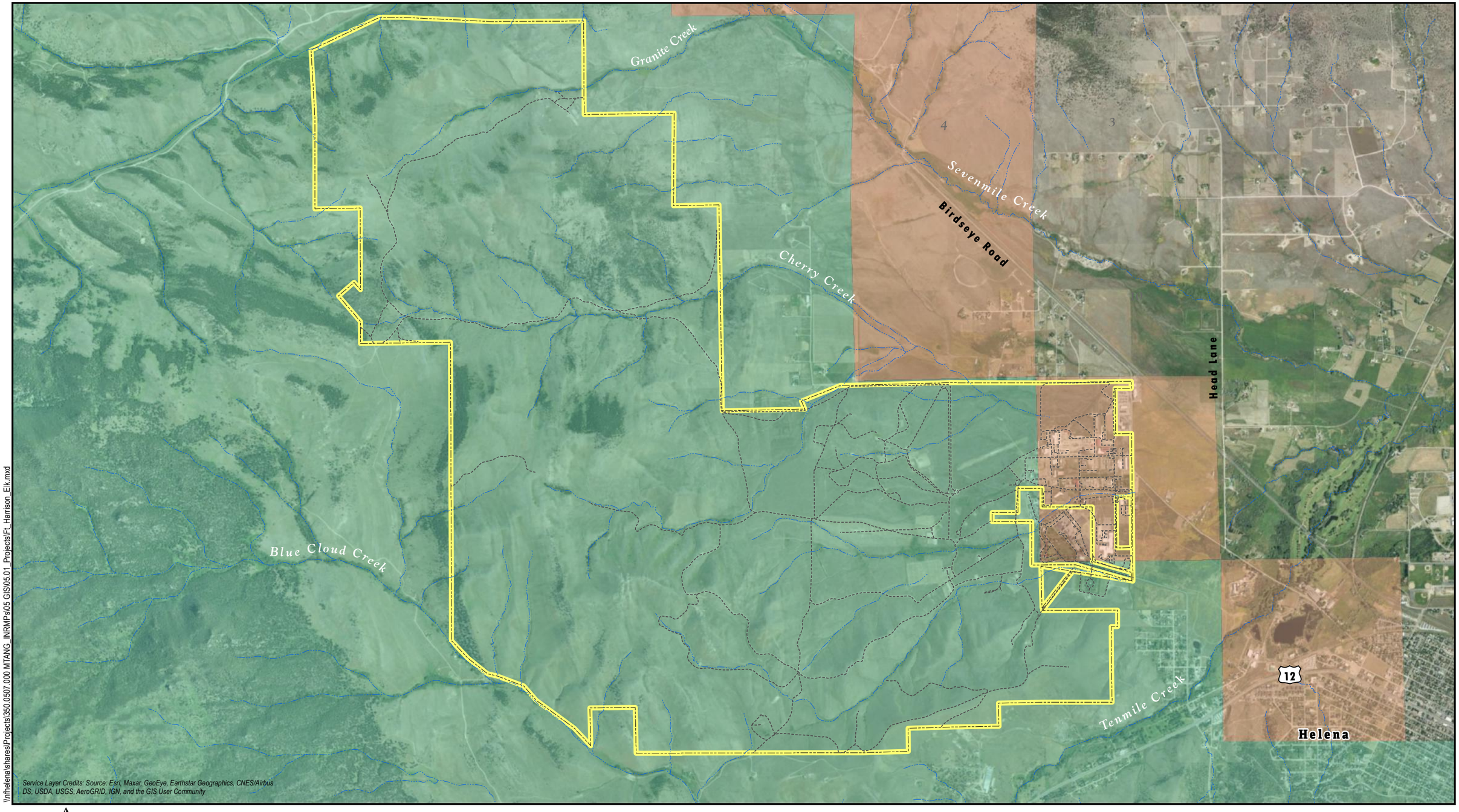
NewFields

Fort Harrison Training Area
Roads
Streams

Mule Deer Distribution (Montana FWP 2021)

General Distribution
General Winter Distribution

Mule Deer - General and Winter Distribution
Fort Harrison Training Area
MTARNG INRMP
Lewis and Clark County, Montana
FIGURE E-2



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Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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NewFields

Fort Harrison Training Area
Roads
Streams

Elk Distribution (Montana FWP 2021)
General Distribution
General Winter Distribution

Elk - General and Winter Distribution
Fort Harrison Training Area
MTARNG INRMP
Lewis and Clark County, Montana
FIGURE E-3

1.1.5 Special Status Species

"Species of Concern" are defined by the Montana Natural Heritage Program (MTNHP) as native plant and animal species that are "rare, threatened, and/or have declining populations and as a result are at risk or potentially at risk of extirpation in Montana" (MTNHP 2021). Designation as a Species of Concern is not a statutory or regulatory classification. Instead, these designations provide a basis for resource managers and decision-makers to make proactive decisions regarding species conservation and data collection priorities to maintain viable populations and avoid extirpation of species from the state.

Species designated with federal status under the U.S. Endangered Species Act (ESA) include federally listed, proposed, or candidate, endangered or threatened species identified by the USFWS, or as "sensitive" by the USFS or the BLM. Grizzly bear and Canada lynx, both listed threatened under the ESA, may be present within FHTA.

Plants

No USFWS-listed plant species are known to occur on FHTA. One rare plant species has been found in FHTA (WESTECH 1999b). Lesser rushy milkvetch (*Astragalus convallarius* var. *convallarius*), has a Global Rank of G5 and a State Rank of S3 (MTNHP 2021). The species' Global Rank of G5 indicates that it is common, widespread, and abundant although it may be rare in parts of its range. The State Rank of S3 indicates the species is potentially at risk because of limited and/or declining numbers, range and/or habitat, even though it may be abundant in some areas. The distribution of lesser rushy milkvetch in Montana is limited to two disjunct localities in the state: the Helena Valley vicinity and an area in extreme southwest Montana in Beaverhead County (MTNHP 2021).

Lesser rushy milkvetch is found in grasslands and open ponderosa pine woodlands in valleys and foothills, where it flowers from June to early July. Rough fescue, Idaho fescue, and bluebunch wheatgrass are common bunchgrass associates. Ten occurrences of the species are recorded in Lewis and Clark County. However, Tetra Tech EMI, Inc. (1998a), WESTECH (1999b), and ESG (ESG 2009) found lesser rushy milkvetch to be widely distributed throughout FHTA. A 2009 survey reported 43.5 percent of surveyed areas in FHTA contained lesser rushy milkvetch. The average canopy cover of lesser rushy milkvetch, when present, was 0.5 percent (ESG 2009). Vegetation surveys conducted in 2020 revealed the presence of lesser rushy milkvetch at approximately 10% of surveyed plots (ESG 2020). Fewer occurences in the current survey is likely due to a lack of sampling in this species preferred habitat type in 2020.

Wildlife

Forty-one birds, 13 mammals, and 4 amphibians are Species of Concern that potentially occur in FHTA. Of these, 21 bird species, 6 mammals, and 2 amphibians have preferred and/or breeding habitat inside the FHTA boundary (**Attachment E-2**). Seven Species of Concern have been recorded in FHTA: ferruginous hawk, golden eagle, bald eagle, long-billed curlew, Lewis' woodpecker, Clark's nutcracker, bobolink (WESTECH 2010). Of these 7 species, only the long-billed curlew is known to nest/reproduce in FHTA.

Prior to 1997, a black-tailed prairie dog (BTPD) colony was situated near the Fort Harrison VA building in the gravel parking lot and on Soldier Park's maintained lawn. In the late 1990s approximately 70 BTPD were trapped and relocated; 35 were moved to the Charles M. Russell Wildlife Refuge and the other 35 were relocated to a 5.7-acre site in the northeastern portion of FHTA (FaunaWest 1997). In 2009 the

minimum number of prairie dogs was 10, which is 5 to 6 less then what was observed within the same BTPD town shortly after relocation (C. Knowles, FawnaWest Wildlife Biologist, personal communication, April 2010). The longevity of this town was uncertain but 10 years after relocation, the BTPD colony population was thought to be relatively stable. The possibility for immigration was low since the nearest BTPD colony is located west of Interstate 15 approximately 8 miles northeast of FHTA (WESTECH 2010). The last known observation of BTPD was in 2011. There were two active fox dens in the vicinity that may have contributed to their demise (J. Stone, MTARNG Natural Resource Manager, personal communication, 27 January 2021). Two bird species associated with BTPD colonies are the mountain plover and burrowing owls. Both species are listed as Species of Concern and potential habitat will be monitored for their presence.

Canada lynx are listed threatened under the ESA. Critical habitat was initially designated in 2006 with revisions in 2009 and 2014, generally covering the boreal forests of northwestern Montana and the area around the Greater Yellowstone Ecosystem (USFWS 2014). Preferred and breeding habitat does not occur within FHTA and Canada lynx have not been recorded in or near the FHTA (WESTECH 2010). However, given the proximity of FHTA to subalpine forests on the Continental Divide and the presence of snowshoe hare (prey species) on FHTA, it is likely that Canada lynx occasionally travel through and/or hunt in FHTA.

1.2 Limestone Hills Training Area

1.2.1 Ecosystem Classification

The National Hierarchical Framework of Ecological Units classifies the LHTA into the following ecological units in order of largest to smallest: Dry Domain-Temperate Steppe Regime Mountains-Middle Rocky Mountain Steppe-Townsend-Horseshoe-London Sedimentary Hills ecoregion (17y) (Bailey 1995). The entire LHTA and lands to the west are in the 17y ecoregion. Lands to the north, east, and south are in the Townsend Basin ecoregion (17w) in which FHTA is located.

The partially wooded Townsend-Horseshoe-London Sedimentary Hills ecoregion (17y) lies in the rainshadow of the Elkhorn Mountains and is rather dry. This area is largely composed of Mesozoic and Paleozoic sedimentary rock; limestone is common and both caverns and dry valleys occur. This ecoregion is lithologically distinct from the nearby Dry Gneiss-Schistose-Volcanic Hills (17ab) and related stream quality, surficial water availability, and aquatic biota are also different. Elevations range from about 4,000 to 8200 feet amsl and are immediate between the higher, forested Northern Rockies (15) and the lower Townsend Basin (17w). Grazing, logging, and mining are the common land uses.

1.2.2 Vegetation

Thirty-one vegetation types, including 19 upland types and 12 drainage bottomland types have been identified in the LHTA (ESG 2020, WESTECH 2001). Upland types include six in grassland, nine in shrub/grassland, three in forest and one tame pasture type. Drainage bottomland types include four deciduous tree types, four riparian shrub types and four herbaceous drainage types. Vegetation types include habitat types as defined by Mueggler and Stewart (1980), Pfister et al. (1977) and Hansen et al. (1995). **Table E-4** includes a general description of the habitat types within LHTA. **Figure E-4** shows 20

mapped general habitat types in the LHTA. A list of plant species recorded within the LHTA, including scientific and common names, are included in **Attachment E-3**.

Table E-4. Description of General Vegetation Types Occurring on LHTA.

General Vegetation Type	General Description
Grassland	The bluebunch wheatgrass/Sandberg bluegrass habitat type is found most on steep, dry slopes of variable aspect. It is most extensive in the northern half of the LHTA. At moderate to higher elevations in the LHTA, two fescue grassland types are present in relatively minor amounts. The Idaho fescue/bluebunch wheatgrass habitat type occurs in middle and upper slopes or ridges of variable aspect. The rough fescue/bluebunch wheatgrass habitat type is found on deeper soils with higher available soil moisture, generally on cooler north and northeasterly aspects. This type is commonly associated with, but not restricted to, previously burned stands of Douglas-fir/rough fescue on midslope and upper slope broad swales along limestone ridges in the northwestern portion of the LHTA.
Upland Shrub	Shrub-dominated upland types comprise the greatest acreage on the LHTA at over 60% of the area. Nine shrub types have been identified, dominated by various sagebrush and juniper communities. Black sagebrush types are most prevalent in the western third of the LHTA; big sagebrush types are equally prevalent in the central portion and dominate the eastern third of the LHTA. Rocky Mountain juniper is conspicuous in most sagebrush stands of both series, and dominates the visual aspect of many stands, although sagebrush canopy cover is usually substantially greater. Mountain mahogany stands dominate the crests and upper slopes of limestone ridges, together with limber pine savannah.
Upland Forest/Savannah Types	Upland conifer forest types occur primarily at middle and higher elevations in the LHTA, on slopes and ridges of variable aspect, and cover approximately 9 percent of the LHTA. Stands are generally best developed on cooler northerly and easterly aspects. Two forest series well represented in the LHTA are the limber pine series and the Douglas-fir series. The limber pine series occupies the driest forest sites in western Montana.
Deciduous Forest	Deciduous forest types occur as patchy stringers on subirrigated and flowing portions of major upland drainage bottoms in the LHTA. Most upland drainages are deeply incised due to the area's geology. Deciduous forest types are most extensive along Indian Creek. Since cattle tend to congregate in these stands (as well as in riparian shrub stands) the disturbed understories are mostly dominated by such

General Vegetation Type	General Description
	invasive species as Kentucky bluegrass, redtop and a diversity of weedy forb species. Four deciduous forest types have been identified in the LHTA including: quaking aspen/red-osier dogwood habitat type, aspen/Kentucky bluegrass community type, black cottonwood/western snowberry community type, and narrowleaf cottonwood/western snowberry community type.
Riparian Shrub	Riparian shrub types occupy hydric and mesic drainage sites, and include one tall shrub type, one mid-shrub type and two low shrub types. They occur mostly as scattered patches along drainages and constitute very minor acreage in the LHTA. Riparian shrub types include: Bebb willow, common chokecherry, shrubby cinquefoil/Kentucky bluegrass, and western snowberry/Kentucky bluegrass.
Herbaceous Wetland	The primary herbaceous wetland type in the LHTA is the Nebraska sedge community type. The small wetland areas in this community type have hydric soils and permanent to semi-permanent high-water tables. Most of these sites have been significantly degraded by cattle grazing and trampling. Except where fenced from livestock, a major portion of perennial stream wetland fringes are currently occupied by non-sedge herbaceous drainage types with reduced hydrophytic species composition. Nebraska sedge is usually dominant in this type on protected sites; elsewhere, codominant species variously include Baltic rush, Kentucky bluegrass, redtop, small-winged sedge, white clover and dandelion. Small microsites in the type may support woolly sedge or brookgrass.
Herbaceous Non-wetland	The Kentucky bluegrass/western wheatgrass community type is a grazing-induced sere of various mesic drainage communities. Scattered mesic shrubs (chokecherry, Wood's rose, wax currant, skunkbush sumac) are often present but herbaceous species dominate, including weedy forbs. Common associates include Canada bluegrass, slender wheatgrass, dandelion, spotted knapweed, creeping white prairie aster and often scattered Rocky Mountain juniper.

Source: ESG 2020, Scow 2001a, WESTECH 2001

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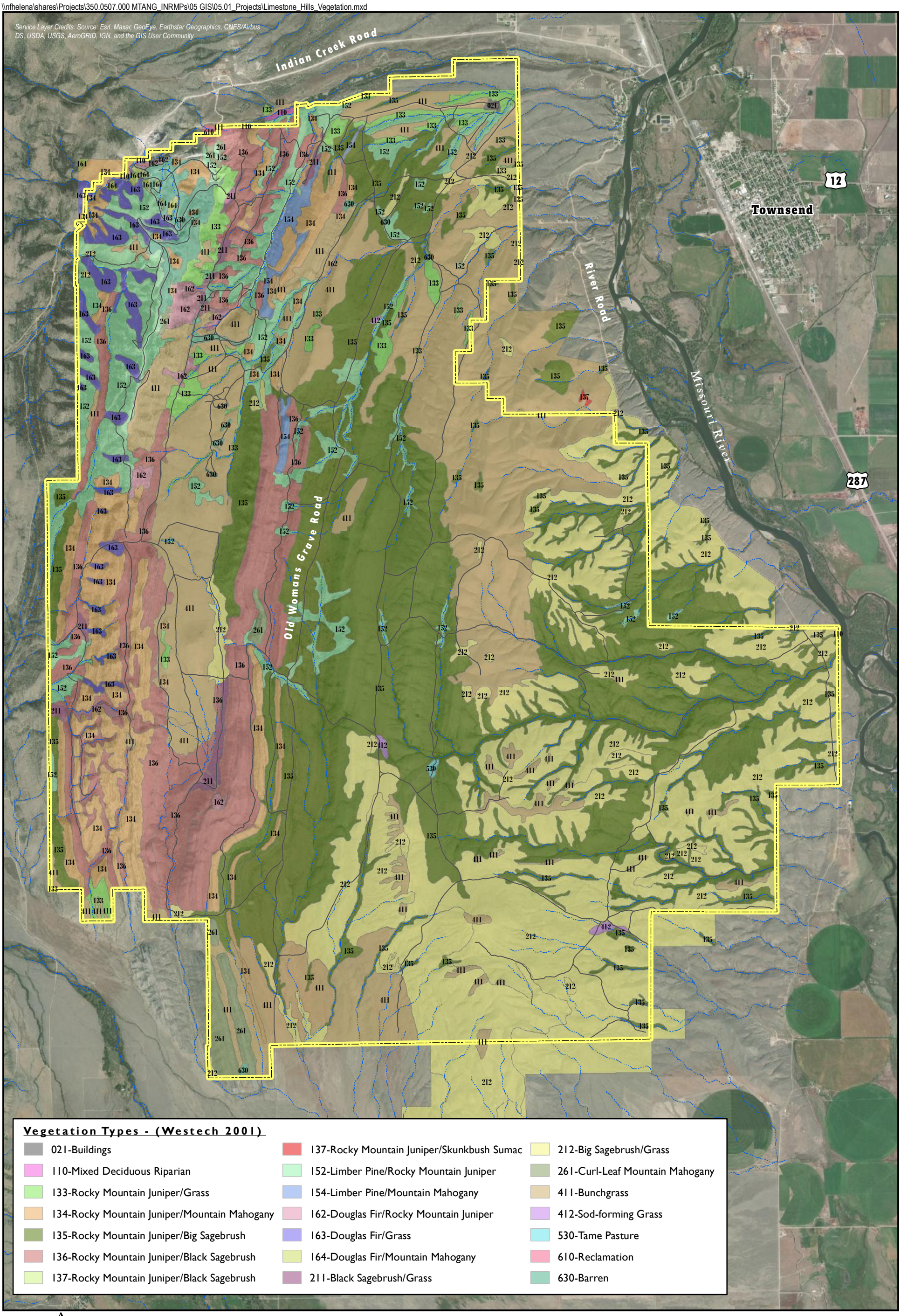


NewFields

Limestone Hills Training Area
Roads
Streams

Vegetation Types
Limestone Hills Training Area
MTARNG INRMP
Broadwater County, Montana
FIGURE E-4

1.2.3 Noxious Weeds

The presence of noxious weeds on the LHTA was first identified during a 1999 vegetation inventory of the area (WESTECH 1999b). Surveys of noxious weeds are now scheduled annually and sometimes more frequently.

Effective June 21, 2019 noxious weeds in Montana are assigned to a series of five priority categories depending on their abundance, threat, and distribution: Priority 1A, Priority 1B, Priority 2A, Priority 2B, and Priority 3. Certain categories may be subject to eradication, sale prohibition, and/or other control measures.

Priority 1A weeds are not present or have a very limited presence in Montana. Management criteria will require eradication if detected; education; and prevention.

Priority 1B weeds have limited presence in Montana. Management criteria will require eradication or containment and education. No Priority 1B weeds are present at the LHTA.

Priority 2A weeds are common in isolated areas of Montana. Management criteria will require eradication or containment where less abundant. Management shall be prioritized by local weed districts. No Priority 2A weeds are present at the LHTA.

Priority 2B weeds are abundant in Montana and widespread in many counties. Management criteria will require eradication or containment where less abundant. Management shall be prioritized by local weed districts. **Table E-5** identifies Priority 2B weeds present at the LHTA.

Priority 3 plants are regulated plants and are NOT considered Montana listed noxious weeds. However, these regulated plants have the potential to have significant negative impacts. They may not be intentionally spread or sold other than as a contaminant in agricultural products. The Montana Department of Agriculture recommends research, education, and prevention to minimize the spread of the regulated plant. Two Priority 3 regulated plants are present at the LHTA and are discussed below.

Table E-5. Priority 2B Noxious Weeds Present at the LHTA.

Scientific Name	Common Name	Notes
Cardaria draba	Whitetop	Found in the northeastern study area, Indian Creek bottom, and mesic swales in the southern portion.
Centaurea diffusa	Diffuse knapweed	Primarily found near roads.
Centaurea maculosa	Spotted knapweed	Widely distributed throughout the LHTA.
Cirsium arvense	Canada thistle	Generally found on wet or mesic sites/drainage bottomland community types.
Cynoglossum officinale	Houndstongue	Found on mesic drainage bottomland communities.
Euphorbia esula	Leafy spurge	Primarily found in northwestern corner of LHTA in black sagebrush and mountain mahogany stands, as well as mesic swales in the southern portion.
Linaria dalmatica	Dalmatian toadflax	Occurs in isolated patches on upland benches primarily in sagebrush communities.
Linaria vulgaris	Yellow toadflax	Found on mesic drainage bottomland communities.
Tanacetum vulgare	Common tansy	Minor presence in former burn areas.

Source: Scow 2001b, MTARNG 2008, ESG 2020.

Cheatgrass and Russian olive are the only Priority 3 regulated plants present on the LHTA.

Counties in Montana may maintain county noxious weed lists that are separate from the state noxious weed list. **Table E-6** identifies Broadwater County noxious weeds found at the LHTA.

Table E-6. Broadwater County Noxious Weeds Present at the LHTA.

Scientific Name	Common Name	Notes
Arctium lappa	Burdock	Primarily found in riparian areas.
Carduus nutans	Musk thistle	Found on mesic drainage bottomland communities; most evident in areas heavily used by livestock.
Hyoscyamus niger	Black henbane	Found along roadsides and ditches.
Sonchus arvensis	Field sowthistle	Found in burned forested areas.

Source: Scow 2001b, WESTECH 2007, ESG 2020

1.2.4 Fish and Wildlife

Fish and wildlife resources in and near the LHTA have been described by many sources, including but not limited to, research, planning, and management documents (various dates) by the BLM, Forest Service, USFWS, and MTFWP; Stevens (1966); Butts (1993, 1995, 1997); WESTECH (1993, 1997, 1999a); and Farmer et al. (2004). The following discussion summarizes information applicable to the area within the LHTA boundary.

The LHTA encompasses a variety of wildlife habitats, including sagebrush terraces along the Missouri River, narrow stringers of riparian habitat along Indian Creek; steeply rolling grasslands and sagebrush/grasslands; benches and low ridges vegetated with juniper and limber pine habitats; steep, rocky sandstone and limestone ridges dominated by Douglas-fir, limber pine and juniper with curly-leaf mountain mahogany and sagebrush understories; and deeply incised limestone and sandstone canyons. In total, 7 wildlife habitat types divided into 26 habitat subtypes have been identified in the LHTA. For the most part, these habitats are xeric. Surface water sources are limited to a few springs and seeps, most of which have been developed for livestock use.

The region encompassing the LHTA is known to support 381 species of fish and wildlife (7 fish, 5 amphibians, 8 reptiles, 291 birds and 70 mammals) at least seasonally. In comparison, the LHTA contains preferred habitat for about 4 fish, 1 to 2 amphibians, 7 reptiles, 98 birds, and 46 mammals. Of these, 1 fish, 3 reptiles, 82 birds and 31 mammals have been recorded in the LHTA. A wildlife species list for the LHTA is in **Attachment E-4**. These records are based on reconnaissance-level investigations and undoubtedly underestimate the actual species richness of the LHTA. Nevertheless, about 70 percent of the wildlife species that would be expected to occur in the LHTA have actually been observed.

1.2.4.1 Fish

The only perennial or intermittent stream in the LHTA is Indian Creek, which crosses the extreme northwest corner of the LHTA. Aquatic habitats in Indian Creek in and near the LHTA have been degraded by historic placer, hydraulic, and dredge mining. The only salmonid suspected to be in this portion of the creek, the non-native brook trout, is considered abundant (MTFWP 2021).

1.2.4.2 Reptiles and Amphibians

Only 17 species of reptiles are known to be native to Montana, and only 7 are known from the region encompassing the LHTA. Habitat for aquatic reptiles (turtles) is not available in the LHTA. Three species of snakes have been recorded in the LHTA. Of these, the gopher snake and western rattlesnake are common.

Compared to many other states, Montana supports a comparatively small number of amphibians. Only 12 species are known to be native to the state, and only 3 are known from the region that encompasses the LHTA. Very little habitat suitable for amphibian reproduction (surface water sources) is available in the LHTA. Consequently, amphibians are a minor component of the LHTA fauna.

1.2.4.3 Birds

The LHTA supports a good diversity of birds. Due to the paucity of aquatic habitat, very few species that are normally associated with water would be expected in the LHTA, although the proximity of the LHTA to the Missouri River and Canyon Ferry Reservoir results in some aquatic bird use of the training area.

The LHTA provides habitat for a variety of raptors (eagles, hawks, falcons and owls). Eleven species have been observed in the LHTA, and three species are known to nest there. The most observed species are the turkey vulture, red-tailed hawk, American kestrel, and great-horned owl.

One native upland game bird, the dusky grouse (blue grouse), and two non-native species (gray partridge and ring-necked pheasant) have been observed in the LHTA. All three species are considered uncommon in the LHTA.

Most other avian species recorded in the LHTA would be considered common or typical of grassland xeric (dry) shrub and dry forest habitats.

1.2.4.4 Mammals

Due to their small size, secretive nature, or seasonal occurrence many species of mammals that probably occur in the LHTA have not been documented. Nevertheless, 31 species have been recorded, suggesting that the training area supports a good diversity of mammals.

The LHTA and surrounding area support considerable habitat for bats, such as small caves, crevices, snags, and tree cavities. Potential habitat is available for many of the bat species known to occur in Montana. However, the paucity of surface water sources in the area may limit its use by bats. No hibernacula or roosts that support large numbers of bats are known from the area.

The two most observed carnivores in the LHTA are the coyote and badger. The mountain lion, which is also a big game animal in Montana, is present at least from late autumn through early spring when wintering deer and elk are available. There are no known gray wolf packs in the vicinity of the LHTA; however, one gray wolf was harvested from the south end of the Elkhorn Mountains in 2019 (N. Lance, MTFWP Wolf Management Specialist, personal communication, 21 January 2021). LHTA is not considered preferred habitat for grizzly bears; however, LHTA is within the area where grizzly bears may be present (J. Martin, USFWS, personal communication, 8 June 2021).

1.2.4.4.1 Big Game

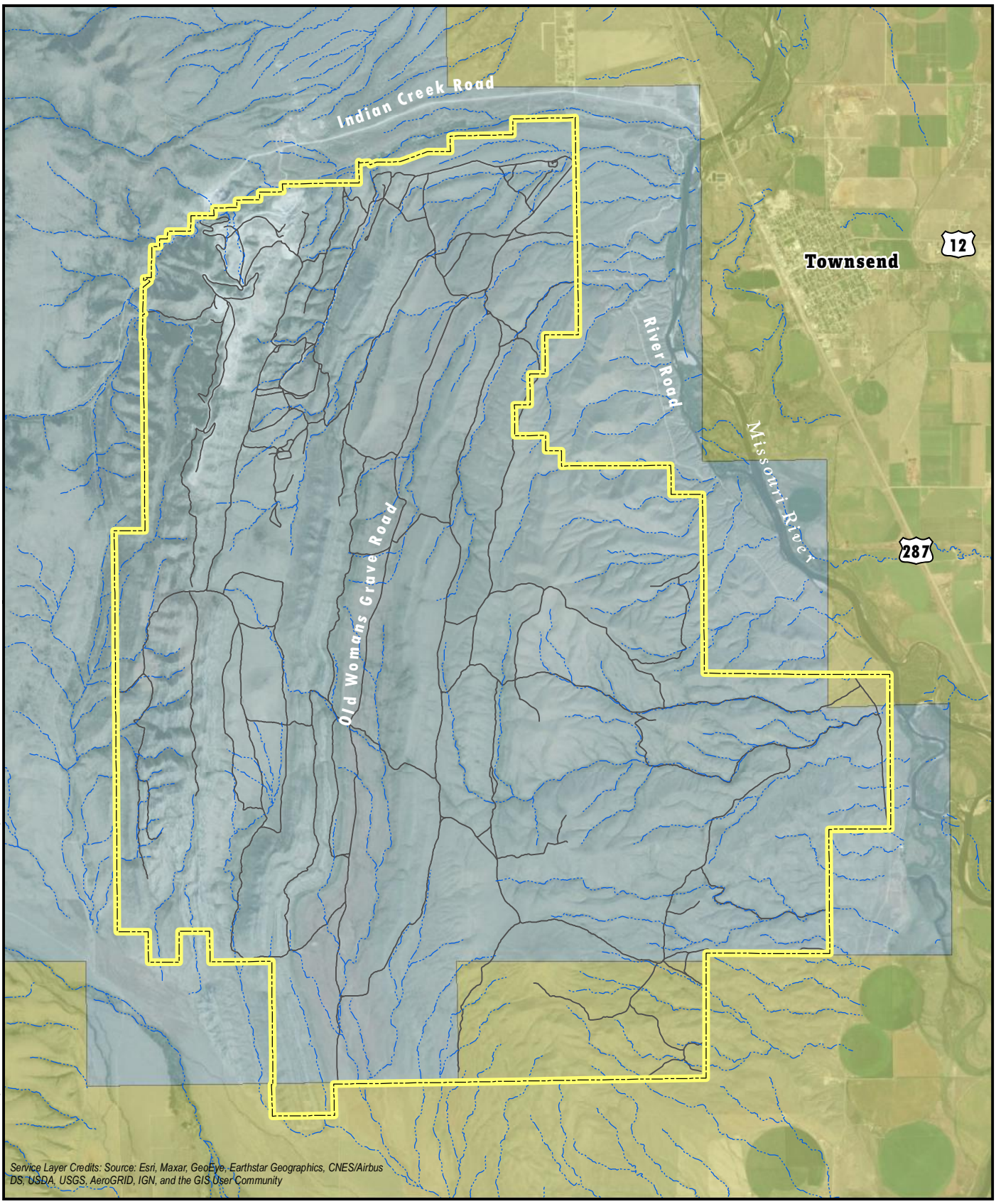
Seasonal habitat for seven species of big game (elk, mule deer, white-tailed deer, pronghorn, bighorn sheep, black bear and mountain lion) is available in the LHTA. Habitat for white-tailed deer and black bear is limited. Mountain lions are present at least seasonally when wintering elk and mule deer are available. Low numbers of pronghorn are present in the open, more rolling habitats of the LHTA at various times throughout the year.

Mule deer are present year-round, but their numbers significantly increase during winter (**Figure E-5**). The LHTA is one of the most important mule deer winter range associated with the Elkhorn Mountains. While the long-term average for wintering mule deer on the LHTA is around 500 mule deer, up to around 800 mule deer were observed when local mule deer numbers were at their peak. Most mule deer use is

associated with the limestone hogback ridges and their accompanying mountain mahogany/shrub habitats in the western portion of the training area; although a considerable number of mule deer may be found in the sagebrush habitats to the east of Old Woman's Grave Road.

Elk use of the LHTA has increased over the last 30+ years. Most elk use occurs during the winter and the spring, but some elk are present in the LHTA year-round (**Figure E-6**). Elk have been found in the weapons closure (restricted area) area west of Old Woman's Grave road during the hunting season. Heaviest use by elk in the LHTA is during the winter and early spring (A. Grove, MTFWP Wildlife Biologist, personal communication, 21 May 2021). Although elk may be found anywhere in the LHTA, most elk observations are from the southwest corner of the LHTA in the limestone hogback ridges and their accompanying mountain mahogany/shrub habitat (mostly winter) or in the sagebrush/grassland areas on the southeast side of the LHTA (mostly winter/spring).

Bighorn sheep were transplanted into the Crow Creek drainage of the Elkhorn Mountains in the winters of 1996, 1997, and 2000. These sheep have reproduced successfully and have established primary winter ranges along the Crow Creek and Indian Creek drainages (**Figure E-7**). Some sheep may be found anywhere in the LHTA but are usually observed west of Old Woman's Grave Road in the limestone hogback ridges. Bighorn sheep are susceptible to the various bacterial respiratory pathogens that cause pneumonia. Pneumonia had a large impact on this population of bighorn sheep in 2007-2008 and significantly decreased the population from what it was prior to the pneumonia die-off. Bighorn sheep numbers have remained relatively low since the die-off (Adam Grove, MTFWP, pers. comm.).



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0 Miles 1.5

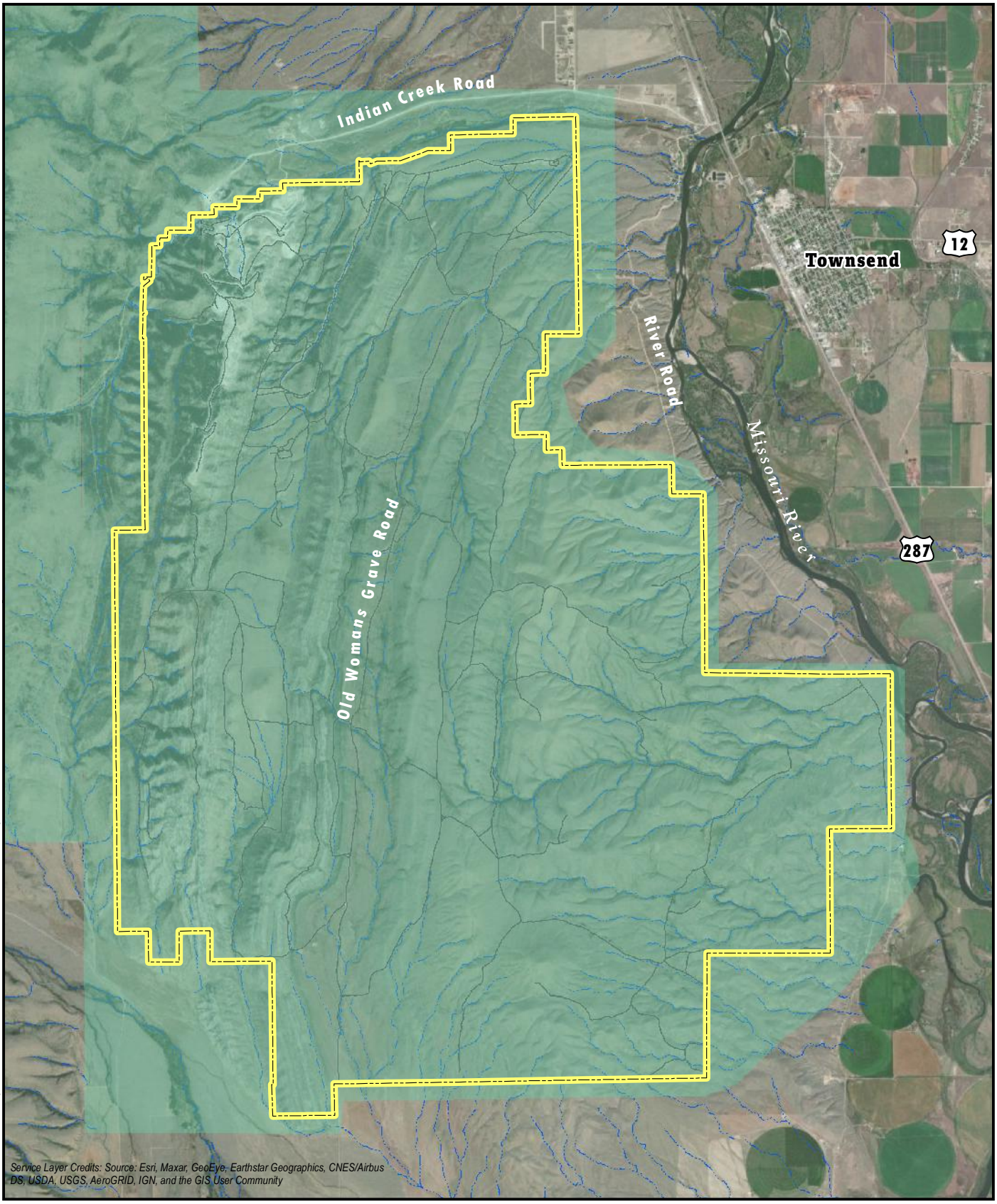
Limestone Hills Training Area
Roads
Streams

Mule Deer Distribution (Montana FWP 2021)

General Distribution
General Winter Distribution

NewFields

Mule Deer - General and Winter Distribution
Limestone Hills Training Area
MTARNG INRMP
Broadwater County, Montana
FIGURE E-5



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N

0 1.5
Miles

Limestone Hills Training Area
Roads
Streams

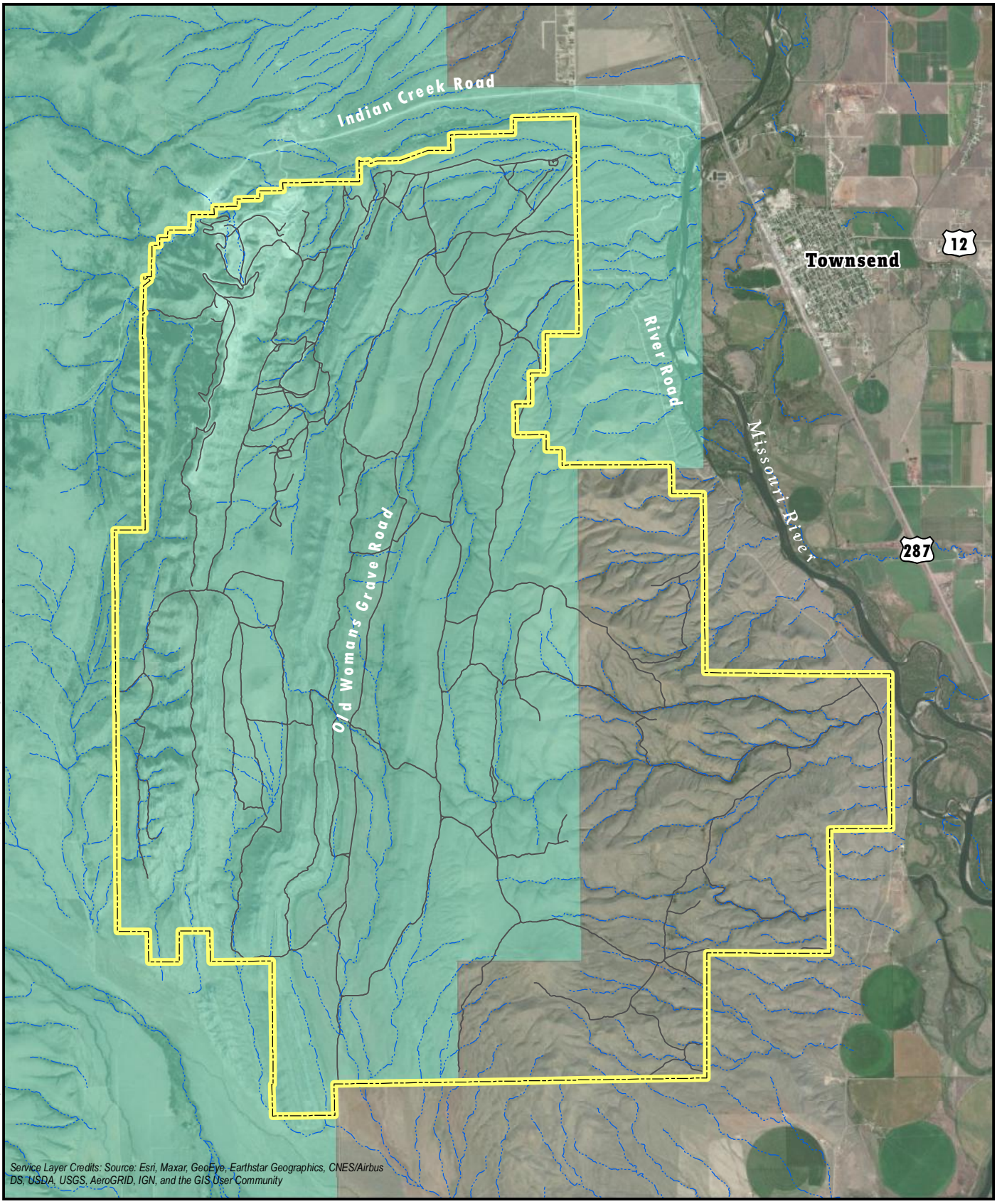
Elk Distribution (Montana FWP 2021)

General Winter Distribution

Note: There is no General Elk Distribution in the area.

NewFields

Elk - General and Winter Distribution
Limestone Hills Training Area
MTARNG INRMP
Broadwater County, Montana
FIGURE E-6



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N

0 1.5
Miles

Limestone Hills Training Area
Roads
Streams

Big Horn Sheep Distribution (Montana FWP 2020)

General Winter Distribution

Note: There is no General Big Horn Sheep Distribution in the area.

NewFields

Big Horn Sheep - General and Winter Distribution
Limestone Hills Training Area
MTARNG INRMP
Broadwater County, Montana
FIGURE E-7

1.2.5 Special Status Species

"Species of Concern" are defined by the MTNHP as native plant and animal species that are "rare, threatened, and/or have declining populations and as a result are at risk or potentially at risk of extirpation in Montana" (MTNHP 2021). Designation as a Species of Concern is not a statutory or regulatory classification. Instead, these designations provide a basis for resource managers and decision-makers to make proactive decisions regarding species conservation and data collection priorities to maintain viable populations and avoid extirpation of species from the state.

Species designated with federal status under the ESA include federally listed, proposed, or candidate, endangered or threatened species identified by the USFWS, or as "sensitive" by the USFS or the BLM. No federally listed, proposed, or candidate endangered or threatened wildlife or plant species have been documented on the LHTA; however, Grizzly bear and Canada lynx, both listed threatened under the ESA, may be present within LHTA.

Plants

The Montana Natural Heritage Program (MTNHP) lists plant species of concern and potential concern for the region encompassing the LHTA (MTNHP 2021). Two of the taxa were identified in the LHTA during five inventories conducted between 1993 and 2004 as cited below. One species, the lesser rushy milkvetch, was identified during inventories conducted between 2008 and 2019. As previously mentioned, the MTNHP (2021) lists lesser rushy milkvetch as a G5, S3 species.

Lesser rushy millkvetch has been found primarily on lower slopes and toeslopes of limestone ridges in the LHTA. Habitat community types in which it has been found include: limber pine/black sagebrush, black sagebrush/bluebunch wheatgrass, Rocky mountain juniper/mountain big sagebrush, and Rocky mountain juniper/black sagebrush. Populations are healthy and apparently quite capable of withstanding moderately heavy grazing pressure. The most recent observation has been within a black sagebrush/bluebunch wheatgrass habitat type Ecodata plot (ESG 2019). It has also been observed within several other established Ecodata plots in the LHTA (ESG 2001, 2008, 2009, 2011, 2013, 2016, 2017, 2021) and is likely present in other locations in the area.

Sword townsend-daisy (*Townsendia spathulata*) was formerly listed by the MTNHP as a G3, S3 species. Its status has been revised to the list of "Potential Species of Concern" as G3, S3S4 indicating that it is "apparently secure in Montana, though it may be quite rare in parts of its range, and/or suspected to be declining" (MTNHP 2021).

Sword townsend-daisy is a regional endemic occurring from central Wyoming to southwestern and southcentral Montana. It is locally common in the Big Horn Canyon area (Carbon County), with smaller populations identified in Beaverhead and Broadwater counties. It occurs on open, rocky, limestone-derived soils of slopes and windswept ridgetops in the valley and foothills zones.

Sword townsend-daisy was recorded within and adjacent to the Graymont limestone mine permit area in the northwestern portion of the LHTA, as well as several locations along the limestone ridges on each side of the firing ranges and impact area (MTNHP 2021a). Populations occur primarily in the Rocky mountain juniper/curl-leaf mountain mahogany habitat type. Plant populations are generally found in open, rocky, limestone-derived soils of slopes and windswept ridges in the area and favor sites where limestone forms a gravel pavement surface, more so than rock outcrop sites.

Birds

Bald and Golden Eagles have been recorded within the LHTA. No evidence of active nesting by either species has been observed or recorded in the LHTA. Foraging habitat not nesting habitat occurs within the LHTA. Bald Eagles nest along the Missouri River east of the Limestone Hills. Golden Eagles do not nest in the area. There is no potential for the military mission to adversely affect nesting and roosting for Golden Eagles within the LHTA. Limited potential exists for the military mission to adversely affect foraging by both species. No Bald Eagle communal roosts are known to occur within the LHTA. Bald Eagle roosting occurs in the winter months when military training activity in the LHTA occurs less frequently and at lower levels of intensity. If an eagle nest is found in the future within the LHTA, mitigating measures will be taken.

Fish and Wildlife

No fish, amphibians or reptiles that are listed as "sensitive" by the BLM or as State Species of Concern would be expected to occur in the LHTA. Preferred habitat is available for six birds listed as "sensitive" by the BLM and as "S3" State Species of Concern. The ferruginous hawk (rolling sagebrush/grassland with scattered trees), golden eagle (cliffs or taller trees), peregrine falcon (limestone cliffs along Indian Creek), burrowing owl (rodent or badger burrows on grassland and sagebrush/grassland benches) and loggerhead shrike (limited amounts of deciduous riparian habitat along Indian Creek) have not been observed to nest in the LHTA but may occur as migrants. The Brewer's sparrow (sagebrush) has been recorded in the LHTA during the nesting season and may nest there.

Preferred habitat for seven mammals listed as either "sensitive" by the BLM and/or a Species of Concern is available in the LHTA. The Preble's shrew could occur in a variety of habitats, including sagebrush habitat throughout the area. There are comparatively few records of this species from Montana, and it is not known to occur in the vicinity of the LHTA. Long-eared myotis, fringed myotis, long-legged myotis, Townsend's big-eared bat, hoary bat, little brown myotis, and silver-haired bat could all roost in crevices or caves in limestone and sandstone formations; all but the fringed myotis have been identified along Indian Creek. All the aforementioned mammals are "S3" State Species of Concern except for the silver-haired bat which is "S4" and therefore not considered a Species of Concern; but is considered a Potential Species of Concern. The hoary bat is considered "sensitive" by the BLM, but the silver-haired bat is not considered "sensitive" by the BLM.

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ATTACHMENT E-1: PLANT LIST OF FORT HARRISON

SPECIES FULL NAME	SPECIES	Duration	Native vs Non-Natve	Wetland Indicator
Trees				
Elaeagnus angustifolia (Russian olive)	ELAANG	Perennial	Introduced	FAC
Juniperus scopulorum (Rocky Mountain juniper)	JUNSCO	Perennial	Native	UPL
Pinus flexilis (limber pine)	PINFLE	Perennial	Native	UPL
Pinus ponderosa var. scopulorum (ponderosa pine)	PINPVS	Perennial	Native	FACU
Pinus ponderosa var. scopulorum (ponderosa pine)	PINPVS	Perennial	Native	FACU
Populus angustifolia (narrowleaf cottonwood)	POPANG	Perennial	Native	FACW
Populus balsamifera (black cottonwood)	POPBAL	Perennial	Native	FAC
Populus tremuloides (quaking aspen)	POPTRE	Perennial	Native	FACU
Pseudotsuga menziesii var. glauca (Douglas fir)	PSEMVG	Perennial	Native	FACU
Shrubs				
Acer glabrum (Rocky Mountain maple)	ACEGLA	Perennial	Native	FAC
Amelanchier alnifolia (Saskatoon serviceberry)	AMEALN	Perennial	Native	FACU
Arctostaphylos uva-ursi (kinnikinnick)	ARCUVA	Perennial	Native	FACU
Artemisia cana subsp. cana (plains silver sagebrush)	ARTCSC	Perennial	Native	FAC
Artemisia cana subsp. viscidula (mountain silver sagebrush)	ARTCSV	Perennial	Native	FAC
Artemisia frigida (fringed sagewort)	ARTFRI	Perennial	Native	UPL
Artemisia tridentata (big sagebrush)	ARTTRI	Perennial	Native	UPL
Artemisia tridentata subsp. tridentata (basin big sagebrush)	ARTTST	Perennial	Native	UPL
Artemisia tridentata subsp. vaseyana (mountain big sagebrush)	ARTTSV	Perennial	Native	UPL
Betula occidentalis (water birch)	BETOCC	Perennial	Native	FACW
Chrysothamnus viscidiflorus (green rabbitbrush)	CHRVIS	Perennial	Native	UPL
Clematis ligusticifolia (western virgin's bower)	CLELIG	Perennial	Native	FAC
Coryphantha missouriensis var. missouriensis (pincushion cactus)	CORMVI	Perennial	Native	UPL
Cornus sericea subsp. sericea (red-osier dogwood)	CORSSS	Perennial	Native	FACW
Coryphantha vivipara var. vivipara (pincushion cactus)	CORVVV	Perennial	Native	UPL
Coryphantha spp. (pincushion cactus)	CORYPH	Unknown	Native	UPL
Eriogonum microthecum (slenderbush buckwheat)	ERIMIC	Perennial	Native	UPL
Eriogonum microthecum var. laxiflorum (slenderbush buckwheat)	ERIMVL	Perennial	Native	UPL
Ericameria nauseosa (rubber rabbitbrush)	ERINAU	Perennial	Native	UPL
Gutierrezia sarothrae (broom snakeweed)	GUTSAR	Perennial	Native	UPL
Juniperus communis var. depressa (common juniper)	JUNCVD	Perennial	Native	UPL
Juniperus horizontalis (creeping juniper)	JUNHOR	Perennial	Native	FACU
Krascheninnikovia lanata (winterfat)	KRALAN	Perennial	Native	UPL
Lonicera dioica (limber honeysuckle)	LONDIO	Perennial	Native	FACU
Lonicera spp. (honeysuckle)	LONICE	Unknown	Both	UPL
Opuntia fragilis (fragile cactus)	OPUFRA	Perennial	Native	UPL
Opuntia polyacantha (plains prickly-pear)	OPUPOL	Perennial	Native	UPL

SPECIES FULL NAME	SPECIES	Duration	Native vs Non-Natve	Wetland Indicator
Philadelphus lewisii (mockorange; syringa)	PHILEW	Perennial	Native	UPL
Prunus pensylvanica (pin cherry)	PRUPEN	Perennial	Native	UPL
Prunus virginiana var. melanocarpa (chokecherry)	PRUVVM	Perennial	Native	FACU
Purshia tridentata (antelope bitterbrush)	PURTRI	Perennial	Native	UPL
Rhus aromatica var. trilobata (skunkbush sumac)	RHUAVT	Perennial	Native	UPL
Ribes aureum (golden currant)	RIBAUR	Perennial	Native	FAC
Ribes cereum (wax currant)	RIBCER	Perennial	Native	UPL
Ribes lacustre (swamp currant)	RIBLAC	Perennial	Native	UPL
Rosa arkansana (prairie rose)	ROSARK	Perennial	Native	FACU
Rosa spp. (rose)	ROSAXX	Unknown	Both	UPL
Rosa woodsii (woods rose)	ROSWOO	Perennial	Native	FACU
Salix bebbiana (Bebb willow)	SALBEB	Perennial	Native	FACW
Shepherdia canadensis (Canada buffaloberry)	SHECAN	Perennial	Native	UPL
Symphoricarpos occidentalis (western snowberry)	SYMOCC	Perennial	Native	FAC
Tetradymia canescens (gray horsebrush)	TETCAN	Perennial	Native	UPL
Toxicodendron rydbergii (poison ivy)	TOXRYD	Perennial	Native	FACU
Graminoids				
Agropyron cristatum (crested wheatgrass)	AGRCRI	Perennial	Introduced	UPL
Agropyron dasystachyum (thickspike wheatgrass)	AGRDAS	Perennial	Native	FACU
Agropyron intermedium (intermediate wheatgrass)	AGRINT	Perennial	Introduced	UPL
Agropyron repens (quackgrass)	AGRREP	Perennial	Introduced	FAC
Agropyron smithii (western wheatgrass)	AGRSMI	Perennial	Native	FACU
Agropyron spicatum (bluebunch wheatgrass)	AGRSPI	Perennial	Native	UPL
Agrostis stolonifera (redtop)	AGRSTO	Perennial	Introduced	FAC
Agropyron trachycaulum (slender wheatgrass)	AGRTRA	Perennial	Native	FACU
Alopecurus spp. (foxtail)	ALOPEC	Unknown	Both	UPL
Aristida purpurea (purple threeawn)	ARIPUR	Perennial	Native	UPL
Avena fatua (wild oat)	AVEFAT	Annual	Introduced	UPL
Bouteloua curtipendula (sideoats grama)	BOUCUR	Perennial	Native	UPL
Bouteloua gracilis (blue grama)	BOUGRA	Perennial	Native	UPL
Bromus briziformis (rattlesnake brome)	BROBRI	Annual	Introduced	UPL
Bromus carinatus (mountain brome)	BROCAR	Perennial	Native	UPL
Bromus inermis (smooth brome)	BROINE	Perennial	Introduced	FAC
Bromus japonicus (field brome)	BROJAP	Annual	Introduced	UPL
Bromus squarrosus (corn brome)	BROSQU	Annual	Introduced	UPL
Bromus tectorum (cheatgrass)	BROTEC	Annual	Introduced	UPL
Calamagrostis montanensis (plains reedgrass)	CALMON	Perennial	Native	UPL
Calamagrostis stricta (northern reedgrass)	CALSTR	Perennial	Native	FACW
Carex athrostachya (slender-beaked sedge)	CARATO	Perennial	Native	FACW
Carex aquatilis var. aquatilis (water sedge)	CARAVA	Perennial	Native	OBL
Carex eleocharis (narrow-leaved sedge)	CARELE	Perennial	Native	UPL
Carex spp. (sedge)	CAREXX	Unknown	Native	UPL
Carex filifolia var. filifolia (threadleaf sedge)	CARFVF	Perennial	Native	UPL
Carex geyeri (elk sedge)	CARGEY	Perennial	Native	UPL
Carex inops var. heliophila (sun sedge)	CARIVH	Perennial	Native	UPL
Carex microptera (small-winged sedge)	CARMIC	Perennial	Native	FACU

SPECIES FULL NAME	SPECIES	Duration	Native vs Non-Natve	Wetland Indicator
Carex nebrascensis (Nebraska sedge)	CARNEB	Perennial	Native	OBL
Carex praegracilis (clustered field sedge)	CARPRA	Perennial	Native	FACW
Carex utriculata (beaked sedge)	CARUTR	Perennial	Native	OBL
Catabrosa aquatica (brookgrass)	CATAQU	Perennial	Native	OBL
Dactylis glomerata (orchardgrass)	DACGLO	Perennial	Introduced	FACU
Distichlis spicata (inland saltgrass)	DISSPI	Perennial	Native	FACW
Eleocharis palustris (common spikesedge)	ELEPAL	Perennial	Native	OBL
Elymus canadensis (Canada wildrye)	ELYCAN	Perennial	Native	FAC
Elymus cinereus (basin wildrye)	ELYCIN	Perennial	Native	FAC
Elymus elymoides (squirreltail)	ELYELY	Perennial	Native	FACU
Festuca campestris (rough fescue)	FESCAM	Perennial	Native	UPL
Festuca idahoensis (Idaho fescue)	FESIDA	Perennial	Native	FACU
Festuca ovina (sheep fescue)	FESOVI	Perennial	Introduced	FACU
Glyceria striata (fowl mannagrass)	GLYSTR	Perennial	Native	FACW
Unknown Grass 1 (Unknown Grass 1)	GRASS1	Unknown	Both	UPL
Hordeum jubatum (foxtail barley)	HORJUB	Perennial	Native	FAC
Juncus balticus (Baltic rush)	JUNBAL	Perennial	Native	FACW
Juncus bufonius (toad rush)	JUNBUF	Annual	Native	FACW
Koeleria macrantha (prairie Junegrass)	KOEMAC	Perennial	Native	UPL
Lolium multiflorum (Italian ryegrass; annual ryegrass)	LOLMUL	Perennial	Introduced	FACU
Muhlenbergia richardsonis (mat muhly)	MUHRIC	Perennial	Native	FAC
Oryzopsis hymenoides (Indian ricegrass)	ORYHYM	Perennial	Native	UPL
Phleum pratense (timothy)	PHLPRA	Perennial	Introduced	FAC
Poa compressa (Canada bluegrass)	POACOM	Perennial	Introduced	FACU
Poa fendleriana (muttongrass)	POAFEN	Perennial	Native	UPL
Poa palustris (fowl bluegrass)	POAPAL	Perennial	Native	FAC
Poa pratensis (Kentucky bluegrass)	POAPRA	Perennial	Introduced	FAC
Poa secunda (Sandberg bluegrass)	POASEC	Perennial	Native	FACU
Poa spp. (bluegrass)	POAXXX	Unknown	Both	UPL
Schoenoplectus acutus (hardstem bulrush)	SCHACU	Perennial	Native	OBL
Spartina pectinata (prairie cordgrass)	SPAPEC	Perennial	Native	OBL
Sporobolus airoides (alkali sacaton)	SPOAIR	Perennial	Native	FAC
Sporobolus cryptandrus (sand dropseed)	SPOCRY	Perennial	Native	FACU
Stipa comata (needle-and-thread)	STICOM	Perennial	Native	UPL
Stipa richardsonii (Richardson's needlegrass)	STIRIC	Perennial	Native	UPL
Stipa viridula (green needlegrass)	STIVIR	Perennial	Native	UPL
Vulpia octoflora (sixweeks fescue)	VULOCT	Annual	Native	UPL
Forbs				
Achillea millefolium (common yarrow)	ACHMIL	Perennial	Native	FACU
Actaea rubra (red baneberry)	ACTRUB	Perennial	Native	UPL
Agoseris glauca (pale agoseris)	AGOGLA	Perennial	Native	FAC
Alisma plantago-aquatica (American waterplantain)	ALIPLA	Perennial	Native	OBL
Allium cernuum (nodding onion)	ALLCER	Perennial	Native	FACU
Allium spp. (onion)	ALLIUM	Unknown	Native	UPL
Allium textile (textile onion)	ALLTEX	Perennial	Native	UPL
Alyssum alyssoides (pale alyssum)	ALYALY	Biennial	Introduced	UPL

SPECIES FULL NAME	SPECIES	Duration	Native vs Non-Natve	Wetland Indicator
Alyssum desertorum (desert alyssum)	ALYDES	Annual	Introduced	UPL
Ambrosia psilostachya (western ragweed)	AMBPSI	Perennial	Native	FACU
Ambrosia trifida (giant ragweed)	AMBTRI	Annual	Native	FAC
Amsinckia lycopsoides (tarweed fiddleneck)	AMSLYC	Annual	Native	UPL
Anaphalis margaritacea (pearly everlasting)	ANAMAR	Perennial	Native	FACU
Androsace septentrionalis (northern fairy-candelabra)	ANDSEP	Perennial	Native	FACU
Antennaria dimorpha (cushion pussytoes)	ANTDIM	Perennial	Native	UPL
Antennaria spp. (everlasting; pussytoes)	ANTENN	Unknown	Native	UPL
Antennaria microphylla (rosy pussytoes)	ANTMIC	Perennial	Native	UPL
Antennaria neglecta (field pussytoes)	ANTNEG	Perennial	Native	FACU
Antennaria parvifolia (Nuttall's pussytoes)	ANTPAR	Perennial	Native	UPL
Apocynum androsaemifolium (spreading dogbane)	APOAND	Perennial	Native	FACU
Apocynum sibiricum (clasping-leaved dogbane)	APOSIB	Perennial	Native	FAC
Arabis spp. (rockcress)	ARABIS	Unknown	Native	UPL
Arabis holboellii (Holboell's rockcress)	ARAHOL	Biennial	Native	FACU
Arabis hirsuta var. pycnocarpa (hairy rockcress)	ARAHVP	Perennial	Native	FACU
Arctium lappa (great burdock)	ARCLAP	Biennial	Introduced	UPL
Arctium minus (lesser burdock)	ARCMIN	Biennial	Introduced	UPL
Arenaria congesta (ballhead sandwort)	ARECON	Perennial	Native	UPL
Arenaria capillaris var. americana (thread-leaved sandwort)	ARECVA	Perennial	Native	UPL
Arenaria spp. (sandwort)	ARENAR	Unknown	Both	UPL
Arnica fulgens (orange arnica)	ARNFUL	Perennial	Native	UPL
Arnica longifolia (spearleaf arnica)	ARNLON	Perennial	Native	FACW
Arnica sororia (twin arnica)	ARNSOR	Perennial	Native	UPL
Artemisia absinthium (wormwood)	ARTABS	Perennial	Introduced	UPL
Artemisia biennis (biennial sagewort)	ARTBIE	Biennial	Native	FACW
Artemisia campestris (green sagewort)	ARTCAM	Biennial	Native	FACU
Artemisia dracunculus (wild tarragon)	ARTDRA	Perennial	Native	UPL
Artemisia ludoviciana (cudweed sagewort)	ARTLUD	Perennial	Native	FACU
Asclepias fascicularis (narrow-leaved milkweed)	ASCFAS	Perennial	Native	FAC
Asclepias spp. (milkweed)	ASCLEP	Unknown	Native	UPL
Asclepias speciosa (showy milkweed)	ASCSPE	Perennial	Native	FAC
Asclepias viridiflora (green milkweed)	ASCVIR	Perennial	Native	UPL
Asparagus officinalis (asparagus)	ASPOFF	Perennial	Introduced	
Astragalus agrestis (field milk-vetch)	ASTAGR	Perennial	Native	FACW
Astragalus australis var. glabriusculus (Indian milk-vetch)	ASTAVG	Perennial	Native	UPL
Astragalus adsurgens var. robustior (standing milk-vetch)	ASTAVR	Perennial	Native	UPL
Astragalus barrii (Barr's milk-vetch)	ASTBAR	Perennial	Native	UPL
Astragalus bisulcatus var. bisulcatus (two-groove milk-vetch)	ASTBVB	Perennial	Native	UPL
Astragalus canadensis (Canada milk-vetch)	ASTCAN	Perennial	Native	FACW
Astragalus cicer (chick-pea milk-vetch)	ASTCIC	Perennial	Introduced	UPL
Astragalus crassicarpus (ground plum)	ASTCRA	Perennial	Native	UPL
Astragalus convallarius var. convallarius (lesser rushy milk-vetch)	ASTCVV	Perennial	Native	UPL
Astragalus drummondii (Drummond's milk-vetch)	ASTDRU	Perennial	Native	UPL

SPECIES FULL NAME	SPECIES	Duration	Native vs Non-Natve	Wetland Indicator
Astragalus flexuosus var. flexuosus (wiry milk-vetch)	ASTFVF	Perennial	Native	UPL
Astragalus gilviflorus (plains orophaca)	ASTGIL	Perennial	Native	UPL
Astragalus lotiflorus (lotus milk-vetch)	ASTLOT	Perennial	Native	UPL
Astragalus miser (weedy milk-vetch)	ASTMIS	Perennial	Native	UPL
Astragalus missouriensis var. missouriensis (Missouri milk-vetch)	ASTMVI	Perennial	Native	UPL
Astragalus purshii (Pursh's milk-vetch)	ASTPUR	Perennial	Native	UPL
Astragalus spp. (milk-vetch)	ASTRAG	Unknown	Both	UPL
Astragalus robbinsii var. minor (Robbins' milk-vetch)	ASTRVM	Perennial	Native	FAC
Astragalus vexilliflexus (bent-flowered milk-vetch)	ASTVEX	Perennial	Native	UPL
Balsamorhiza sagittata (arrowleaf balsamroot)	BALSAG	Perennial	Native	UPL
Berula erecta var. incisa (cut-leaved water-parsnip)	BEREVI	Perennial	Native	OBL
Boechera divaricarpa (spreadingpod rockcress)	BOEDIV	Biennial	Native	FACU
Boechera microphylla (littleleaf rockcress)	BOEMIC	Perennial	Native	UPL
Boechera pendulocarpa (dropseed rockcress)	BOEPEN	Biennial	Native	FACU
Boechera retrofracta (second rockcress)	BOERET	Biennial	Native	FACU
Brassica spp. (mustard)	BRASSI	Unknown	Introduced	UPL
Mustard Family (mustard)	BRASSX	Unknown	Both	UPL
Brickellia eupatorioides var. corymbulosa (false-boneset)	BRIEVC	Perennial	Native	UPL
Calochortus eurycarpus (wide-fruit mariposa)	CALEUR	Perennial	Native	UPL
Calochortus nuttallii (sego-lily)	CALNUT	Perennial	Native	UPL
Calochortus spp. (mariposa)	CALOCH	Unknown	Native	UPL
Camelina spp. (falseflax)	CAMELI	Unknown	Introduced	UPL
Camelina microcarpa (littlepod falseflax)	CAMMIC	Biennial	Introduced	FACU
Campanula rotundifolia (harebell)	CAMROT	Perennial	Native	FACU
Camelina sativa (gold-of-pleasure)	CAMSAT	Biennial	Introduced	FACU
Carduus nutans (musk thistle)	CARNUT	Biennial	Introduced	UPL
Castilleja flava (yellow paintbrush)	CASFLA	Perennial	Native	UPL
Castilleja pallescens var. pallescens (palish Indian-paintbrush)	CASPVP	Perennial	Native	UPL
Castilleja spp. (paintbrush)	CASTIL	Unknown	Native	UPL
Centaurea maculosa (spotted knapweed)	CENMAC	Biennial	Introduced	UPL
Cerastium arvense subsp. strictum (field chickweed)	CERASS	Perennial	Native	FACU
Chenopodium album (lamb's quarters)	CHEALB	Annual	Introduced	FACU
Chenopodium leptophyllum (slimleaf goosefoot)	CHELEP	Annual	Native	FACU
Cirsium arvense (Canada thistle)	CIRARV	Perennial	Introduced	FAC
Cirsium flodmanii (Flodman's thistle)	CIRFLO	Perennial	Native	FAC
Cirsium spp. (thistle)	CIRSIU	Unknown	Both	UPL
Cirsium undulatum (wavy-leaved thistle)	CIRUND	Biennial	Native	FACU
Cirsium vulgare (bull thistle)	CIRVUL	Biennial	Introduced	FACU
Cleome serrulata (Rocky Mountain bee plant)	CLESER	Annual	Native	FACU
Collomia linearis (narrow-leaf collomia)	COLLIN	Annual	Native	FACU
Collinsia parviflora (small-flowered blue-eyed mary)	COLPAR	Annual	Native	UPL
Comandra umbellata var. pallida (bastard toad-flax)	COMUVP	Perennial	Native	FACU
Convolvulus arvensis (field bindweed)	CONARV	Perennial	Introduced	UPL
Conyza canadensis (Canadian horseweed)	CONCAN	Biennial	Native	UPL
Crepis acuminata (tapertip hawksbeard)	CREACU	Perennial	Native	UPL

SPECIES FULL NAME	SPECIES	Duration	Native vs Non-Natve	Wetland Indicator
Crepis modocensis subsp. modocensis (low hawksbeard)	CREMSM	Perennial	Native	UPL
Crepis occidentalis (western hawksbeard)	CREOCC	Perennial	Native	UPL
Crepis spp. (hawksbeard)	CREPIS	Unknown	Both	UPL
Cryptantha celosioides (northern cryptantha)	CRYCEL	Biennial	Native	UPL
Cryptantha spp. (cryptantha)	CRYPTA	Unknown	Native	UPL
Cynoglossum officinale (houndstongue)	CYNOFF	Biennial	Introduced	FACU
Dalea purpurea (purple prairie clover)	DALPUR	Perennial	Native	UPL
Delphinium ajacis (rocket larkspur)	DELAJA	Annual	Introduced	UPL
Delphinium bicolor (little larkspur)	DELBIC	Perennial	Native	UPL
Descurainia incana (mountain tansymustard)	DESINC	Perennial	Native	FACU
Descurainia pinnata (pinnate tansymustard)	DESPIN	Perennial	Native	UPL
Descurainia sophia (fixweed)	DESSOP	Biennial	Introduced	UPL
Douglasia montana (Rocky Mountain douglasia)	DOUMON	Perennial	Native	UPL
Draba reptans (Carolina whitlow-grass)	DRAREP	Annual	Native	UPL
Echinacea angustifolia (pale purple coneflower)	ECHANG	Perennial	Native	UPL
Epilobium ciliatum (common willow-herb)	EPICIL	Perennial	Native	FACW
Epilobium spp. (willow-herb)	EPILOB	Unknown	Native	UPL
Erigeron acris (bitter fleabane)	ERIACR	Perennial	Native	FACU
Erigeron caespitosus (tufted fleabane)	ERICAE	Perennial	Native	UPL
Erigeron canus (hoary fleabane)	ERICAN	Perennial	Native	UPL
Erigeron compositus (cut-leaf daisy)	ERICOM	Perennial	Native	UPL
Erigeron corymbosus (long-leaved fleabane)	ERICOR	Perennial	Native	UPL
Eriogonum crosbyae (Crosby's buckwheat)	ERICRO	Perennial	Native	UPL
Erigeron divergens (spreading fleabane)	ERIDIV	Biennial	Native	UPL
Erigeron filifolius (thread-leaf fleabane)	ERIFIL	Perennial	Native	UPL
Eriogonum flavum (yellow buckwheat)	ERIFLA	Perennial	Native	UPL
Erigeron spp. (daisy; fleabane)	ERIGER	Unknown	Native	UPL
Erigeron ochroleucus (buff fleabane)	ERIOCH	Perennial	Native	UPL
Eriogonum spp. (buckwheat; wild buckwheat)	ERIOGO	Unknown	Native	UPL
Erigeron pumilus (shaggy fleabane)	ERIPUM	Perennial	Native	UPL
Erigeron subtrinervis (three-veined fleabane)	ERISUB	Perennial	Native	UPL
Erigeron strigosus var. strigosus (branching daisy)	ERISVT	Biennial	Native	FACU
Eriogonum umbellatum (sulfur buckwheat)	ERIUMB	Perennial	Native	UPL
Eriogonum umbellatum (sulfur buckwheat)	ERIUMB	Perennial	Native	UPL
Erysimum asperum (plains wallflower)	ERYASP	Biennial	Native	UPL
Erysimum capitatum (western wallflower)	ERYCAP	Biennial	Native	UPL
Erysimum cheiranthoides (wormseed wallflower)	ERYCHE	Biennial	Introduced	FACU
Erysimum inconspicuum (smallflowered wallflower)	ERYINC	Biennial	Native	UPL
Erysimum spp. (wallflower)	ERYSIM	Unknown	Both	UPL
Euphorbia esula (leafy spurge)	EUPESU	Perennial	Introduced	UPL
Euphorbia glyptosperma (corrugate-seeded spurge)	EUPGLY	Annual	Native	UPL
Eurybia conspicua (western showy aster)	EURCON	Perennial	Native	UPL
Evolvulus nuttallianus (Nuttall's evolvulus)	EVONUT	Perennial	Native	UPL
Filago arvensis (field filago)	FILARV	Annual	Introduced	UPL
Forb spp. (forb)	FORBXX	Unknown	Both	UPL
Fritillaria pudica (yellow bell)	FRIPUD	Perennial	Native	UPL

SPECIES FULL NAME	SPECIES	Duration	Native vs Non-Natve	Wetland Indicator
Gaillardia aristata (blanketflower)	GAIARI	Perennial	Native	UPL
Galium aparine (cleavers)	GALAPA	Annual	Native	UPL
Galium boreale (northern bedstraw)	GALBOR	Perennial	Native	FACU
Galium triflorum (sweet-scented bedstraw)	GALTRI	Perennial	Native	UPL
Gaura coccinea (scarlet gaura)	GAUCOC	Perennial	Native	UPL
Geranium richardsonii (white geranium)	GERRIC	Perennial	Native	FAC
Geranium viscosissimum (sticky geranium)	GERVIS	Perennial	Native	FACU
Geum macrophyllum var. perincisum (large-leaved avens)	GEUMVP	Perennial	Native	OBL
Geum triflorum (prairie smoke)	GEUTRI	Perennial	Native	FACU
Glycyrrhiza lepidota (American licorice)	GLYLEP	Perennial	Native	FAC
Grindelia squarrosa (curlycup gumweed)	GRISQU	Perennial	Native	FACU
Hackelia deflexa var. americana (nodding stickseed)	HACDVA	Perennial	Native	UPL
Hackelia floribunda (showy stickseed)	HACFLO	Biennial	Native	UPL
Hedysarum boreale var. boreale (northern hedysarum)	HEDBVB	Perennial	Native	UPL
Hedeoma hispida (rough pennyroyal)	HEDHIS	Annual	Native	UPL
Hedysarum occidentale (western hedysarum)	HEDOCC	Perennial	Native	UPL
Helianthus annuus (common sunflower)	HELANN	Annual	Native	FACU
Helianthus nuttallii (Nuttall's sunflower)	HELNUT	Perennial	Native	FACW
Heterotheca villosa (hairy golden-aster)	HETVIL	Perennial	Native	UPL
Heuchera parvifolia (small-leaved alumroot)	HEUPAR	Perennial	Native	UPL
Heuchera richardsonii (Richardson's alumroot)	HEURIC	Perennial	Native	FACU
Hieracium spp. (hawkweed)	HIERAC	Unknown	Both	UPL
Hymenopappus filifolius (Columbia cut-leaf)	HYMFIL	Perennial	Native	UPL
Iris missouriensis (Rocky Mountain iris)	IRIMIS	Perennial	Native	FACW
Iva axillaris (poverty weed)	IVAAXI	Perennial	Native	FAC
Kochia scoparia (burningbush)	KOCSCO	Annual	Introduced	FAC
Lactuca pulchella (blue lettuce)	LACPUL	Biennial	Native	FAC
Lactuca serriola (prickly lettuce)	LACSER	Biennial	Introduced	FACU
Lactuca spp. (lettuce)	LACTUC	Unknown	Both	UPL
Lappula redowskii (western stickseed)	LAPRED	Biennial	Native	UPL
Lappula squarrosa (bristly stickseed)	LAPSQU	Biennial	Introduced	UPL
Lepidium appelianum (hairy whitetop)	LEPAPP	Perennial	Introduced	FACU
Lepidium densiflorum (prairie pepperweed)	LEPDEN	Biennial	Native	FACU
Lepidium draba (whitetop)	LEPDRA	Perennial	Introduced	UPL
Lepidium spp. (pepperweed)	LEPIDI	Unknown	Both	UPL
Lepidium perfoliatum (clasping pepperweed)	LEPPER	Biennial	Introduced	FACU
Lepidium ramosissimum (manybranched pepperweed)	LEPRAM	Biennial	Native	UPL
Lepidium virginicum (tall pepperweed)	LEPVIR	Perennial	Native	FACU
Lewisia rediviva (bitterroot)	LEWRED	Perennial	Native	UPL
Liatris punctata var. punctata (spotted gay feather)	LIAPVP	Perennial	Native	UPL
Ligusticum spp. (lovage; licorice-root)	LIGUST	Unknown	Native	UPL
Linaria dalmatica (dalmatian toadflax)	LINDAL	Perennial	Introduced	UPL
Linum lewisii (wild blue flax)	LINLEW	Perennial	Native	UPL
Linum perenne (blue flax)	LINPER	Perennial	Introduced	UPL
Linum rigidum (yellow flax)	LINRIG	Perennial	Native	UPL
Lithospermum arvense (corn gromwell)	LITARV	Annual	Introduced	UPL

SPECIES FULL NAME	SPECIES	Duration	Native vs Non-Natve	Wetland Indicator
Lithospermum spp. (gromwell; puccoon)	LITHOS	Unknown	Both	UPL
Lithospermum incisum (yellow gromwell)	LITINC	Perennial	Native	UPL
Lithospermum ruderale (western gromwell)	LITRUD	Perennial	Native	UPL
Lomatium spp. (biscuit-root; desert-parsley)	LOMATI	Unknown	Native	UPL
Lomatium foeniculaceum (fennel-leaved desert-parsley)	LOMFOE	Perennial	Native	UPL
Lomatium triternatum (nine-leaf lomatium)	LOMTRI	Perennial	Native	UPL
Lomatium triternatum (nine-leaf lomatium)	LOMTRI	Perennial	Native	UPL
Lupinus argenteus (silvery lupine)	LUPARG	Perennial	Native	UPL
Lupinus sericeus (silky lupine)	LUPSER	Perennial	Native	UPL
Lygodesmia juncea (rush skeletonplant)	LYGJUN	Perennial	Native	UPL
Machaeranthera canescens var. canescens (hoary tansyaster)	MACCVC	Perennial	Native	FAC
Marrubium vulgare (horehound)	MARVUL	Perennial	Introduced	FACU
Medicago lupulina (black medick)	MEDLUP	Perennial	Introduced	FACU
Medicago sativa (alfalfa)	MEDSAT	Perennial	Introduced	UPL
Melilotus alba (white sweet clover)	MELALB	Perennial	Introduced	FACU
Melilotus officinalis (yellow sweet clover)	MELOFF	Perennial	Introduced	FACU
Mentha arvensis (field mint)	MENARV	Perennial	Native	FACW
Mentzelia laevicaulis (blazing-star mentzelia)	MENLAE	Biennial	Native	UPL
Mimulus guttatus (common monkey-flower)	MIMGUT	Perennial	Native	OBL
Monarda fistulosa var. menthifolia (horsemint)	MONFVM	Perennial	Native	FAC
Musineon divaricatum (leafy musineon)	MUSDIV	Perennial	Native	UPL
Myosotis scorpioides (scorpion grass)	MYOSCO	Perennial	Introduced	FACW
Nepeta cataria (catnip)	NEPCAT	Perennial	Introduced	FACU
Oenothera spp. (evening-primrose)	OENOTH	Unknown	Native	UPL
Onobrychis viciifolia (sainfoin)	ONOVIC	Perennial	Introduced	UPL
Orthocarpus spp. (owl-clover)	ORTHOC	Unknown	Native	UPL
Orthocarpus luteus (yellow owl-clover)	ORTLUT	Annual	Native	FACU
Orthocarpus tenuifolius (thin-leaved owl-clover)	ORTTEN	Annual	Native	UPL
Osmorhiza chilensis (mountain sweet-cicely)	OSMCHI	Perennial	Native	UPL
Osmorhiza spp. (sweet-cicely)	OSMORH	Unknown	Native	UPL
Oxytropis besseyi (Bessey's crazyweed)	OXYBES	Perennial	Native	UPL
Oxytropis campestris (slender crazyweed)	OXYCAM	Perennial	Native	UPL
Oxytropis lagopus (rabbit-foot crazyweed)	OXYLAG	Perennial	Native	UPL
Oxytropis lambertii var. lambertii (purple locoweed)	OXYLVM	Perennial	Native	UPL
Oxytropis sericea (white locoweed)	OXYSER	Perennial	Native	UPL
Oxytropis spp. (crazyweed; locoweed)	OXYTRO	Unknown	Both	UPL
Paronychia sessiliflora (stemless whitlow-wort)	PARSES	Perennial	Native	UPL
Penstemon albidus (white-flowered penstemon)	PENALB	Perennial	Native	UPL
Penstemon albertinus (Alberta penstemon)	PENALE	Perennial	Native	UPL
Penstemon aridus (stiff-leaf penstemon)	PENARI	Perennial	Native	UPL
Penstemon attenuatus (sulphur penstemon)	PENATT	Perennial	Native	FACU
Penstemon cyaneus (dark-blue penstemon)	PENCYA	Perennial	Native	UPL
Penstemon eriantherus (fuzzy-tongue penstemon)	PENERI	Perennial	Native	UPL
Penstemon glaber var. glaber (hairy-anther penstemon)	PENGVL	Perennial	Native	UPL
Penstemon procerus var. procerus (small-flowered penstemon)	PENPVP	Perennial	Native	FAC

SPECIES FULL NAME	SPECIES	Duration	Native vs Non-Natve	Wetland Indicator
Penstemon spp. (penstemon)	PENSTE	Unknown	Native	UPL
Phacelia spp. (phacelia)	PHACEL	Unknown	Native	UPL
Phacelia franklinii (Franklin's phacelia)	PHAFRA	Biennial	Native	UPL
Phacelia hastata (silverleaf phacelia)	PHAHAS	Perennial	Native	UPL
Phacelia linearis (threadleaf phacelia)	PHALIN	Annual	Native	UPL
Phlox alyssifolia (alyssum-leaved phlox)	PHLALY	Perennial	Native	UPL
Phlox hoodii (Hood's phlox)	PHLHOO	Perennial	Native	UPL
Physaria spatulata (spatula-leaf bladderpod)	PHYSPA	Perennial	Native	UPL
Plantago lanceolata (English plantain)	PLALAN	Perennial	Introduced	FACU
Plantago major (common plantain)	PLAMAJ	Perennial	Introduced	FAC
Plantago patagonica (Indian-wheat)	PLAPAT	Annual	Native	UPL
Polygonum amphibium (water smartweed)	POLAMP	Perennial	Native	OBL
Polygonum aviculare (dooryard knotweed)	POLAVI	Perennial	Introduced	FAC
Polygonum douglasii (Douglas' knotweed)	POLDOU	Annual	Native	FACU
Polygonum spp. (knotweed; smartweed; bistort)	POLYGO	Unknown	Both	UPL
Potentilla anserina subsp. anserina (silverweed)	POTASA	Perennial	Native	OBL
Potentilla spp. (cinquefoil)	POTENT	Unknown	Both	UPL
Potentilla gracilis (slender cinquefoil)	POTGRA	Perennial	Native	FAC
Potentilla hippiana (woolly cinquefoil)	POTHIP	Perennial	Native	UPL
Potentilla pensylvanica (prairie cinquefoil)	POTPEN	Perennial	Native	FACU
Potentilla recta (sulphur cinquefoil)	POTREC	Perennial	Introduced	UPL
Pyrrocoma uniflora var. uniflora (plantain goldenweed)	PYRUVU	Perennial	Native	FAC
Ranunculus gmelinii (small yellow water-buttercup)	RANGME	Perennial	Native	FACW
Ratibida columnifera (prairie coneflower)	RATCOL	Perennial	Native	UPL
Rorippa nasturtium-aquaticum (water-cress)	RORNAS	Perennial	Introduced	OBL
Rorippa palustris (marsh yellowcress)	RORPAL	Perennial	Introduced	OBL
Rudbeckia hirta (black-eyed Susan)	RUDHIR	Perennial	Native	FACU
Rumex crispus (curly dock)	RUMCRI	Perennial	Introduced	FAC
Rumex occidentalis (western dock)	RUMOCC	Perennial	Native	FACW
Salicornia rubra (red glasswort)	SALRUB	Annual	Native	OBL
Salsola tragus (prickly Russian thistle)	SALTRA	Annual	Introduced	FACU
Schoenocrambe linifolia (flaxleaf plainsmustard)	SCHLIN	Perennial	Native	UPL
Sedum lanceolatum (lance-leaved stonecrop)	SEDLAN	Perennial	Native	UPL
Senecio canus (woolly groundsel)	SENCAN	Perennial	Native	UPL
Senecio spp. (groundsel; ragwort; butterweed)	SENECI	Unknown	Both	UPL
Senecio integerrimus (western groundsel)	SENINT	Biennial	Native	UPL
Senecio plattensis (prairie groundsel)	SENPLA	Biennial	Native	UPL
Senecio serra var. serra (tall butterweed)	SENSVS	Perennial	Native	FACU
Silene antirrhina (sleepy catchfly)	SILANT	Annual	Native	UPL
Silene drummondii (Drummond campion)	SILDRU	Perennial	Native	UPL
Silene parryi (Parry's silene)	SILPAR	Perennial	Native	UPL
Sisymbrium altissimum (tall tumblemustard)	SISALT	Biennial	Introduced	FACU
Sisymbrium loeselii (Loeselii tumblemustard)	SISLOE	Biennial	Introduced	UPL
Smilacina racemosa (false spikenard)	SMIRAC	Perennial	Native	FAC
Smilacina stellata (starry Solomon-plume)	SMISTE	Perennial	Native	FAC
Solidago canadensis (Canada goldenrod)	SOLCAN	Perennial	Native	FACU

SPECIES FULL NAME	SPECIES	Duration	Native vs Non-Natve	Wetland Indicator
Solidago missouriensis (Missouri goldenrod)	SOLMIS	Perennial	Native	UPL
Solanum sarrachoides (hairy nightshade)	SOLSAR	Annual	Introduced	UPL
Sonchus arvensis (field sowthistle)	SONARV	Perennial	Introduced	FACU
Sonchus asper (prickly sowthistle)	SONASP	Annual	Introduced	FACU
Sonchus spp. (sow-thistle)	SONCHU	Unknown	Introduced	UPL
Sphaeralcea coccinea (scarlet globemallow)	SPHCOC	Biennial	Native	UPL
Stanleya pinnata (bushy princesplume)	STAPIN	Perennial	Native	UPL
Stanleya tomentosa (woolly stanleya)	STATOM	Biennial	Native	UPL
Stenotus acaulis (stemless mock goldenweed)	STEACA	Perennial	Native	UPL
Stenotus armerioides (thrift mock goldenweed)	STEARM	Perennial	Native	UPL
Stenotus lanuginosus (woolly mock goldenweed)	STELAN	Perennial	Native	UPL
Symphyotrichum ascendens (western aster)	SYMASC	Perennial	Native	FACU
Symphyotrichum ericoides var. pansum (manyflowered aster)	SYMEVP	Perennial	Native	FACU
Symphyotrichum falcatum (white prairie aster)	SYMFAL	Perennial	Native	FACU
Symphyotrichum laeve var. geyeri (smooth aster)	SYMLVG	Perennial	Native	FACU
Symphyotrichum spp. (aster)	SYMPHY	Unknown	Native	UPL
Tanacetum vulgare (common tansy)	TANVUL	Perennial	Introduced	FACU
Taraxacum officinale (common dandelion)	TAROFF	Perennial	Introduced	FACU
Tetraneuris acaulis var. acaulis (stemless hymenoxys)	TETAVA	Perennial	Native	UPL
Thlaspi arvense (field pennycress)	THLARV	Annual	Introduced	UPL
Townsendia hookeri (Hooker's townsendia)	TOWHOO	Perennial	Native	UPL
Tragopogon dubius (goat's beard)	TRADUB	Biennial	Introduced	UPL
Trifolium repens (white clover)	TRIREP	Perennial	Introduced	FAC
Typha latifolia (common cattail)	TYPLAT	Perennial	Native	OBL
Urtica dioica subsp. gracilis (stinging nettle)	URTDSG	Perennial	Native	FAC
Veronica anagallis-aquatica (water speedwell)	VERANA	Biennial	Introduced	OBL
Verbena bracteata (bracted verbena)	VERBRA	Perennial	Native	FAC
Verbascum thapsus (common mullein)	VERTHA	Biennial	Introduced	FACU
Vicia americana (American vetch)	VICAME	Perennial	Native	FAC
Zigadenus elegans (glaucous zigadenus)	ZIGELE	Perennial	Native	FACU
Zigadenus venenosus (meadow death-camas)	ZIGVEN	Perennial	Native	FAC
Zizia aptera (heart-leaved Alexanders)	ZIZAPT	Perennial	Native	FAC
Ferns and Allies				
Cheilanthes feei (Fee's lip-fern)	CHEFEE	Perennial	Native	UPL
Equisetum arvense (common horsetail)	EQUARV	Perennial	Native	FAC
Equisetum laevigatum (smooth horsetail)	EQULAE	Perennial	Native	FACW
Fern spp. (fern)	FERNXX	Unknown	Both	UPL
Selaginella densa (compact selaginella)	SELDEN	Perennial	Native	UPL
Moss				
Lichen spp. (lichen)	LICHEN	Unknown	Both	UPL
Moss spp. (moss)	MOSSXX	Unknown	Both	UPL
Ptilium crista-castrensis (knights plume moss)	PTICRI	Perennial	Native	UPL

ATTACHMENT E-2: WILDLIFE SPECIES POTENTIALLY FOUND IN THE REGION ENCOMPASSING FORT HARRISON

Common Name	Scientific Name	Preferred and/or Breeding Habitat	Preferred and/or breeding habitat in FH	Recorded in or near FH[2]
BIRDS[3]				
Gaviiformes				
Common loon[4]	***Gavia immer***	Prefers small lakes, nests on islands and herbaceous shorelines.	No	B
Podicipediformes				
Horned grebe	***Podiceps auritus***	Migrant; breeds in marshes and shallow ponds with emergent vegetation.	No	B
Eared grebe	*Podiceps nigricollis*	Prefers shallow lakes and ponds with emergent vegetation.	No	
Red-necked grebe	*Podiceps grisegena*	Inhabits marsh areas and bays of freshwater lakes and a variety of smaller waterbodies.	No	
Pied-billed grebe	*Podilymbus podiceps*	Inhabits marshes and open waterbodies	No	B
Western grebe	*Aechmophorus occidentalis*	Prefers lakes and marshes with emergent vegetation.	No	
Pelecaniformes				
American white pelican	***Pelecanus erythrorhynchos***	Migrant; breeds in rivers and lakes and also uses other types of waterbodies.	No	
Double-crested cormorant	*Phalacrocorax auritus*	Found in a variety of large-bodied aquatic habitats.	No	A
Ciconiiformes				
American bittern	***Botaurus lentiginosus***	Breeds in wetlands with tall, emergent vegetation.	No	
Great blue heron	***Ardea herodias***	Nests in riparian and coniferous habitats.	No	B
Snowy egret	*Egretta thula*	Migrant; uses wetlands and flooded fields.	No	
Black-crowned night-heron	***Nycticorax nycticorax***	Migrant; prefers marshes for nesting or other wetland vegetation types near water.	No	
White-faced Ibis	***Plegadis chihi***	Nests and breeds in wetlands with islands of emergent vegetation. Feeds in grasslands and marshes.	No	
Anseriformes				
Tundra swan	*Cygnus columbianus*	Migrant; uses lakes and ponds during migration through Montana.	No	
Trumpeter swan	***Cygnus buccinators***	Migrant; breeds in clean, shallow lakes with emergent vegetation including 100 meters of open water for flight initiation.	No	
Greater white-fronted goose	*Anser albifrons*	Migrant; uses agricultural fields, marshes, and prairies.	No	

Common Name	Scientific Name	Preferred and/or Breeding Habitat	Preferred and/or breeding habitat in FH	Recorded in or near FH[2]
Snow goose	*Chen caerulescens*	Uses grain fields, lakes, and rivers during migration through Montana.	No	
Canada goose	*Branta canadensis*	Inhabits surface water with adjacent agricultural and other types of open land.	Yes	B
Wood duck	*Aix sponsa*	Inhabits wetlands including creeks, rivers, marshes, swamps, and ponds.	No	
Mallard	Anas platyrhynchus	Highly adaptable; nests in areas near water with dense cover.	No	B
Northern pintail	*Anas acuta*	Breeds in wetlands of prairie grasslands and uses shallow wetlands and flooded agricultural fields during non-breeding times.	No	
Gadwall	*Anas strepera*	Nests in saline lowlands and areas with clay, pan spots, silt deposits, and dense cover.	No	B
American wigeon	*Anas americana*	Breeds in wetlands, nests in brushy and grassy upland sites.	Yes	B
Eurasian wigeon	*Anas penelope*	Migrant; occurs in shallow water, fields, and meadows.	No	
Northern shoveler	*Anas clypeata*	Inhabits marsh areas of lakes and ponds.	No	B
Blue-winged teal	*Anas discors*	Nests in herbaceous vegetation near shallow ponds.	No	B
Cinnamon teal	*Anas cyanoptera*	Inhabits wetlands including large marshes, reservoirs, slow streams, ditches, and ponds	No	B
Green-winged teal	*Anas crecca*	Prefers ponds with deciduous parklands. Uses grasslands, sedge meadows, and thickets near ponds or marshes.	No	B
Lesser scaup	*Aythya affinis*	Inhabits lakes, rivers, and large wetlands.	No	B
Ring-necked duck	*Aythya collaris*	Prefers wetlands and open water with abundant aquatic vegetation.	No	
Canvasback	*Aythya valisineria*	Breeds in small lakes and bays, deep-water marshes, ponds, potholes and shallow rivers. Uses mixed-grass prairies and aspen parklands.	No	
Redhead	*Aythya americana*	Prefers lakes and ponds.	No	
Long-tailed duck	*Clangula hyemalis*	Migrant; uses waterbodies during migration through Montana.	No	
Surf scoter	*Melanitta perspicillata*	Migrant; uses lakes and rivers during migration through Montana.	No	B
White-winged scoter	*Melanitta fusca*	Migrant; nests in dense vegetation within spruce forests.	No	
Common goldeneye	*Bucephala clangula*	Breeds in forested wetlands, and also uses lakes and rivers.	No	B
Barrow's goldeneye	*Bucephala islandica*	Inhabits waterbodies in montane regions.	No	
Bufflehead	*Bucephala islandica*	Prefers ponds and small lakes.	No	B
Common merganser	*Mergus merganser*	Prefers lakes and rivers.	No	B

Common Name	Scientific Name	Preferred and/or Breeding Habitat	Preferred and/or breeding habitat in FH	Recorded in or near FH[2]
Red-breasted merganser	*Mergus serrator*	Migrant; uses lakes, ponds, and rivers during migration through Montana.	No	B
Ruddy duck	*Oxyura jamaicensis*	Breeds in shallow marshes. Found in deep water with silty or muddy bottoms.	No	B
Hooded merganser	*Lophodytes cucullatus*	Prefers rivers with adjacent riparian forests.	No	B
Falconiformes				
Turkey vulture	*Cathartes aura*	Nests in rock outcroppings. Forages in grasslands, badlands, farmlands, and open- woodlands.	Yes	D
Northern harrier	*Circus cyaneus*	Uses grasslands and shrublands.	Yes	B, X
Cooper's hawk	*Accipter cooperii*	Prefers dense coniferous and deciduous forests.	Yes	B, D
Sharp-shinned hawk	*Accipiter striatus*	Prefers coniferous and deciduous forests and sometimes found hunting in open areas.	Yes	B
Northern goshawk	***Accipiter gentilis***	Prefers mature coniferous forests with gentle-to-steep slopes and limited undergrowth.	Yes	B
Red-tailed hawk	*Buteo jamaicensis*	Nests in cliffs and trees. Uses grasslands, open woodlands, and agricultural fields.	Yes	D
Swainson's hawk	*Buteo swainsoni*	Nests in stream bottoms and brushy coulees. Hunts over grasslands, agricultural land, and riparian areas.	Yes	D
Ferruginous hawk	***Buteo regalis***	Inhabits mixed-grass prairies, shrub-grasslands, grasslands, grass-sagebrush complexes, and sagebrush steppe.	Yes	D
Rough-legged hawk	*Buteo lagopus*	Migrant/winter resident; inhabits grasslands and agricultural lands.	Yes	B, D
Osprey	*Pandion haliaetus*	Inhabits lakes, reservoirs, and rivers.	No	B
Golden eagle	***Aquila chrysaetos***	Inhabits prairies, sagebrush/grasslands, and open woodlands.	Yes	X
Bald eagle	***Haliaeetus leucocephalus***	Inhabits riparian forests surrounding lakes and rivers.	Yes	B, D
American kestrel	*Falco sparverius*	Prefers open prairies with scattered trees for nesting and perching.	Yes	B, D
Prairie falcon	*Falco mexicanus*	Uses grasslands and nests in adjacent cliffs.	Yes	D
Merlin	*Falco columbarius*	Breeds in riparian forests and coniferous stands adjacent to prairies.	Yes	B
Peregrine falcon	***Falco peregrinus***	Prefers cliffs with a wide view and nearby waterbodies.	No	
Gyrfalcon	*Falco rusticolus*	Migrant/winter resident; found near concentrations of waterfowl or upland gamebirds.	Yes	
Galliformes				
Ring-necked pheasant	*Phasianus colchicus*	Prefers brushy and/or herbaceous cover near open grasslands and agricultural fields.	Yes	
Gray partridge	*Perdix perdix*	Prefers grasslands interspersed with cultivated	Yes	D, X

Common Name	Scientific Name	Preferred and/or Breeding Habitat	Preferred and/or breeding habitat in FH	Recorded in or near FH[2]
		fields.		
Chukar	*Alectoris chukar*	Inhabits brushy areas of steep, rocky terrain.	No	
Ruffed grouse	*Bonasa umbellus*	Dense cover of forested areas.	Yes	B
Sharp-tailed grouse	***Tympanuchus phasianellus***	Native grasslands with shrub-filled coulees.	Yes	
Greater sage-grouse	***Centrocercus urophasianus***	Prefers sagebrush in all seasons.	No	
Spruce grouse	*Falcipennis Canadensis*	Prefers dense forest types including alpine fir, Engelmann spruce, or lodgepole pine.	Yes	D
Dusky grouse	*Dendragapus obscurus*	Winters in high-elevation coniferous forests. Uses openings of forests and forest edges.	Yes	B
Wild turkey	*Meleagris gallopavo*	Inhabits open riparian, coniferous, and deciduous forests at lower elevations.	Yes	
Gruiformes				
Virginia rail	*Rallus limicola*	Breeds in wetlands with shallow water and emergent vegetation.	No	
Sora	*Porzana carolina*	Prefers marshes with grassy vegetation.	No	
American coot	*Fulica americana*	Prefers marshy borders of ponds and inhabits a variety of other wetlands.	No	B
Sandhill crane	*Grus canadensis*	Uses grasslands and marshes.	Yes	B
Charadriiformes				
Semipalmated plover	*Charadrius semipalmatus*	Migrant; found during migration on open, sandy, or gravelly areas along rivers and lake beaches.	No	
Killdeer	*Charadrius vociferus*	Prefers open areas such as sandbars, pastures, and human- modified habitats.	Yes	B, D
Black-necked stilt	***Himantopus mexicanus***	Uses open marshes and meadows of large wetland complexes.	No	
American avocet	*Recurvirostra americana*	Breeds in marsh areas, ponds, and alkaline lakes.	No	B
Greater yellowlegs	*Tringa melanoleuca*	Migrant; uses marshes and slow moving rivers during migration.	No	
Lesser yellowlegs	*Tringa flavipes*	Migrant; uses mudflats and shallow ponds during migration.	No	B
Solitary sandpiper	*Tringa solitaria*	Migrant; found along sloughs and mudflats during migration.	No	
Spotted sandpiper	*Actitis macularia*	Uses rocky shores and steep banks of ponds and streams.	Yes	B
Upland sandpiper	*Bartrmia longicauda*	Breeds in upland grasslands.	Yes	D
Whimbrel	*Numenius phaeopus*	Migrant; prefers grassy wetlands.	No	
Long-billed curlew	*Numenius americanus*	Nests on dry grasslands.	Yes	B, D
Marbled godwit	*Limosa fedoa*	Migrant; breeds in native grasslands and wetlands.	Yes	
Willet	*Catoptrophorus emipalmatus*	Uses sparse cover in wetlands and grasslands.	No	
Baird's sandpiper	*Calidris bairdii*	Migrant; uses wet meadows and shallow ponds	No	

Common Name	Scientific Name	Preferred and/or Breeding Habitat	Preferred and/or breeding habitat in FH	Recorded in or near FH[2]
		during migration.		
Semipalmated sandpiper	*Calidris pusilla*	Migrant; uses wet and dry mudflats.	No	
Stilt sandpiper	*Calidris himantopus*	Prefers shallow ponds with muddy bottoms.	No	
Long-billed dowitcher	*Limnodromus scolopaceus*	Uses grassy marshes during migration.	No	
Wilson's snipe	*Callinago delicata*	Prefers marshes and wet fields and breeds in wetlands with ample protective cover.	No	B
Wilson's phalarope	*Phalaropus tricolor*	Found in marshy borders of lakes and ponds, and flooded fields.	No	
Sabine's gull	*Xema sabini*	Migrant; primarily pelagic and breeds along shoreline of the coast.	No	
Franklin's gull	*Leucophaeus pipixcan*	Prefers prairie marshes and nests on waterbodies with emergent vegetation.	No	B
Laughing gull	*Larus atricilla*	Migrant; nests along the coastlines.	No	
Ring-billed gull	*Larus delawarensis*	Prefers wetlands and human-modified habitats.	Yes	B, D
California gull	*Larus californicus*	Nests on bare ground or dry vegetation near waterbodies.	Yes	B, D
Herring gull	*Larus argentatus*	Migrant; prefers islands and other areas near water.	No	
Black tern	*Chlidonias niger*	Uses wetlands including ponds, prairie potholes, and reservoirs.	No	B
Caspian tern	*Sterna caspia*	Nests on sand and/or pebble shores on islands of large lakes and reservoirs.	No	B
Common tern	*Sterna hirundo*	Nests on islands of large lakes and reservoirs.	No	
Forster's tern	*Sterna forsteri*	Prefers to breed in marshes with reed beds and muskrat houses present for nesting.	No	
Columbiformes				
Rock pigeon	*Columba livia*	Prefers human-modified habitats.	Yes	B, D
Mourning dove	*Zenaida macroura*	Inhabits open woodlands, forest edges and human-modified habitats.	Yes	D
Cuculiformes				
Black-billed cuckoo	***Coccyzus erythropthalmus***	Prefers dense forested areas near water.	No	
Strigiformes				
Long-eared owl	*Asio otus*	Inhabits woody draws, juniper thickets, and forest edges. Hunts in open habitat.	Yes	
Short-eared owl	*Asio flammeus*	Inhabits grasslands, plains, and agricultural areas.	Yes	
Flammulated owl	***Otus flammeolus***	Breeds in montane forests. Prefers mature stands of ponderosa pine.	Yes	B
Western screech-owl	*Megascops kinnicotti*	Cottonwood forest stands and/or coniferous edges	Yes	
Great horned owl	*Bubo virginianus*	Inhabits river bottoms and forest edges.	Yes	B
Northern hawk	*Surnia ulula*	Migrant; coniferous edges	Yes	

Common Name	Scientific Name	Preferred and/or Breeding Habitat	Preferred and/or breeding habitat in FH	Recorded in or near FH[2]
owl				
Snowy owl	*Nyctea scandiaca*	Migrant; found in open fields and marshes during winter.	Yes	
Great gray owl	***Strix nebulosa***	Uses dense coniferous forests.	Yes	
Barred owl	*Strix varia*	Uses mature forest types.	Yes	
Northern pygmy-owl	*Glaucidium gnoma*	Habitat ranges from river riparian areas to timberline.	Yes	
Burrowing owl	***Athene cunicularia***	Inhabits open grasslands with abandoned burrows.	Yes	
Boreal owl	*Aegolius funereus*	Inhabits high elevation spruce and fir forests.	No	
Northern saw-whet owl	*Aegolius acadicus*	Inhabits coniferous forests and deciduous riparian areas.	Yes	
Caprimulgiformes				
Common nighthawk	*Chordeiles minor*	Breeds in open prairies and uses river valleys, marshes, and farmlands.	Yes	B, D
Common poorwill	*Phalaenoptilus nuttallii*	Uses grasslands and shrublands.	Yes	B
Corachiiformes				
Belted kingfisher	*Ceryle alcyon*	Inhabits waterbodies with available nesting habitat in earthen banks.	No	B
Apodiformes				
White-throated swift	*Aeronautes saxatalis*	Breeds near cliffs and canyons in mountainous country.	No	
Vaux's swift	*Chaetura vauxi*	Breeds in mature coniferous forests and mixed deciduous-coniferous forests.	Yes	
Black-chinned hummingbird	*Archilochus alexandri*	Uses riparian communities with associated willows and cottonwoods.	Yes	B
Calliope hummingbird	*Stellula calliope*	Inhabits montane forests.	Yes	B
Rufous hummingbird	*Selasphorus rufus*	Uses secondary successional habitats and mature forests.	Yes	
Piciformes				
Northern flicker	*Colaptes auratus*	Inhabits open woodlands.	Yes	A, X
Red-headed woodpecker	*Melanerpes erythrocephalus*	Inhabits riparian forests, savannahs with snags, and large burned forests.	No	
Lewis's woodpecker	***Melanerpes lewis***	Found in river bottoms, forest edges, burned areas. Prefers ponderosa pine stands.	Yes	B, D
Downy woodpecker	*Picoides pubescens*	Inhabits open riparian areas and deciduous woodlands.	Yes	B, D
Hairy woodpecker	*Picoides villosus*	Inhabits mature woodlands and prefers larch for nesting.	Yes	B
American three-toed woodpecker	*Picoides dorsalis*	Nests in coniferous forests.	Yes	
Black-backed	***Picoides arcticus***	Prefers early successional burned coniferous	Yes	

Common Name	Scientific Name	Preferred and/or Breeding Habitat	Preferred and/or breeding habitat in FH	Recorded in or near FH[2]
woodpecker		forests.		
Pileated woodpecker	***Dryocopus pileatus***	Uses mature forests and early successional forests with large dead trees.	Yes	B
Williamson's sapsucker	*Sphyrapicus thyroideus*	Prefers fir and lodgepole pine forests.	Yes	
Red-naped sapsucker	*Sphyrapicus nuchalis*	Breeds in open woodlands including ponderosa pine and aspen groves.	Yes	A
Passeriformes				
Olive-sided flycatcher	*Contopus cooperi*	Inhabits montane forests, prefers post-fire forest habitats.	Yes	B
Western wood-pewee	*Contopus sordidulus*	Found along deciduous and coniferous forest edges.	Yes	B
Willow flycatcher	*Empidonax traillii*	Prefers brushy wetlands.	No	B, D
Least flycatcher	*Empidonax minimus*	Utilizes diverse habitats such as coniferous groves to shrubby fields.	Yes	B
Dusky flycatcher	*Empidonax oberholseri*	Use brushy habitats, open coniferous forests, and aspen groves.	Yes	A
Hammond's flycatcher	*Empidonax hammondii*	Inhabits deciduous and coniferous forests.	Yes	D
Cordilleran flycatcher	*Empidonax occidentalis*	Uses riparian habitats including woodlands, aspens, and coniferous forests.	Yes	D
Say's phoebe	*Sayornis saya*	Prefers open country including sagebrush plains, badlands, and barren foothills.	Yes	D
Ash-throated flycatcher	*Myiarchus cinerascens*	Transient; inhabits a variety of habitats ranging from desert scrub to riparian woodlands.	Yes	
Western kingbird	*Tyrannus verticalis*	Inhabits open areas such as prairies and farmland.	Yes	D
Eastern kingbird	*Tyrannus tyrannus*	Found in open areas along forest edges and fields.	Yes	B, D
Northern shrike	*Lanius excubitor*	Migrant/winter resident; uses forest edges.	Yes	B
Loggerhead shrike	***Lanius ludovicianus***	Inhabits sagebrush, bitterbrush, and mesic shrub stands.	Yes	
Cassin's vireo	*Vireo cassinii*	Inhabits coniferous and mixed coniferous-deciduous forests.	Yes	B
Warbling vireo	*Vireo gilvus*	Prefers forests with adjacent water sources.	Yes	D
Red-eyed Vireo	*Vireo olivaceus*	Prefers mixed forests with limited amounts of understory.	Yes	
Steller's jay	*Cyanocitta stelleri*	Inhabits open woodlands of coniferous and mixed coniferous-deciduous forests.	Yes	
Blue jay	*Cyanocitta cristata*	Inhabits coniferous and deciduous forests.	Yes	
Pinyon jay	***Gymnorhinus yanocephalus***	Prefers grasslands with tall cover for breeding and nesting.	Yes	
Gray jay	*Perisoreus canadensis*	Inhabits sub-alpine coniferous forests.	Yes	
Clark's nutcracker	***Nucifraga Columbiana***	Inhabits coniferous forests including ponderosa pine, Douglas fir, and white-bark pine.	Yes	B, X
Black-billed magpie	*Pica pica*	Breeds in thickets of riparian areas and adaptable to human activity.	Yes	B, X

Common Name	Scientific Name	Preferred and/or Breeding Habitat	Preferred and/or breeding habitat in FH	Recorded in or near FH[2]
American crow	*Corvus brachyrhynchos*	Adaptable bird with widespread habitats.	Yes	B, X
Common raven	*Corvus corax*	Highly adaptable; preferred habitat ranges from coniferous forests to arid brushlands.	Yes	B, D
Horned lark	*Eremophila alpestris*	Occupies open, barren country.	Yes	B, D
Tree swallow	*Tachycineta bicolor*	Nests in trees and uses open fields, meadows, marshes, and other areas associated with wetlands.	No	B,D
Violet-green swallow	*Tachycineta thalassina*	Inhabits deciduous, coniferous, and mixed forests.	Yes	B
Northern rough-winged swallow	*Steigidopteryx serripennis*	Nests in cliffs, sandbanks, and other crevices. Forages over ponds and rivers.	No	B
Bank swallow	*Riparia riparia*	Inhabits low elevation waterbodies with eroded banks for nesting.	No	B
Barn swallow	*Hirundo rustica*	Nests in vertical substrate, including buildings with nearby water.	Yes	
Cliff swallow	*Hirundo pyrrhonota*	Uses areas with vertical cliffs or other overhangs. A mud source is needed for nesting purposes.	No	B
Black-capped chickadee	*Parus atricapillus*	Occupies open woodlands, willows, and cottonwood groves.	Yes	B, D
Mountain chickadee	*Parus gambeli*	Inhabits montane coniferous forests.	Yes	B, D
White-breasted nuthatch	*Sitta carolinensis*	Prefers forest edges of deciduous and coniferous forests.	Yes	B
Red-breasted nuthatch	*Sitta canadensis*	Breeds in fir forests, spruce forests, and mixed woodlands.	Yes	B, D
Pygmy nuthatch	*Sitta pygmaea*	Prefers ponderosa pine forests.	Yes	
Brown creeper	***Certhia Americana***	Inhabits coniferous forests and mixed coniferous-deciduous forests.	Yes	
Marsh wren	*Cistothorus palustris*	Inhabits marshes with dense vegetation.	No	
House wren	*Troglodytes aedon*	Inhabits woodlands and human-modified landscapes.	Yes	B, D
Winter wren	***Troglodytes troglodytes***	Uses coniferous forests and open areas near water.	Yes	
Rock wren	*Salpinctes obsoletus*	Prefers rocky areas and other crevice forming substrate.	No	B, D
Canyon wren	*Catherpes mexicanus*	Limited to rocky cliffs and rock outcrops.	No	
American dipper	*Cinclus mexicanus*	Prefers fast-moving, clear streams.	No	
Golden-crowned kinglet	*Regulus satrapa*	Nests in forests, riparian areas, and edges of clearings.	Yes	
Ruby-crowned kinglet	*Regulus calendula*	Nests in coniferous forests and uses a variety of habitats during non-nesting.	Yes	B
Mountain bluebird	*Sialia currucoides*	Prefers open areas with scattered trees such as prairies and agricultural fields.	Yes	A, D
Western bluebird	*Sialia mexicana*	Inhabits open coniferous forests and deciduous	Yes	D

Common Name	Scientific Name	Preferred and/or Breeding Habitat	Preferred and/or breeding habitat in FH	Recorded in or near FH[2]
		forests.		
Townsend's solitaire	*Myadestes townsendi*	Inhabits open forests and forest edges.	Yes	B
Varied thrush	*Ixoreus naevius*	Inhabits montane coniferous forests and deciduous forests with dense understory.	Yes	
American robin	*Turdus migratorius*	Inhabits diverse habitat types.	Yes	B, X
Veery	***Catharus fuscescens***	Inhabits riparian forests with dense understory.	No	B
Swainson's thrush	*Catharus ustulatus*	Inhabits coniferous forests, montane deciduous riparian habitats, and aspen forests. Prefers mature forests.	Yes	B
Hermit thrush	*Catharus guttatus*	Prefers forest edges along ponds and meadows.	No	
Northern mockingbird	*Mimus polyglottos*	Inhabits forest edges and cultivated lands.	No	
Gray catbird	*Dumetella carolinensis*	Occupies early successional shrub habitats, forest edges, and old human inhabitants.	Yes	B, D
Sage thrasher	***Oreoscoptes montanus***	Sagebrush obligate.	No	B, C
American pipit	*Anthus rubescens*	Uses open habitats during migration.	Yes	
Bohemian waxwing	*Bombycilla garrulus*	Migrant/winter range; inhabits open coniferous and deciduous forests.	Yes	B
Cedar waxwing	*Bombycilla cedrorum*	Prefers open forests and riparian areas with adjacent grasslands.	Yes	B, D
European starling	*Sturnus vulgaris*	Inhabits open human-modified areas.	Yes	B, D
Tennessee warbler	*Vermivora peregrina*	Migrant; breeds in open woodlands and found in brushy habitats during migration.	No	
Orange-crowned warbler	*Vermivora celata*	Inhabits riparian areas and aspen groves with limited understory.	No	
Yellow warbler	*Dendroica petechia*	Found in wet brushy habitats.	Yes	B, D
Magnolia warbler	*Dendroica magnolia*	Migrant; uses coniferous forests and brushy or wooded areas.	Yes	
Townsend's warbler	*Dendroica townsendi*	Inhabits coniferous and mixed coniferous-deciduous forests.	Yes	
Yellow-rumped warbler	*Dendroica coronata*	Inhabits coniferous and mixed coniferous-deciduous forests.	Yes	B, D
Blackpoll warbler	*Dendroica striata*	Migrant, use riparian area.	No	B
American redstart	*Setophaga ruticilla*	Inhabits deciduous woodlands with nearby water, and alder and willow riparian habitats.	No	
Prothonotary warbler	*Protonotaria citrea*	Accidental species; inhabits wet lowland forests.	No	
Northern waterthrush	*Seiurus noveboracensis*	Breeds in wetlands with dark, cool, habitat types.	No	
Ovenbird	*Seiurus aurocapilla*	Inhabits mature forests.	Yes	
MacGillivray's warbler	*Oporornis tolmiei*	Found in riparian habitats and coniferous forests.	Yes	B
Common yellowthroat	*Geothlypis trichas*	Prefers dense vegetation of a wide-range of habitats.	Yes	B

Common Name	Scientific Name	Preferred and/or Breeding Habitat	Preferred and/or breeding habitat in FH	Recorded in or near FH[2]
Wilson's warbler	*Wilsonia pusilla*	Prefers riparian habitats with willows.	Yes	
Yellow-breasted chat	*Icteria virens*	Uses riparian shrubs, swamps, ponds with low and dense vegetation, forest borders, regenerated forests, and logged areas.	Yes	
Western tanager	*Piranga ludoviciana*	Occupies open woodlands and dense forests. During migration much more diverse habitat is used.	Yes	
Lazuli bunting	*Passrina amoena*	Inhabits shrublands within openings of forested areas.	Yes	B, D
Indigo bunting	*Passerina cyanea*	Migrant; prefers shrubby habitats with adjacent woodlands or fields.	No	
Black-headed grosbeak	*Pheucticus melanocephalus*	Inhabits diverse landscapes throughout Montana.	Yes	B
Rose-breasted grosbeak	*Pheucticus ludovicianus*	Migrant; inhabits deciduous forests.	No	
Spotted towhee	*Pipilo maculatus*	Uses shrubby areas in coniferous forest openings.	Yes	B, D
Green-tailed towhee	*Pipilo chlorurus*	Uses shrubby habitats on mountain slopes.	Yes	
Chipping sparrow	*Spizella passerina*	Inhabits open woodlands, river and lake edges, and brushy fields.	Yes	B, D
Clay-colored sparrow	*Spizella pallida*	Inhabits riparian areas, second-growth areas, open shrublands, and forest edges.	Yes	B
Brewer's sparrow	***Spizella breweri***	Prefers sagebrush habitats.	Yes	C, D
American tree sparrow	*Spizella arborea*	Migrant/winter resident; uses open areas with scattered trees and human-modified landscapes.	Yes	B, D
Lark bunting	*Calamospiza melanocorys*	Prefers mixed grass communities.	Yes	D
Vesper sparrow	*Pooecetes gramineus*	Uses grasslands and sagebrush.	Yes	B, D
Lark sparrow	*Chondestes grammacus*	Uses open habitats such as grasslands and pinyon-juniper edges.	Yes	
Savannah sparrow	*Passerculus sandwichensis*	Breeds in marsh areas, meadows, and agricultural fields.	No	
Grasshopper sparrow	***Ammodramus Bairdii***	Open prairie.	Yes	
Fox sparrow	*Passerella iliaca*	Migrant; prefers thick cover near forest edges.	No	
Song sparrow	*Melospiza melodia*	Migrant; uses forests and shrub areas adjacent to water and riparian habitats.	Yes	B
Lincoln's sparrow	*Melozpiza lincolnii*	Uses dense shrubs, willows, sedges, and mossy areas. Occupies shrub habitats during migration.	No	B
Swamp sparrow	*Melospiza georgiana*	Migrant; breeds in wet lowland areas. During migration uses forest edges and dense brushy habitat types.	No	
Dark-eyed junco	*Junco hyemalis*	Prefers open coniferous forests.	Yes	B
Harris's sparrow	*Zonotrichia querula*	Migrant; shrub and forests.	Yes	

Common Name	Scientific Name	Preferred and/or Breeding Habitat	Preferred and/or breeding habitat in FH	Recorded in or near FH[2]
White-crowned sparrow	*Zonotrichia leucophrys*	Breeding habitat includes grasslands, bare ground for forage, and dense cover for nesting, surface water, and tall coniferous trees nearby.	Yes	B
White-throated sparrow	*Zonotrichia albicollis*	Migrant; inhabits brushy habitats adjacent or within woodlands.	Yes	
Lapland longspur	*Calcarius lapponicus*	Migrant/winter resident; uses open areas while wintering in Montana.	Yes	
Snow bunting	*Plectrophenax nivalis*	Migrant/winter resident; nests in rocky areas near tundra. Uses shores of lakes and agricultural fields during winter.	No	
Bullock's oriole	*Icterus bullockii*	Prefers open woodlands.	Yes	B, D
Western meadowlark	*Sturnella neglecta*	Prefers native grasslands, pastures, hay fields, and alfalfa fields.	Yes	B, D
Bobolink	***Dolichonyx oryzivorus***	Prefers mixed grass prairies.	Yes	A
Red-winged blackbird	*Agelaius phoeniceus*	Inhabits wetlands, upland sedge meadows, alfalfa and other types of agriculture fields.	Yes	B, D
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*	Inhabits wetlands in prairies, mountain meadows, and aspen parklands.	No	B
Brewer's blackbird	*Euphagus cyanocephalus*	Inhabits human-modified land with open surroundings.	Yes	B, D
Common grackle	*Quiscalus quiscula*	Uses forest edges, swamps, marshes, and human-altered landscapes.	Yes	B
Brown-headed cowbird	*Molothrus ater*	Inhabits prairies, agricultural fields, woodland edges, and pastures.	Yes	B, D
Grey-crowned rosy-finch	***Leucosticte tephrocotis***	Migrant/winter resident; nests in cliff crevices above timberline.	No	
Red crossbill	*Loxia curvirostra*	Prefers mature coniferous forests.	Yes	B
White-winged crossbill	*Loxia leucoptera*	Inhabits coniferous and mixed coniferous-deciduous forests.	Yes	
Evening grosbeak	*Coccothraustes vespertinus*	Nests in coniferous and deciduous forests.	No	B
House finch	*Carpodacus mexicanus*	Occupies open habitats and human-modified landscapes.	Yes	B
Purple finch	*Carpodacus purpureus*	Migrant; nests in coniferous and deciduous forests.	Yes	B
Cassin's finch	***Carpodacus cassinii***	Inhabits open coniferous forests.	Yes	
American goldfinch	*Carduelis tristis*	Found in river flood plains, secondary growth forests, and human-altered land.	Yes	B, D
Brambling	*Fringilla montifringilla*	Migrant; prefers seeders in human's backyards.	No	
Pine siskin	*Carduelis pinus*	Found in open coniferous and deciduous forests.	Yes	B
Common redpoll	*Acanthis flammea*	Migrant/winter resident; uses open woodlands and edges of fields.	Yes	B
Hoary redpoll	*Carduelis hornemanni*	Migrant; inhabits open forests and shrub types.	Yes	
Pine grosbeak	*Pinicola enucleator*	Inhabits coniferous forests.	Yes	
House sparrow	*Passer domesticus*	Inhabits human-modified environments.	Yes	B

Common Name	Scientific Name	Preferred and/or Breeding Habitat	Preferred and/or breeding habitat in FH	Recorded in or near FH[2]
MAMMALS[5]				
Lipotyphla				
Masked shrew	*Sorex cinereus*	Dry coniferous forests.	Yes	
Montane shrew	*Sorex monticolus*	Forests, streambanks	Yes	B
Dwarf shrew	*Sorex nanus*	Wide range of habitats	Yes	
Water shrew	*Sorex palustris*	Prefers mountain streams and nests in stream islands.	No	
Preble's shrew	***Sorex preblei***	Prefers arid grasslands and sagebrush.	Yes	
Vagrant shrew	*Sorex vagrans*	Inhabits open meadows to dense forests.	Yes	
Chiroptera				
Townsend's big-eared bat	***Corynorhinus townsendii***	Roosts in caves and old mines near Douglas fir, lodgepole pine, ponderosa pine, and cottonwood stands.	Yes	
Big brown bat	*Eptesicus fuscus*	Habitats include open and forested areas near water sources.	Yes	
Spotted bat	***Euderma maculatum***	Cliffs and crevices in arid habitats	No	
Silver-haired bat	*Lasionycteris noctivagans*	Prefers coniferous forests with ponds or other types of waterbodies nearby.	No	
Hoary bat	***Lasiurus cinereus***	Prefers mature coniferous forests, but uses other forested areas.	Yes	
California myotis	*Myotis californicus*	Crevices and buildings in riparian and dry woodland habitats	Yes	
Western small-footed myotis	*Myotis ciliolabrum*	Found in areas around cliffs, winters in caves and mine shafts.	Yes	B
Long-eared myotis	***Myotis evotis***	Inhabits ponderosa pine and Douglas fir forests, and short- grass prairie.	Yes	
Little brown myotis	***Myotis lucifugus***	Forages over creeks and lakes, roosts in cliffs, caves, and human-made structures.	Yes	B
Fringed myotis	***Myotis thysanodes***	Roosts in crevices, buildings, etc. Forages over moist habitats in ponderosa pine and Douglas-fir forests	Yes	
Long-legged Myotis	***Myotis volans***	Inhabits montane coniferous forests, and roosts in buildings, bark of coniferous trees, and caves.	Yes	
Yuma myotis	***Myotis yumanensis***	Roosts in human-built structures, hibernacula are associated with caves and mines.	Yes	
Lagomorpha				
Pika	*Ochotona princeps*	Inhabits high elevation rocky slopes.	No	
Snowshoe hare	*Lepus americanus*	Prefers dense understory in coniferous forests.	Yes	
White-tailed jackrabbit	*Lepus townsendii*	Inhabits grasslands to alpine tundra.	Yes	D, X

Common Name	Scientific Name	Preferred and/or Breeding Habitat	Preferred and/or breeding habitat in FH	Recorded in or near FH[2]
Mountain cottontail	*Sylvilagus nuttallii*	Inhabits sagebrush, agricultural fields, rocky outcroppings in canyons, and dense riparian areas.	Yes	X
Rodentia				
Beaver	*Castor canadensis*	Inhabits waterbodies with woody riparian vegetation.	Yes	
Porcupine	*Erethizon dorsatum*	Prefers a mix of coniferous and deciduous stands with dense understory.	Yes	D
Northern pocket gopher	*Thomomys talpoides*	Inhabits sagebrush and mountain meadows with deep loose soil.	Yes	D
Southern red-backed vole	*Clethrionomys gapperi*	Inhabits dense forests.	Yes	
Long-tailed vole	*Microtus longicaudus*	Uses habitats ranging from grasslands to boreal forests.	Yes	
Meadow vole	*Microtus pennsylvanicus*	Found in meadows of forested areas and grassland prairies.	Yes	
Water vole	*Microtus richardsoni*	Prefers high elevations streams and ponds.	No	
Heather vole	*Phenacomys intermedius*	Prefers subalpine forested types with dense ground cover.	No	
Bushy-tailed woodrat	*Neotoma cinerea*	Uses a variety of habitats ranging from desert to montane forests and buildings.	Yes	
Muskrat	*Ondatra zibethicus*	Inhabits riparian habitats with herbaceous vegetation and non-freezing attributes.	No	
Deer mouse	*Peromyscus maniculatus*	Inhabits nearly all habitat types of Montana.	Yes	B, D
House mouse	*Mus musculus*	Uses human-altered landscapes and buildings.	Yes	D
Black-tailed prairie dog	***Cynomys ludovicianus***	Prefers flat, open grasslands, and shrub/grasslands.	Yes	A, X
Yellow-bellied marmot	*Marmota flaviventris*	Inhabits lower elevations and nests in rock outcroppings.	Yes	
Northern flying squirrel	*Glaucomys sabrinus*	Inhabits coniferous forests including ponderosa pine and lodgepole pine.	Yes	
Red squirrel	*Tamiasciurus hudsonicus*	Uses montane coniferous forests.	Yes	B, X
Eastern fox squirrel	*Sciurus niger*	Introduced into Helena; deciduous trees	Yes	
Columbian ground squirrel	*Spermophilus columbianus*	Prefers alpine and subalpine forests and also inhabits open woodlands and grasslands at lower elevations.	Yes	
Golden-mantled ground squirrel	*Spermophilus lateralis*	Inhabits intermountain valleys to alpine rock slopes. Associated with rock outcrops.	Yes	B
Richardson's ground squirrel	*Spermophilus richardsonii*	Prefers short-grass prairies and pastures.	Yes	

Common Name	Scientific Name	Preferred and/or Breeding Habitat	Preferred and/or breeding habitat in FH	Recorded in or near FH[2]
Yellow-pine chipmunk	*Tamias amoenus*	Prefers shrublands and openings in coniferous forests.	Yes	
Least chipmunk	*Tamias minimus*	Sagebrush, brushy grasslands, coniferous forest	Yes	
Red-tailed chipmunk	*Tamias ruficaudus*	Prefers subalpine forests with abundant ground and shrub cover.	No	
Western jumping mouse	*Zapus princeps*	Prefers grass and sedge communities along marshes and streams.	Yes	
Carnvivora				
Coyote	*Canis latrans*	Inhabits diverse habitats from open grasslands to human- disturbed forests.	Yes	X
Gray wolf	***Canis lupus***	Occupies a wide range of habitat dependent upon the presence of the species' primary prey (big game).	Yes	C, X
Red fox	*Vulpes vulpes*	Prefers a mix of forest and open-country near water. Although uses many habitats types.	Yes	D
Mountain lion	*Puma concolor*	Inhabits areas that provide good cover and ungulate presence.	Yes	X
Canada lynx	***Lynx canadensis***	Suitable habitat consists of boreal and montane regions made up of coniferous or mixed forests with thick undergrowth at 3,500 to 7,000 feet.	No	
Bobcat	*Lynx rufus*	Uses grasslands and shrublands, and dense understory of coniferous forests.	Yes	A,X
Striped skunk	*Mephitis mephitis*	Inhabits mixed woods, agricultural areas, grasslands, and riparian areas.	Yes	D
Wolverine	***Gulo gulo***	Inhabits high-elevation coniferous forests and prefers roadless areas.	No	
Northern river otter	*Lontra Canadensis*	Inhabits streams and rivers with narrow riparian vegetation margins for denning.	No	
American marten	*Martes americana*	Inhabits mesic coniferous forests.	Yes	
Short-tailed weasel	*Mustela erminea*	Inhabits diverse habitats including coniferous forests, riparian areas, and meadows.	Yes	
Long-tailed weasel	*Mustela frenata*	Prefers open habitats such as grasslands and forest edges.	Yes	X
Least weasel	*Mustela nivalis*	Wide variety of habitats, avoids dense forest	Yes	
Mink	*Mustela vison*	Prefers waterbodies near forests and grasslands.	No	B
Badger	*Taxidea taxus*	Inhabits grassland communities, open plains, and sagebrush steppe.	Yes	X
Raccoon	*Procyon lotor*	Uses diverse habitats from wooded areas to grasslands.	Yes	
Black bear	*Ursus americanus*	Inhabits montane coniferous forests.	Yes	
Grizzly bear	**Ursus arctos**	Historically found in forested and grassland regions. Potential transient in area.	No	

Common Name	Scientific Name	Preferred and/or Breeding Habitat	Preferred and/or breeding habitat in FH	Recorded in or near FH[2]
Artiodactyla				
Pronghorn	*Antilocapra americana*	Found in flat or rolling grasslands and sagebrush.	Yes	X
Mountain goat	*Oreamnos americanus*	Occupies high elevation rocky slopes.	No	
Bighorn sheep	*Ovis canadensis*	Inhabits areas of cliffs and rocky terrain with nearby grasslands.	No	
Moose	*Alces alces*	Prefers dense forests in early successional stages.	No	
Elk	*Cervus canadensis*	Highly adaptable; inhabits coniferous forests with openings of grassland and shrublands.	Yes	X
Mule deer	*Odocoileus hemionus*	Uses open montane habitats and sagebrush slopes.	Yes	X
White-tailed deer	*Odocoileus virginianus*	Inhabits diverse habitats ranging from heavily forested slopes to open plains.	Yes	D
AMPHIBIANS[6]				
Caudata				
Long-toed salamander	*Ambystoma macrodactylum*	Uses ponds, lakes, and marshes in forested and non-forested lands.	Yes	B
Anura				
Plains spadefoot	***Spea bombifrons***	Prefers prairie ponds with sandy soils and/or gravel-loam.	Yes	
Western toad	***Bufo boreas***	Breeds in any clean standing water. Inhabits coniferous forests, subalpine meadows, lakes, ponds, and marshes.	Yes	
Boreal Chorus frog	*Pseudacris maculata*	Breeds in potholes and reservoirs in agricultural fields and prairies.	Yes	
Columbia spotted frog	*Rana luteiventris*	Breeds in high elevation mountain meadows encompassed by both forested and non-forested habitats.	Yes	
Northern leopard frog	***Rana pipiens***	Prefers wetlands with cattail marshes, grassy shores, and wet meadows.	No	
REPTILES[5]				
Testudines				
Painted turtle	*Chrysemys picta*	Inhabits aquatic environments with mud bottoms, ample aquatic vegetation, and downed logs.	No	
Squamata				
Rubber boa	*Charina bottae*	Inhabits forests in mountainous regions.	Yes	
Eastern racer	*Coluber constrictor*	Prefers open habitats such as prairie, sagebrush, and badlands.	Yes	D
Gophersnake	*Pitophis catenifer*	Prefers open habitat such as short-grass prairie, sagebrush, and river bottoms.	Yes	
Terrestrial gartersnake	*Thamnophis elegans*	Inhabits low-lying valleys to high-elevation mountains.	Yes	
Common	*Thamnophis sirtalis*	Inhabits mountainous areas.	Yes	

Common Name	Scientific Name	Preferred and/or Breeding Habitat	Preferred and/or breeding habitat in FH	Recorded in or near FH[2]
gartersnake				
Western rattlesnake	*Crotalus viridis*	Inhabits grasslands, sagebrush, rock outcroppings and forested river bottoms.	Yes	X
FISH[7]				
Cypriniformes				
White sucker	*Catostomus commersoni*	Uses lakes and streams, and avoids fast currents.	No	
Longnose sucker	*Catostomus catostomus*	Inhabits clear, cold streams and lakes.	No	
Longnose dace	*Rhinichthys cataractae*	Inhabits riffles of rivers and streams.	Yes[8]	
Flathead chub	*Platygobio gracilis*	Occupies turbid rivers and streams.	No	
Fathead minnow	*Pimephales promelas*	Uses ponds, shallow lakes, and slow-flowing streams.	No	
Salmoniformes				
Rainbow trout	*Oncorhychus mykiss*	Occupies cool, clear streams and lakes.	Yes[8]	
Brown trout	*Salmo trutta*	Prefers valley streams and rivers and also uses lakes and reservoirs with suitable spawning tributaries.	No	
Brook trout	*Salvelinus fontinalis*	Prefers small streams and ponds.	Yes[8]	
Mountain whitefish	*Prosopium williamsoni*	Uses clear, cold rivers.	No	
Scorpaeniformes				
Mottled sculpin	*Cottus bairdi*	Prefer the riffles of cold streams.	Yes[8]	

FH = Fort Harrison

[1]DM = Recovered, de-listed, and being monitored; LT = Listed threatened; LE = Listed endangered; FC = Federal candidate.

[2]A=MTNHP POD/ BPOD within the FH; B=MTNHP POD/BPOD within 2-mile buffer of FHTA boundary; C= Species of Concern buffer overlapping FH; D=MTARNG recorded species within FH; and X=Species recorded within FHTA during field reconnaissance October 14-15, 2009 and December 17, 2009, and January 26, 2010.

[3]Distribution and nomenclature of potential bird species list from Lenard et al. (2003) and MTNHP (2009).

[4]Species in **bold text** are Montana Species of Concern (MTNHP 2021).

[5]Distribution and nomenclature of potential mammals list from Foresman (2001) and MTNHP (2009).

[6]Distribution and nomenclature of potential amphibians and reptiles list from Werner et al. (2004) and MTNHP (2009).

[7]Distribution and nomenclature of potential fish list from Montana Fish, Wildlife, and Parks (2003) and MTNHP (2009).

[8]Species that have potential to occur in creeks within FHTA during spring and early summer (Eric Roberts, MTFWP Fish Biologist, personal communication March 24, 2010).

ATTACHMENT E-3: PLANT LIST OF LIMESTONE HILLS

SPECIES FULL NAME	SPECIES	Duration	Native vs Non-Natve	Wetland Indicator
Trees				
Juniperus scopulorum (Rocky Mountain juniper)	JUNSCO	Perennial	Native	UPL
Pinus flexilis (limber pine)	PINFLE	Perennial	Native	UPL
Pinus ponderosa var. scopulorum (ponderosa pine)	PINPVS	Perennial	Native	FACU
Populus angustifolia (narrowleaf cottonwood)	POPANG	Perennial	Native	FACW
Populus tremuloides (quaking aspen)	POPTRE	Perennial	Native	FACU
Pseudotsuga menziesii var. glauca (Douglas fir)	PSEMVG	Perennial	Native	FACU
Shrubs				
Amelanchier alnifolia (Saskatoon serviceberry)	AMEALN	Perennial	Native	FACU
Artemisia cana subsp. cana (plains silver sagebrush)	ARTCSC	Perennial	Native	FAC
Artemisia frigida (fringed sagewort)	ARTFRI	Perennial	Native	UPL
Artemisia nova (black sagebrush)	ARTNOV	Perennial	Native	UPL
Artemisia tridentata (big sagebrush)	ARTTRI	Perennial	Native	UPL
Artemisia tridentata subsp. tridentata (basin big sagebrush)	ARTTST	Perennial	Native	UPL
Artemisia tridentata subsp. vaseyana (mountain big sagebrush)	ARTTSV	Perennial	Native	UPL
Atriplex gardneri (Gardner's saltbush)	ATRGAR	Perennial	Native	FACW
Cercocarpus ledifolius var. intercedens (curl-leaf mountain mahogany)	CERLVI	Perennial	Native	UPL
Chrysothamnus viscidiflorus (green rabbitbrush)	CHRVIS	Perennial	Native	UPL
Clematis columbiana var. columbiana (Columbia clematis)	CLECVC	Perennial	Native	UPL
Clematis ligusticifolia (western virgin's bower)	CLELIG	Perennial	Native	FAC
Coryphantha missouriensis var. missouriensis (pincushion cactus)	CORMVI	Perennial	Native	UPL
Coryphantha vivipara var. vivipara (pincushion cactus)	CORVVV	Perennial	Native	UPL
Coryphantha spp. (pincushion cactus)	CORYPH	Unknown	Native	UPL
Dasiphora fruticosa (shrubby cinquefoil)	DASFRU	Perennial	Native	FAC
Eriogonum microthecum (slenderbush buckwheat)	ERIMIC	Perennial	Native	UPL
Eriogonum microthecum var. laxiflorum (slenderbush buckwheat)	ERIMVL	Perennial	Native	UPL
Ericameria nauseosa (rubber rabbitbrush)	ERINAU	Perennial	Native	UPL
Gutierrezia sarothrae (broom snakeweed)	GUTSAR	Perennial	Native	UPL
Juniperus communis var. depressa (common juniper)	JUNCVD	Perennial	Native	UPL
Krascheninnikovia lanata (winterfat)	KRALAN	Perennial	Native	UPL
Opuntia fragilis (fragile cactus)	OPUFRA	Perennial	Native	UPL
Opuntia polyacantha (plains prickly-pear)	OPUPOL	Perennial	Native	UPL
Pediocactus simpsonii var. simpsonii (hedgehog cactus)	PEDSVS	Perennial	Native	UPL
Philadelphus lewisii (mockorange; syringa)	PHILEW	Perennial	Native	UPL
Prunus virginiana var. melanocarpa (chokecherry)	PRUVVM	Perennial	Native	FACU
Rhamnus alnifolia (alder buckthorn)	RHAALN	Perennial	Native	FACW
Rhus aromatica var. trilobata (skunkbush sumac)	RHUAVT	Perennial	Native	UPL
Rhus aromatica var. trilobata (skunkbush sumac)	RHUAVT	Perennial	Native	UPL
Ribes aureum (golden currant)	RIBAUR	Perennial	Native	FAC
Ribes cereum (wax currant)	RIBCER	Perennial	Native	UPL

SPECIES FULL NAME	SPECIES	Duration	Native vs Non-Natve	Wetland Indicator
Ribes lacustre (swamp currant)	RIBLAC	Perennial	Native	FAC
Ribes setosum (bristly gooseberry)	RIBSET	Perennial	Native	FACW
Rosa arkansana (prairie rose)	ROSARK	Perennial	Native	FACU
Rosa spp. (rose)	ROSAXX	Unknown	Both	UPL
Rosa woodsii (woods rose)	ROSWOO	Perennial	Native	FACU
Salix bebbiana (Bebb willow)	SALBEB	Perennial	Native	FACW
Salix exigua subsp. exigua (sandbar willow)	SALESE	Perennial	Native	FACW
Salix lutea (yellow willow)	SALLUT	Perennial	Native	FACW
Salix scouleriana (Scouler willow)	SALSCO	Perennial	Native	FAC
Shepherdia canadensis (Canada buffaloberry)	SHECAN	Perennial	Native	UPL
Solanum dulcamara (bittersweet nightshade)	SOLDUL	Perennial	Introduced	FAC
Symphoricarpos occidentalis (western snowberry)	SYMOCC	Perennial	Native	FAC
Tetradymia canescens (gray horsebrush)	TETCAN	Perennial	Native	UPL
Yucca glauca (soapweed)	YUCGLA	Perennial	Native	UPL
Graminoids				
Agropyron cristatum (crested wheatgrass)	AGRCRI	Perennial	Introduced	UPL
Agropyron dasystachyum (thickspike wheatgrass)	AGRDAS	Perennial	Native	FACU
Agrostis exarata (spike bentgrass)	AGREXA	Perennial	Native	FACW
Agropyron intermedium (intermediate wheatgrass)	AGRINT	Perennial	Introduced	UPL
Agropyron spp. (wheatgrass)	AGROPY	Unknown	Both	UPL
Agrostis spp. (bentgrass)	AGROST	Unknown	Both	UPL
Agropyron repens (quackgrass)	AGRREP	Perennial	Introduced	FAC
Agropyron smithii (western wheatgrass)	AGRSMI	Perennial	Native	FACU
Agropyron spicatum (bluebunch wheatgrass)	AGRSPI	Perennial	Native	UPL
Agrostis stolonifera (redtop)	AGRSTO	Perennial	Introduced	FAC
Agropyron trachycaulum (slender wheatgrass)	AGRTRA	Perennial	Native	FACU
Alopecurus pratensis (meadow foxtail)	ALOPRA	Perennial	Introduced	FAC
Aristida purpurea (purple threeawn)	ARIPUR	Perennial	Native	UPL
Bouteloua gracilis (blue grama)	BOUGRA	Perennial	Native	UPL
Bromus carinatus (mountain brome)	BROCAR	Perennial	Native	UPL
Bromus inermis (smooth brome)	BROINE	Perennial	Introduced	FAC
Bromus japonicus (field brome)	BROJAP	Annual	Introduced	UPL
Bromus squarrosus (corn brome)	BROSQU	Annual	Introduced	UPL
Bromus tectorum (cheatgrass)	BROTEC	Annual	Introduced	UPL
Calamagrostis rubescens (pine reedgrass)	CALRUB	Perennial	Native	UPL
Carex aquatilis var. aquatilis (water sedge)	CARAVA	Perennial	Native	OBL
Carex douglasii (Douglas's sedge)	CARDOU	Perennial	Native	FAC
Carex eleocharis (narrow-leaved sedge)	CARELE	Perennial	Native	UPL
Carex spp. (sedge)	CAREXX	Unknown	Native	UPL
Carex foenea (silvertop sedge)	CARFOE	Perennial	Native	FACU
Carex filifolia var. filifolia (threadleaf sedge)	CARFVF	Perennial	Native	UPL
Carex geyeri (elk sedge)	CARGEY	Perennial	Native	UPL
Carex hoodii (Hood's sedge)	CARHOO	Perennial	Native	FACU
Carex inops var. heliophila (sun sedge)	CARIVH	Perennial	Native	UPL
Carex microptera (small-winged sedge)	CARMIC	Perennial	Native	FACU
Carex nebrascensis (Nebraska sedge)	CARNEB	Perennial	Native	OBL

SPECIES FULL NAME	SPECIES	Duration	Native vs Non-Natve	Wetland Indicator
Carex petasata (Liddon's sedge)	CARPET	Perennial	Native	UPL
Carex praegracilis (clustered field sedge)	CARPRA	Perennial	Native	FACW
Carex rossii (Ross sedge)	CARROI	Perennial	Native	UPL
Danthonia spicata (poverty oatgrass)	DANSPI	Perennial	Native	UPL
Danthonia unispicata (onespike oatgrass)	DANUNI	Perennial	Native	UPL
Deschampsia cespitosa (tufted hairgrass)	DESCES	Perennial	Native	FACW
Distichlis spicata (inland saltgrass)	DISSPI	Perennial	Native	FACW
Eleocharis palustris (common spikesedge)	ELEPAL	Perennial	Native	OBL
Elymus canadensis (Canada wildrye)	ELYCAN	Perennial	Native	FAC
Elymus cinereus (basin wildrye)	ELYCIN	Perennial	Native	FAC
Elymus elymoides (squirreltail)	ELYELY	Perennial	Native	FACU
Elymus spp. (wildrye)	ELYMUS	Unknown	Both	UPL
Elymus virginicus (Virginia wildrye)	ELYVIR	Perennial	Native	FAC
Festuca campestris (rough fescue)	FESCAM	Perennial	Native	UPL
Festuca idahoensis (Idaho fescue)	FESIDA	Perennial	Native	FACU
Festuca ovina (sheep fescue)	FESOVI	Perennial	Introduced	UPL
Glyceria striata (fowl mannagrass)	GLYSTR	Perennial	Native	FACW
Unknown Grass 1 (Unknown Grass 1)	GRASS1	Unknown	Both	UPL
Grass spp. (grass)	GRASSX	Unknown	Both	UPL
Hordeum jubatum (foxtail barley)	HORJUB	Perennial	Native	FAC
Juncus balticus (Baltic rush)	JUNBAL	Perennial	Native	FACW
Juncus spp. (rush)	JUNCUS	Unknown	Native	UPL
Juncus longistylis (long-styled rush)	JUNLON	Perennial	Native	FACW
Juncus regelii (Regel's rush)	JUNREG	Perennial	Native	FACW
Juncus tenuis (slender rush)	JUNTEN	Perennial	Native	FAC
Koeleria macrantha (prairie Junegrass)	KOEMAC	Perennial	Native	UPL
Lolium multiflorum (Italian ryegrass; annual ryegrass)	LOLMUL	Perennial	Introduced	FACU
Luzula parviflora (small-flowered woodrush)	LUZPAR	Perennial	Native	FAC
Muhlenbergia richardsonis (mat muhly)	MUHRIC	Perennial	Native	FAC
Munroa squarrosa (false buffalograss)	MUNSQU	Annual	Native	UPL
Oryzopsis hymenoides (Indian ricegrass)	ORYHYM	Perennial	Native	UPL
Oryzopsis micrantha (littleseed ricegrass)	ORYMIC	Perennial	Native	UPL
Phalaris arundinacea (reed canarygrass)	PHAARU	Perennial	Native	FACW
Phleum pratense (timothy)	PHLPRA	Perennial	Introduced	FAC
Poa compressa (Canada bluegrass)	POACOM	Perennial	Introduced	FACU
Poa fendleriana (muttongrass)	POAFEN	Perennial	Native	UPL
Poa interior (inland bluegrass)	POAINT	Perennial	Native	FAC
Poa palustris (fowl bluegrass)	POAPAL	Perennial	Native	FAC
Poa pratensis (Kentucky bluegrass)	POAPRA	Perennial	Introduced	FAC
Poa secunda (Sandberg bluegrass)	POASEC	Perennial	Native	FACU
Poa spp. (bluegrass)	POAXXX	Unknown	Both	UPL
Polypogon monspeliensis (annual rabbitsfoot grass)	POLMON	Annual	Introduced	FACW
Sorghastrum nutans (Indiangrass)	SORNUT	Perennial	Native	FACU
Sphenopholis obtusata (prairie wedgegrass)	SPHOBT	Perennial	Native	FAC
Sporobolus airoides (alkali sacaton)	SPOAIR	Perennial	Native	FAC
Sporobolus cryptandrus (sand dropseed)	SPOCRY	Perennial	Native	FACU

SPECIES FULL NAME	SPECIES	Duration	Native vs Non-Natve	Wetland Indicator
Stipa comata (needle-and-thread)	STICOM	Perennial	Native	UPL
Stipa viridula (green needlegrass)	STIVIR	Perennial	Native	UPL
Vulpia microstachys (small fescue)	VULMIC	Annual	Native	UPL
Forbs				
Achillea millefolium (common yarrow)	ACHMIL	Perennial	Native	FACU
Acroptilon repens (Russian knapweed)	ACRREP	Perennial	Introduced	UPL
Agoseris glauca (pale agoseris)	AGOGLA	Perennial	Native	FAC
Allium cernuum (nodding onion)	ALLCER	Perennial	Native	FACU
Allium spp. (onion)	ALLIUM	Unknown	Native	UPL
Allium textile (textile onion)	ALLTEX	Perennial	Native	UPL
Alyssum alyssoides (pale alyssum)	ALYALY	Biennial	Introduced	UPL
Alyssum desertorum (desert alyssum)	ALYDES	Annual	Introduced	UPL
Ambrosia psilostachya (western ragweed)	AMBPSI	Perennial	Native	FACU
Amsinckia spp. (fiddleneck)	AMSINC	Unknown	Native	UPL
Amsinckia lycopsoides (tarweed fiddleneck)	AMSLYC	Annual	Native	UPL
Anaphalis margaritacea (pearly everlasting)	ANAMAR	Perennial	Native	FACU
Androsace septentrionalis (northern fairy-candelabra)	ANDSEP	Perennial	Native	FACU
Anemone cylindrica (candle anemone)	ANECYL	Perennial	Native	UPL
Anemone spp. (anemone)	ANEMON	Unknown	Native	UPL
Anemone multifida (cliff anemone)	ANEMUL	Perennial	Native	UPL
Antennaria anaphaloides (tall pussytoes)	ANTANA	Perennial	Native	UPL
Antennaria corymbosa (meadow pussytoes)	ANTCOR	Perennial	Native	FAC
Antennaria dimorpha (cushion pussytoes)	ANTDIM	Perennial	Native	UPL
Antennaria spp. (everlasting; pussytoes)	ANTENN	Unknown	Native	UPL
Antennaria microphylla (rosy pussytoes)	ANTMIC	Perennial	Native	UPL
Antennaria neglecta (field pussytoes)	ANTNEG	Perennial	Native	FACU
Antennaria parlinii (plainleaf pussytoes)	ANTPAL	Perennial	Native	UPL
Antennaria parvifolia (Nuttall's pussytoes)	ANTPAR	Perennial	Native	UPL
Antennaria racemosa (raceme pussytoes)	ANTRAC	Perennial	Native	UPL
Antennaria rosea (rosy pussytoes)	ANTROS	Perennial	Native	UPL
Arabis spp. (rockcress)	ARABIS	Unknown	Native	UPL
Arabis holboellii (Holboell's rockcress)	ARAHOL	Biennial	Native	FACU
Arabis nuttallii (Nuttall's rockcress)	ARANUT	Perennial	Native	UPL
Arctium minus (lesser burdock)	ARCMIN	Biennial	Introduced	UPL
Arenaria congesta (ballhead sandwort)	ARECON	Perennial	Native	UPL
Arenaria hookeri var. hookeri (Hooker's sandwort)	AREHVH	Perennial	Native	UPL
Arenaria spp. (sandwort)	ARENAR	Unknown	Both	UPL
Arnica cordifolia (heart-leaf arnica)	ARNCOR	Perennial	Native	UPL
Arnica spp. (arnica)	ARNICA	Unknown	Native	UPL
Arnica sororia (twin arnica)	ARNSOR	Perennial	Native	UPL
Artemisia absinthium (wormwood)	ARTABS	Perennial	Introduced	UPL
Artemisia biennis (biennial sagewort)	ARTBIE	Biennial	Native	FACW
Artemisia campestris (green sagewort)	ARTCAM	Biennial	Native	FACU
Artemisia dracunculus (wild tarragon)	ARTDRA	Perennial	Native	UPL
Artemisia ludoviciana (cudweed sagewort)	ARTLUD	Perennial	Native	FACU
Astragalus agrestis (field milk-vetch)	ASTAGR	Perennial	Native	FACW

SPECIES FULL NAME	SPECIES	Duration	Native vs Non-Natve	Wetland Indicator
Astragalus americanus (American milk-vetch)	ASTAME	Perennial	Native	FAC
Astragalus australis var. glabriusculus (Indian milk-vetch)	ASTAVG	Perennial	Native	UPL
Astragalus alpinus var. alpinus (alpine milk-vetch)	ASTAVL	Perennial	Native	UPL
Astragalus adsurgens var. robustior (standing milk-vetch)	ASTAVR	Perennial	Native	UPL
Astragalus barrii (Barr's milk-vetch)	ASTBAR	Perennial	Native	UPL
Astragalus bisulcatus var. bisulcatus (two-groove milk-vetch)	ASTBVB	Perennial	Native	UPL
Astragalus canadensis (Canada milk-vetch)	ASTCAN	Perennial	Native	FACW
Astragalus cicer (chick-pea milk-vetch)	ASTCIC	Perennial	Introduced	UPL
Astragalus crassicarpus (ground plum)	ASTCRA	Perennial	Native	UPL
Astragalus convallarius var. convallarius (lesser rushy milk-vetch)	ASTCVV	Perennial	Native	UPL
Astragalus drummondii (Drummond's milk-vetch)	ASTDRU	Perennial	Native	UPL
Astragalus eucosmus (elegant milk-vetch)	ASTEUC	Perennial	Native	FACU
Astragalus flexuosus var. flexuosus (wiry milk-vetch)	ASTFVF	Perennial	Native	UPL
Astragalus gilviflorus (plains orophaca)	ASTGIL	Perennial	Native	UPL
Astragalus lotiflorus (lotus milk-vetch)	ASTLOT	Perennial	Native	UPL
Astragalus microcystis (least bladdery milk-vetch)	ASTMIC	Perennial	Native	UPL
Astragalus miser (weedy milk-vetch)	ASTMIS	Perennial	Native	UPL
Astragalus missouriensis var. missouriensis (Missouri milk-vetch)	ASTMVI	Perennial	Native	UPL
Astragalus purshii (Pursh's milk-vetch)	ASTPUR	Perennial	Native	UPL
Astragalus spp. (milk-vetch)	ASTRAG	Unknown	Both	UPL
Astragalus robbinsii var. minor (Robbins' milk-vetch)	ASTRVM	Perennial	Native	FAC
Astragalus vexilliflexus (bent-flowered milk-vetch)	ASTVEX	Perennial	Native	UPL
Balsamorhiza sagittata (arrowleaf balsamroot)	BALSAG	Perennial	Native	UPL
Besseya wyomingensis (Wyoming kittentail)	BESWYO	Perennial	Native	UPL
Boechera spp. (rockcress)	BOECHE	Unknown	Native	UPL
Boechera divaricarpa (spreadingpod rockcress)	BOEDIV	Biennial	Native	FACU
Boechera microphylla (littleleaf rockcress)	BOEMIC	Perennial	Native	UPL
Boechera pendulocarpa (dropseed rockcress)	BOEPEN	Biennial	Native	FACU
Boechera retrofracta (second rockcress)	BOERET	Biennial	Native	FACU
Boechera sparsiflora (elegant rockcress)	BOESPA	Biennial	Native	UPL
Boechera stricta (Drummond's rockcress)	BOESTR	Biennial	Native	FACU
Brassica spp. (mustard)	BRASSI	Unknown	Introduced	UPL
Brickellia eupatorioides var. corymbulosa (false-boneset)	BRIEVC	Perennial	Native	UPL
Brickellia oblongifolia (narrow-leaved brickellia)	BRIOBL	Perennial	Native	UPL
Calochortus nuttallii (sego-lily)	CALNUT	Perennial	Native	UPL
Calochortus spp. (mariposa)	CALOCH	Unknown	Native	UPL
Camelina spp. (falseflax)	CAMELI	Unknown	Introduced	UPL
Camelina microcarpa (littlepod falseflax)	CAMMIC	Biennial	Introduced	FACU
Campanula rotundifolia (harebell)	CAMROT	Perennial	Native	FACU
Camelina sativa (gold-of-pleasure)	CAMSAT	Biennial	Introduced	FACU
Capsella bursa-pastoris (shepherd's purse)	CAPBUR	Annual	Introduced	FACU
Carduus nutans (musk thistle)	CARNUT	Biennial	Introduced	UPL
Castilleja flava (yellow paintbrush)	CASFLA	Perennial	Native	UPL
Castilleja longispica (white paintbrush)	CASLON	Perennial	Native	UPL
Castilleja lutescens (yellowish paintbrush)	CASLUT	Perennial	Native	UPL
Castilleja pallescens var. pallescens (palish Indian-paintbrush)	CASPVP	Perennial	Native	UPL

SPECIES FULL NAME	SPECIES	Duration	Native vs Non-Natve	Wetland Indicator
Castilleja spp. (paintbrush)	CASTIL	Unknown	Native	UPL
Centaurea maculosa (spotted knapweed)	CENMAC	Biennial	Introduced	UPL
Cerastium arvense subsp. strictum (field chickweed)	CERASS	Perennial	Native	FACU
Chamerion angustifolium (fireweed)	CHAANG	Perennial	Native	FACU
Chaenactis douglasii (Douglas' dustymaiden)	CHADOU	Biennial	Native	UPL
Chenopodium album (lamb's quarters)	CHEALB	Annual	Introduced	FACU
Chenopodium leptophyllum (slimleaf goosefoot)	CHELEP	Annual	Native	FACU
Chenopodium spp. (goosefoot)	CHENOP	Unknown	Both	UPL
Chondrilla juncea (rush skeletonweed)	CHOJUN	Perennial	Introduced	UPL
Cirsium arvense (Canada thistle)	CIRARV	Perennial	Introduced	FAC
Cirsium flodmanii (Flodman's thistle)	CIRFLO	Perennial	Native	FAC
Cirsium spp. (thistle)	CIRSIU	Unknown	Both	UPL
Cirsium undulatum (wavy-leaved thistle)	CIRUND	Biennial	Native	FACU
Cirsium vulgare (bull thistle)	CIRVUL	Biennial	Introduced	FACU
Cleome serrulata (Rocky Mountain bee plant)	CLESER	Annual	Native	FACU
Collomia linearis (narrow-leaf collomia)	COLLIN	Annual	Native	FACU
Comandra umbellata var. pallida (bastard toad-flax)	COMUVP	Perennial	Native	FACU
Conringia orientalis (mustard hare's ear)	CONORI	Annual	Introduced	UPL
Corydalis aurea (golden smoke)	CORAUR	Biennial	Native	UPL
Crepis acuminata (tapertip hawksbeard)	CREACU	Perennial	Native	UPL
Crepis atribarba (slender hawksbeard)	CREATR	Perennial	Native	UPL
Crepis modocensis subsp. modocensis (low hawksbeard)	CREMSM	Perennial	Native	UPL
Crepis occidentalis (western hawksbeard)	CREOCC	Perennial	Native	UPL
Crepis spp. (hawksbeard)	CREPIS	Unknown	Both	UPL
Cryptantha celosioides (northern cryptantha)	CRYCEL	Biennial	Native	UPL
Cryptantha spp. (cryptantha)	CRYPTA	Unknown	Native	UPL
Cymopterus nivalis (snow spring-parsley)	CYMNIV	Perennial	Native	UPL
Cynoglossum officinale (houndstongue)	CYNOFF	Biennial	Introduced	FACU
Dalea purpurea (purple prairie clover)	DALPUR	Perennial	Native	UPL
Delphinium bicolor (little larkspur)	DELBIC	Perennial	Native	UPL
Delphinium nuttallianum (Nuttall's larkspur)	DELNUT	Perennial	Native	FAC
Descurainia incana (mountain tansymustard)	DESINC	Perennial	Native	FACU
Descurainia pinnata (pinnate tansymustard)	DESPIN	Perennial	Native	UPL
Descurainia sophia (fixweed)	DESSOP	Biennial	Introduced	UPL
Douglasia montana (Rocky Mountain douglasia)	DOUMON	Perennial	Native	UPL
Draba aurea (golden draba)	DRAAUR	Perennial	Native	FACU
Draba spp. (draba)	DRABAX	Unknown	Native	UPL
Draba oligosperma (few-seeded draba)	DRAOLI	Perennial	Native	UPL
Draba reptans (Carolina whitlow-grass)	DRAREP	Annual	Native	UPL
Drymocallis glandulosa (sticky cinquefoil)	DRYGLA	Perennial	Native	FAC
Dyssodia papposa (fetid marigold)	DYSPAP	Annual	Native	UPL
Echinacea angustifolia (pale purple coneflower)	ECHANG	Perennial	Native	UPL
Ellisia nyctelea (nyctelea)	ELLNYC	Annual	Native	FACU
Epilobium brachycarpum (autumn willow-herb)	EPIBRA	Annual	Native	UPL
Epilobium ciliatum (common willow-herb)	EPICIL	Perennial	Native	FACW
Erigeron asperugineus (rough fleabane)	ERIASP	Perennial	Native	UPL

SPECIES FULL NAME	SPECIES	Duration	Native vs Non-Natve	Wetland Indicator
Erigeron caespitosus (tufted fleabane)	ERICAE	Perennial	Native	UPL
Erigeron canus (hoary fleabane)	ERICAN	Perennial	Native	UPL
Erigeron compositus (cut-leaf daisy)	ERICOM	Perennial	Native	UPL
Erigeron corymbosus (long-leaved fleabane)	ERICOR	Perennial	Native	UPL
Eriogonum crosbyae (Crosby's buckwheat)	ERICRO	Perennial	Native	UPL
Erigeron filifolius (thread-leaf fleabane)	ERIFIL	Perennial	Native	UPL
Eriogonum flavum (yellow buckwheat)	ERIFLA	Perennial	Native	UPL
Erigeron spp. (daisy; fleabane)	ERIGER	Unknown	Native	UPL
Erigeron linearis (desert yellow daisy)	ERILIN	Perennial	Native	UPL
Eriogonum mancum (imperfect buckwheat)	ERIMAN	Perennial	Native	UPL
Erigeron ochroleucus (buff fleabane)	ERIOCH	Perennial	Native	UPL
Eriogonum spp. (buckwheat; wild buckwheat)	ERIOGO	Unknown	Native	UPL
Eriogonum ovalifolium (cushion buckwheat)	ERIOVA	Perennial	Native	FACU
Eriogonum pauciflorum (few-flowered wild buckwheat)	ERIPAU	Perennial	Native	UPL
Erigeron pumilus (shaggy fleabane)	ERIPUM	Perennial	Native	UPL
Erigeron subtrinervis (three-veined fleabane)	ERISUB	Perennial	Native	UPL
Eritrichium spp. (alpine forget-me-not)	ERITRI	Unknown	Native	UPL
Eriogonum umbellatum (sulfur buckwheat)	ERIUMB	Perennial	Native	UPL
Erysimum asperum (plains wallflower)	ERYASP	Biennial	Native	UPL
Erysimum cheiranthoides (wormseed wallflower)	ERYCHE	Biennial	Introduced	FACU
Erysimum inconspicuum (smallflowered wallflower)	ERYINC	Biennial	Native	UPL
Euphorbia esula (leafy spurge)	EUPESU	Perennial	Introduced	UPL
Euphorbia glyptosperma (corrugate-seeded spurge)	EUPGLY	Annual	Native	UPL
Euphorbia serpens (round-leaved spurge)	EUPSEP	Perennial	Native	FAC
Eurybia conspicua (western showy aster)	EURCON	Perennial	Native	UPL
Eurybia glauca (gray aster)	EURGLA	Perennial	Native	UPL
Evolvulus nuttallianus (Nuttall's evolvulus)	EVONUT	Perennial	Native	UPL
Filago arvensis (field filago)	FILARV	Annual	Introduced	UPL
Forb spp. (forb)	FORBXX	Unknown	Both	UPL
Fritillaria pudica (yellow bell)	FRIPUD	Perennial	Native	UPL
Fumaria officinalis (fumitory)	FUMOFF	Annual	Introduced	UPL
Gaillardia aristata (blanketflower)	GAIARI	Perennial	Native	UPL
Galium aparine (cleavers)	GALAPA	Annual	Native	FACU
Galium boreale (northern bedstraw)	GALBOR	Perennial	Native	FACU
Gaura coccinea (scarlet gaura)	GAUCOC	Perennial	Native	UPL
Geranium viscosissimum (sticky geranium)	GERVIS	Perennial	Native	FACU
Geum macrophyllum var. perincisum (large-leaved avens)	GEUMVP	Perennial	Native	OBL
Geum triflorum (prairie smoke)	GEUTRI	Perennial	Native	FACU
Glycyrrhiza lepidota (American licorice)	GLYLEP	Perennial	Native	FAC
Grindelia squarrosa (curlycup gumweed)	GRISQU	Perennial	Native	FACU
Hackelia deflexa var. americana (nodding stickseed)	HACDVA	Perennial	Native	UPL
Hackelia floribunda (showy stickseed)	HACFLO	Biennial	Native	FACU
Hackelia spp. (stickseed)	HACKEL	Unknown	Native	UPL
Hedeoma drummondii (Drummond false pennyroyal)	HEDDRU	Perennial	Native	UPL
Hedeoma hispida (rough pennyroyal)	HEDHIS	Annual	Native	UPL
Hedysarum occidentale (western hedysarum)	HEDOCC	Perennial	Native	UPL

SPECIES FULL NAME	SPECIES	Duration	Native vs Non-Natve	Wetland Indicator
Helianthus annuus (common sunflower)	HELANN	Annual	Native	FACU
Helianthus spp. (sunflower)	HELIAN	Unknown	Native	UPL
Helianthus petiolaris (prairie sunflower)	HELPET	Annual	Native	FAC
Heterotheca villosa (hairy golden-aster)	HETVIL	Perennial	Native	UPL
Heuchera spp. (alumroot)	HEUCHE	Unknown	Native	UPL
Heuchera cylindrica (roundleaf alumroot)	HEUCYL	Perennial	Native	UPL
Heuchera parvifolia (small-leaved alumroot)	HEUPAR	Perennial	Native	UPL
Heuchera richardsonii (Richardson's alumroot)	HEURIC	Perennial	Native	FACU
Hieracium spp. (hawkweed)	HIERAC	Unknown	Both	UPL
Hymenoxys spp. (hymenoxys)	HYMENO	Unknown	Native	UPL
Hymenopappus spp. (hymenopappus; cut-leaf)	HYMENP	Unknown	Native	UPL
Hymenopappus filifolius (Columbia cut-leaf)	HYMFIL	Perennial	Native	UPL
Hymenoxys richardsonii var. richardsonii (Richardson's hymenoxys)	HYMRVR	Perennial	Native	UPL
Hyoscyamus niger (black henbane)	HYONIG	Biennial	Introduced	UPL
Hypericum perforatum (St. John's wort)	HYPPER	Perennial	Introduced	FACU
Ipomopsis spicata (spiked ipomopsis)	IPOSPI	Perennial	Native	UPL
Iris missouriensis (Rocky Mountain iris)	IRIMIS	Perennial	Native	FACW
Iva axillaris (poverty weed)	IVAAXI	Perennial	Native	FAC
Kochia scoparia (burningbush)	KOCSCO	Annual	Introduced	FAC
Lactuca pulchella (blue lettuce)	LACPUL	Biennial	Native	FAC
Lactuca serriola (prickly lettuce)	LACSER	Biennial	Introduced	FACU
Lactuca spp. (lettuce)	LACTUC	Unknown	Both	UPL
Lappula spp. (stickseed)	LAPPUL	Unknown	Both	UPL
Lappula redowskii (western stickseed)	LAPRED	Biennial	Native	UPL
Lappula squarrosa (bristly stickseed)	LAPSQU	Biennial	Introduced	UPL
Lepidium appelianum (hairy whitetop)	LEPAPP	Perennial	Introduced	FACU
Lepidium campestre (field pepperweed)	LEPCAM	Biennial	Introduced	UPL
Lepidium densiflorum (prairie pepperweed)	LEPDEN	Biennial	Native	FACU
Lepidium spp. (pepperweed)	LEPIDI	Unknown	Both	UPL
Lepidium latifolium (broadleaved pepperweed)	LEPLAT	Perennial	Introduced	FAC
Lepidium perfoliatum (clasping pepperweed)	LEPPER	Biennial	Introduced	FACU
Lepidium virginicum (tall pepperweed)	LEPVIR	Perennial	Native	FACU
Lewisia rediviva (bitterroot)	LEWRED	Perennial	Native	UPL
Liatris punctata var. punctata (spotted gay feather)	LIAPVP	Perennial	Native	UPL
Ligusticum spp. (lovage; licorice-root)	LIGUST	Unknown	Native	UPL
Linaria dalmatica (dalmatian toadflax)	LINDAL	Perennial	Introduced	UPL
Linum lewisii (wild blue flax)	LINLEW	Perennial	Native	UPL
Linum perenne (blue flax)	LINPER	Perennial	Introduced	UPL
Linum rigidum (yellow flax)	LINRIG	Perennial	Native	UPL
Linaria vulgaris (butter and eggs)	LINVUL	Perennial	Introduced	UPL
Lithospermum arvense (corn gromwell)	LITARV	Annual	Introduced	UPL
Lithospermum incisum (yellow gromwell)	LITINC	Perennial	Native	UPL
Lithophragma parviflorum (smallflower woodlandstar)	LITPAR	Perennial	Native	UPL
Lithospermum ruderale (western gromwell)	LITRUD	Perennial	Native	UPL
Lomatium spp. (biscuit-root; desert-parsley)	LOMATI	Unknown	Native	UPL

SPECIES FULL NAME	SPECIES	Duration	Native vs Non-Natve	Wetland Indicator
Lomatium dissectum var. multifidum (fern-leaved desert-parsley)	LOMDVM	Perennial	Native	UPL
Lomatium foeniculaceum (fennel-leaved desert-parsley)	LOMFOE	Perennial	Native	UPL
Lomatium triternatum (nine-leaf lomatium)	LOMTRI	Perennial	Native	UPL
Lupinus argenteus (silvery lupine)	LUPARG	Perennial	Native	UPL
Lupinus spp. (lupine)	LUPINU	Unknown	Native	UPL
Lygodesmia juncea (rush skeletonplant)	LYGJUN	Perennial	Native	UPL
Malcolmia africana (malcolmia)	MALAFR	Annual	Introduced	UPL
Malva parviflora (cheeseweed)	MALPAR	Perennial	Introduced	UPL
Malacothrix torreyi (Torrey malacothrix)	MALTOR	Annual	Native	UPL
Malva spp. (mallow)	MALVAX	Unknown	Introduced	UPL
Matricaria matricarioides (pineapple weed)	MATMAT	Annual	Introduced	FACU
Medicago lupulina (black medick)	MEDLUP	Perennial	Introduced	FACU
Medicago sativa (alfalfa)	MEDSAT	Perennial	Introduced	UPL
Melilotus alba (white sweet clover)	MELALB	Perennial	Introduced	FACU
Melilotus officinalis (yellow sweet clover)	MELOFF	Perennial	Introduced	FACU
Mentha arvensis (field mint)	MENARV	Perennial	Native	FACW
Mentzelia dispersa (bushy mentzelia)	MENDIS	Annual	Native	UPL
Mentzelia laevicaulis (blazing-star mentzelia)	MENLAE	Biennial	Native	UPL
Mentzelia spp. (mentzelia)	MENTZE	Unknown	Native	UPL
Mertensia longiflora (small bluebells)	MERLON	Perennial	Native	UPL
Mertensia oblongifolia (oblongleaf bluebells)	MEROBL	Perennial	Native	FACU
Mimulus guttatus (common monkey-flower)	MIMGUT	Perennial	Native	OBL
Mirabilis linearis var. linearis (narrow-leaved four-o'clock)	MIRLVL	Perennial	Native	UPL
Monarda fistulosa var. menthifolia (horsemint)	MONFVM	Perennial	Native	FAC
Monolepis nuttalliana (poverty weed)	MONNUT	Annual	Native	FAC
Musineon divaricatum (leafy musineon)	MUSDIV	Perennial	Native	UPL
Musineon spp. (musineon)	MUSINE	Unknown	Native	UPL
Myosotis arvensis (field forget-me-not)	MYOARV	Annual	Introduced	FACU
Myosotis scorpioides (scorpion grass)	MYOSCO	Perennial	Introduced	FACW
Myosotis sylvatica (garden forget-me-not)	MYOSYL	Perennial	Introduced	FAC
Nepeta cataria (catnip)	NEPCAT	Perennial	Introduced	FACU
Oenothera spp. (evening-primrose)	OENOTH	Unknown	Native	UPL
Onobrychis viciifolia (sainfoin)	ONOVIC	Perennial	Introduced	UPL
Orobanche spp. (broomrape)	OROBAN	Unknown	Native	UPL
Orobanche fasciculata (clustered broomrape)	OROFAS	Annual	Native	UPL
Orobanche uniflora var. minuta (naked broomrape)	OROUVM	Annual	Native	FACU
Orthocarpus luteus (yellow owl-clover)	ORTLUT	Annual	Native	FACU
Oxytropis campestris (slender crazyweed)	OXYCAM	Perennial	Native	UPL
Oxytropis lagopus (rabbit-foot crazyweed)	OXYLAG	Perennial	Native	UPL
Oxytropis lambertii var. lambertii (purple locoweed)	OXYLVM	Perennial	Native	UPL
Oxytropis sericea (white locoweed)	OXYSER	Perennial	Native	UPL
Oxytropis spp. (crazyweed; locoweed)	OXYTRO	Unknown	Both	UPL
Parietaria pensylvanica (Pennsylvania pellitory)	PARPEN	Annual	Native	FACU
Paronychia sessiliflora (stemless whitlow-wort)	PARSES	Perennial	Native	UPL
Penstemon albidus (white-flowered penstemon)	PENALB	Perennial	Native	UPL
Penstemon albertinus (Alberta penstemon)	PENALE	Perennial	Native	UPL

SPECIES FULL NAME	SPECIES	Duration	Native vs Non-Natve	Wetland Indicator
Penstemon aridus (stiff-leaf penstemon)	PENARI	Perennial	Native	UPL
Penstemon attenuatus (sulphur penstemon)	PENATT	Perennial	Native	FACU
Penstemon confertus (yellow penstemon)	PENCON	Perennial	Native	UPL
Penstemon eriantherus (fuzzy-tongue penstemon)	PENERI	Perennial	Native	UPL
Penstemon glaber var. glaber (hairy-anther penstemon)	PENGVL	Perennial	Native	UPL
Penstemon procerus var. procerus (small-flowered penstemon)	PENPVP	Perennial	Native	FAC
Penstemon rydbergii (Rydberg's penstemon)	PENRYD	Perennial	Native	FACU
Penstemon spp. (penstemon)	PENSTE	Unknown	Native	UPL
Perideridia montana (common yampah)	PERMON	Perennial	Native	FACU
Petrophytum caespitosum (Rocky Mountain rockmat)	PETCAE	Perennial	Native	UPL
Phacelia hastata (silverleaf phacelia)	PHAHAS	Perennial	Native	UPL
Phacelia linearis (threadleaf phacelia)	PHALIN	Annual	Native	UPL
Phlox alyssifolia (alyssum-leaved phlox)	PHLALY	Perennial	Native	UPL
Phlox hoodii (Hood's phlox)	PHLHOO	Perennial	Native	UPL
Phlox longifolia (long-leaved phlox)	PHLLON	Perennial	Native	UPL
Phlox muscoides (moss phlox)	PHLMUS	Perennial	Native	UPL
Phlox spp. (phlox)	PHLOXX	Unknown	Native	UPL
Physaria curvipes (curved bladderpod)	PHYCUR	Perennial	Native	UPL
Physalis spp. (ground-cherry)	PHYSAL	Unknown	Native	UPL
Physaria spp. (twinpod)	PHYSAR	Unknown	Native	UPL
Physaria spatulata (spatula-leaf bladderpod)	PHYSPA	Perennial	Native	UPL
Plantago eriopoda (saline plantain)	PLAERI	Perennial	Native	FACW
Plantago lanceolata (English plantain)	PLALAN	Perennial	Introduced	FACU
Plantago major (common plantain)	PLAMAJ	Perennial	Introduced	FAC
Plantago patagonica (Indian-wheat)	PLAPAT	Annual	Native	UPL
Polygala alba (white milkwort)	POLALB	Perennial	Native	UPL
Polygonum amphibium (water smartweed)	POLAMP	Perennial	Native	OBL
Polygonum aviculare (dooryard knotweed)	POLAVI	Perennial	Introduced	FAC
Polygonum douglasii (Douglas' knotweed)	POLDOU	Annual	Native	FACU
Polemonium viscosum (sky pilot)	POLVIS	Perennial	Native	UPL
Potentilla anserina subsp. anserina (silverweed)	POTASA	Perennial	Native	OBL
Potentilla spp. (cinquefoil)	POTENT	Unknown	Both	UPL
Potentilla glaucophylla (diverse-leaf cinquefoil)	POTGLU	Perennial	Native	UPL
Potentilla gracilis (slender cinquefoil)	POTGRA	Perennial	Native	FAC
Potentilla hippiana (woolly cinquefoil)	POTHIP	Perennial	Native	UPL
Potentilla pensylvanica (prairie cinquefoil)	POTPEN	Perennial	Native	FACU
Potentilla recta (sulphur cinquefoil)	POTREC	Perennial	Introduced	UPL
Pyrrocoma lanceolata var. lanceolata (lanceleaf goldenweed)	PYRLVL	Perennial	Native	FAC
Pyrrocoma uniflora var. uniflora (plantain goldenweed)	PYRUVU	Perennial	Native	FAC
Ranunculus acris (tall buttercup)	RANACR	Perennial	Introduced	FAC
Ranunculus cymbalaria (shore buttercup)	RANCYM	Perennial	Native	OBL
Ranunculus macounii var. macounii (Macoun's buttercup)	RANMVM	Perennial	Native	OBL
Ranunculus repens (creeping buttercup)	RANREP	Perennial	Introduced	FAC
Ranunculus spp. (buttercup)	RANUNC	Unknown	Both	UPL
Ratibida columnifera (prairie coneflower)	RATCOL	Perennial	Native	UPL
Rudbeckia hirta (black-eyed Susan)	RUDHIR	Perennial	Native	FACU

SPECIES FULL NAME	SPECIES	Duration	Native vs Non-Natve	Wetland Indicator
Rumex acetosella (sheep sorrel)	RUMACE	Perennial	Introduced	FACU
Rumex crispus (curly dock)	RUMCRI	Perennial	Introduced	FAC
Salsola tragus (prickly Russian thistle)	SALTRA	Annual	Introduced	FACU
Schoenocrambe linifolia (flaxleaf plainsmustard)	SCHLIN	Perennial	Native	UPL
Sedum lanceolatum (lance-leaved stonecrop)	SEDLAN	Perennial	Native	UPL
Senecio canus (woolly groundsel)	SENCAN	Perennial	Native	UPL
Senecio spp. (groundsel; ragwort; butterweed)	SENECI	Unknown	Both	UPL
Senecio integerrimus (western groundsel)	SENINT	Biennial	Native	UPL
Senecio serra var. serra (tall butterweed)	SENSVS	Perennial	Native	FACU
Silene csereii (bladder campion)	SILCSE	Biennial	Introduced	UPL
Silene drummondii (Drummond campion)	SILDRU	Perennial	Native	UPL
Silene spp. (campion; catchfly)	SILENE	Unknown	Both	UPL
Silene parryi (Parry's silene)	SILPAR	Perennial	Native	UPL
Silene vulgaris (bladder silene)	SILVUL	Perennial	Introduced	UPL
Sisymbrium altissimum (tall tumblemustard)	SISALT	Biennial	Introduced	FACU
Sisymbrium loeselii (Loeselii tumblemustard)	SISLOE	Biennial	Introduced	UPL
Smilacina stellata (starry Solomon-plume)	SMISTE	Perennial	Native	FAC
Solidago canadensis (Canada goldenrod)	SOLCAN	Perennial	Native	FACU
Solidago spp. (goldenrod)	SOLIDA	Unknown	Native	UPL
Solidago missouriensis (Missouri goldenrod)	SOLMIS	Perennial	Native	UPL
Sonchus arvensis (field sowthistle)	SONARV	Perennial	Introduced	FACU
Sonchus asper (prickly sowthistle)	SONASP	Annual	Introduced	FACU
Sonchus spp. (sow-thistle)	SONCHU	Unknown	Introduced	UPL
Sphaeralcea coccinea (scarlet globemallow)	SPHCOC	Biennial	Native	UPL
Sphaeralcea munroana (Munro's globemallow)	SPHMUN	Perennial	Native	UPL
Stanleya pinnata (bushy princesplume)	STAPIN	Perennial	Native	UPL
Stachys palustris subsp. pilosa (swamp hedge-nettle)	STAPSP	Perennial	Native	UPL
Stanleya tomentosa (woolly stanleya)	STATOM	Biennial	Native	UPL
Stenotus acaulis (stemless mock goldenweed)	STEACA	Perennial	Native	UPL
Stenotus armerioides (thrift mock goldenweed)	STEARM	Perennial	Native	UPL
Stenotus lanuginosus (woolly mock goldenweed)	STELAN	Perennial	Native	UPL
Stenotus spp. (mock goldenweed)	STENOT	Unknown	Native	UPL
Stephanomeria runcinata (runcinate-leaved skeltonweed)	STERUN	Perennial	Native	UPL
Symphyotrichum ascendens (western aster)	SYMASC	Perennial	Native	FACU
Symphyotrichum campestre (western meadow aster)	SYMCAM	Perennial	Native	UPL
Symphyotrichum ericoides var. pansum (manyflowered aster)	SYMEVP	Perennial	Native	FACU
Symphyotrichum falcatum (white prairie aster)	SYMFAL	Perennial	Native	FACU
Symphyotrichum laeve var. geyeri (smooth aster)	SYMLVG	Perennial	Native	FACU
Symphyotrichum spp. (aster)	SYMPHY	Unknown	Native	UPL
Tanacetum vulgare (common tansy)	TANVUL	Perennial	Introduced	FACU
Taraxacum officinale (common dandelion)	TAROFF	Perennial	Introduced	FACU
Tetraneuris acaulis var. acaulis (stemless hymenoxys)	TETAVA	Perennial	Native	UPL
Thelesperma subnudum var. marginatum (thelesperma)	THESVM	Perennial	Native	UPL
Thlaspi arvense (field pennycress)	THLARV	Annual	Introduced	UPL
Townsendia hookeri (Hooker's townsendia)	TOWHOO	Perennial	Native	UPL
Tragopogon dubius (goat's beard)	TRADUB	Biennial	Introduced	UPL

SPECIES FULL NAME	SPECIES	Duration	Native vs Non-Natve	Wetland Indicator
Trifolium spp. (clover)	TRIFOL	Unknown	Both	UPL
Trifolium repens (white clover)	TRIREP	Perennial	Introduced	FAC
Typha latifolia (common cattail)	TYPLAT	Perennial	Native	OBL
Urtica dioica subsp. gracilis (stinging nettle)	URTDSG	Perennial	Native	FAC
Veronica americana (American brooklime)	VERAME	Perennial	Native	OBL
Veronica anagallis-aquatica (water speedwell)	VERANA	Biennial	Introduced	OBL
Verbena bracteata (bracted verbena)	VERBRA	Perennial	Native	FAC
Verbascum thapsus (common mullein)	VERTHA	Biennial	Introduced	FACU
Vicia americana (American vetch)	VICAME	Perennial	Native	FAC
Viola spp. (violet)	VIOLAX	Unknown	Both	UPL
Viola nuttallii (Nuttall's violet)	VIONUT	Perennial	Native	UPL
Xanthisma spinulosum var. spinulosum (spiny goldenweed)	XANSVS	Perennial	Native	FACU
Zigadenus elegans (glaucous zigadenus)	ZIGELE	Perennial	Native	FACU
Zigadenus venenosus (meadow death-camas)	ZIGVEN	Perennial	Native	FAC
Zizia aptera (heart-leaved Alexanders)	ZIZAPT	Perennial	Native	FAC
Ferns and Allies				
Cheilanthes feei (Fee's lip-fern)	CHEFEE	Perennial	Native	UPL
Cystopteris fragilis (fragile fern)	CYSFRA	Perennial	Native	FACU
Equisetum arvense (common horsetail)	EQUARV	Perennial	Native	FAC
Pellaea glabella (smooth cliff-brake)	PELGLA	Perennial	Native	UPL
Selaginella densa (compact selaginella)	SELDEN	Perennial	Native	UPL
Woodsia oregana subsp. oregana (Oregon woodsia)	WOOOSO	Perennial	Native	UPL
Woodsia scopulina (Rocky Mountain woodsia)	WOOSCO	Perennial	Native	UPL
Mosses				
Moss spp. (moss)	MOSSXX	Unknown	Both	UPL
Ptilium crista-castrensis (knights plume moss)	PTICRI	Perennial	Native	UPL

ATTACHMENT E-4: WILDLIFE SPECIES POTENTIALLY FOUND IN THE REGION ENCOMPASSING LIMESTONE HILLS

Common Name	Scientific Name	Preferred Habitat Occurs in LHTA	Recorded in LHTA
Fish			
CATASTOMIDAE			
White Sucker	*Catostomus commersoni*	N	
Longnose Sucker	*Catstomus catostomus*	N	
CYPRINIDAE			
Common Carp	*Cyprinus carpio*	N	
Utah Chub	*Gila atraria*	N	
Longnose Dace	*Rhinichthyes cataractae*	N	
Flathead Chub	*Playgobio gracilia*	N	
Fathead Minnow	*Pimephales promelas*	N	
SALMONIDAE			
Rainbow Trout	*Oncorhynchos mykiss*	Y	
Westslope Cutthroat Trout*	***Oncorhynchos clarki lewisi***	Y	
Brown Trout	*Salmo trutta*	N	
Brook Trout	*Salvelinus fontinalis*	Y	√
Mountain Whitefish	*Prosopium williamsoni*	N	
ICTALURIDAE			
Stonecat	*Noturus flavus*	N	
GADIDAE			
Burbot	*Lota lota*	N	
COTTIDAE			
Mottled Sculpin	*Cottus bairdi*	Y	
PERCIDAE			
Yellow Perch	*Perca flavescens*	N	
Walleye	*Stizostedion vitreum*	N	
Amphibians			
ANURA			
Western Toad	***Bufo boreas***	Y	
Boreal Chorus Frog	*Pseudacris maculata*	N	
Plains Spadefoot	*Spea bombifrons*	Y?[c]	
Northern Leopard Frog	***Rana pipiens***	N	
Columbia Spotted Frog	*Rana luteiventris*	N	
Reptiles			
TESTUDINES			
Painted Turtle	*Chrysemys picta*	N	
SQUAMATA			
Short Horned Lizard	***Phrynosoma hernandesi***	Y	
Rubber Boa	*Charina bottae*	Y	

Common Name	Scientific Name	Preferred Habitat Occurs in LHTA	Recorded in LHTA
Racer	*Coluber constrictor*	Y	√
Gophersnake	*Pituophis catenifer*	Y	√
Terrestrial Garter Snake	*Thamnophis elegans*	Y	√
Common Garter Snake	*Thamnophis sirtalis*	Y	
Western Rattlesnake	*Crotalus viridis*	Y	√
Birds			
GAVIIFORMES			
Common Loon	***Gavia immer***	N	
PODICIPEDIFORMES			
Pied Billed Grebe	*Podilymbus podiceps*	N	
Horned Grebe	***Podiceps auritus***	N	
Red-Necked Grebe	*Podiceps grisegena*	N	
Eared Grebe	*Podiceps nigricollis*	N	
Western Grebe	*Aechmorphorus occidentalis*	N	
Clark's Grebe	***Aechmorphorus clarkia***	N	
PELECANIFORMES			
American White Pelican	***Pelecanus erythrorhynchos***	N	
Double-Crested Cormorant	*Phalacrocorax auritus*	N	
CICONIIFORMES			
American Bittern	***Botaurus lentiginosus***	N	
Great Blue Heron	***Ardea herodias***	N	
Great Egret	*Ardea alba*	N	
Snowy Egret	*Egretta thula*	N	
Cattle Egret	*Bubulcus ibis*	N	
Black-Crowned Night Heron	***Nycticorax nycticorax***	N	
White-Faced Ibis	***Plegadis chihi***	N	
ANSERIFORMES			
Tundra Swan	*Cygnus columbianus*	N	
Trumpeter Swan	***Cygnus buccinator***	N	
Mute Swan	*Cygnus olor*	N	
Greater White-Fronted Goose	*Anser albifrons*	N	
Snow Goose	*Chen caerulescens*	N	√
Ross's Goose	*Chen rossii*	N	
Canada Goose	*Branta canadensis*	N	√
Wood Duck	*Aix sponsa*	N	
Green-Winged Teal	*Anas crecca*	N	
Mallard	*Anas platyrhynchos*	N	√
Northern Pintail	*Anas acuta*	N	
Blue-Winged Teal	*Anas discors*	N	
Cinnamon Teal	*Anas cyanoptera*	N	
Northern Shoveler	*Anas clypeata*	N	
Gadwall	*Anas strepera*	N	
Eurasian Wigeon	*Anas Penelope*	N	
American Wigeon	*Anas americana*	N	

Common Name	Scientific Name	Preferred Habitat Occurs in LHTA	Recorded in LHTA
Canvasback	*Aythya valisineria*	N	
Redhead	*Aythya americana*	N	
Ring-Necked Duck	*Aythya collaris*	N	
Greater Scaup	*Aythya marila*	N	
Lesser Scaup	*Aythya affinis*	N	
Harlequin Duck	***Histrionicus histrionicus***	N	
Long-Tailed Duck	*Clangula hyemalis*	N	
Surf Scoter	*Melanitta perspicillata*	N	
White-Winged Scoter	*Mdelanitta fusca*	N	
Common Goldeneye	*Bucephala clangula*	N	
Barrow's Goldeneye	***Bucephala islandica***	N	
Bufflehead	*Bucephala albeola*	N	
Hooded Merganser	***Lophodytes cucullatus***	N	
Common Merganser	*Mergus merganser*	N	
Red-Breasted Merganser	*Mergus serrator*	N	
Ruddy Duck	*Oxyura jamaicensis*	N	
FALCONIFORMES			
Turkey Vulture	*Cathartes aura*	Y	√
Osprey	*Pandion haliaetus*	N	√
Bald Eagle	***Haliaeetus leucocephalus***	N	√
Northern Harrier	*Circus cyaneus*	Y	√
Sharp-Shinned Hawk	*Accipiter striatus*	Y	
Cooper's Hawk	*Accipiter cooperii*	Y	√?
Northern Goshawk	***Accipiter gentilis***	N	
Swainson's Hawk	*Buteo swainsoni*	Y	
Red-Tailed Hawk	*Buteo jamaicensis*	Y	√
Ferruginous Hawk	***Buteo regalis***	Y	
Rough-Legged Hawk	*Buteo lagopus*	Y (winter)	√
Golden Eagle	***Aquila chrysaetos***	Y	√
American Kestrel	*Falco sparverius*	Y	√
Merlin	*Falco columbarius*	Y	
Peregrine Falcon	***Falco peregrinus***	N	
Gyrfalcon	*Falco rusticolus*	N	
Prairie Falcon	*Falco mexicanus*	Y	
GALLIFORMES			
Gray Partridge	*Perdix perdix*	Y	√
Ring-Necked Pheasant	*Phasianus colchicus*	Y	√
Spruce Grouse	*Falcipennis canadensis*	N	
Blue Grouse	*Dendragapus obscurus*	Y	√
Ruffed Grouse	*Bonasa umbellus*	N	
Greater Sage-Grouse	***Centrocercus urophasianus***	N	
Sharp-Tailed Grouse	***Tympanuchus phasianellus***	Y	
Wild Turkey	*Meleagris gallopavo*	N	√

Common Name	Scientific Name	Preferred Habitat Occurs in LHTA	Recorded in LHTA
GRUIFORMES			
Virginia Rail	*Rallus limicola*	N	
Sora	*Porzana carolina*	N	
American Coot	*Fulica americana*	N	
Sandhill Crane	*Grus canadensis*	N	
Whooping Crane	***Grus americana***	N	
CHARADRIIFORMES			
Black-Bellied Plover	*Pluvialis squatarola*	N	
American Golden-Plover	*Pluvialis dominicus*	N	
Snowy Plover	*Charadrius alexandrinus*	N	
Semipalmated Plover	*Charadrius semipalmatus*	N	
Piping Plover	***Charadrius melodus***	N	
Killdeer	*Charadrius vociferus*	Y	√
Mountain Plover	***Charadrius montanus***	N	
Black-Necked Stilt	***Himantopus mexicanus***	N	
American Avocet	*Recurvirostra americana*	N	
Greater Yellowlegs	*Tringa melanoleuca*	N	
Lesser Yellowlegs	*Tringa flavipes*	N	
Solitary Sandpiper	*Tringa solitaria*	N	
Willet	*Catoptrophorus semipalmatus*	N	
Spotted Sandpiper	*Actitis macularia*	N	
Upland Sandpiper	*Bartramia longicauda*	Y	√
Whimbrel	*Numenius phaeopus*	N	
Long-Billed Curlew	***Numenius americanus***	N	
Marbled Godwit	*Limosa fedoa*	N	
Ruddy Turnstone	*Arenaria interpes*	N	
Red Knot	***Calidrus canutus***	N	
Sanderling	*Calidris alba*	N	
Semipalmated Sandpiper	*Calidris pusilla*	N	
Western Sandpiper	*Calidris mauri*	N	
Least Sandpiper	*Calidris minutilla*	N	
Baird's Sandpiper	*Calidris bairdii*	N	
Pectoral Sandpiper	*Calidris melanotus*	N	
Dunlin	*Calidris alpine*	N	
Stilt Sandpiper	*Calidris himantopus*	N	
Buff-Breasted Sandpiper	*Tryngites subruficollis*	N	
Long-Billed Dowitcher	*Limnodromus scolopaceus*	N	
Common Snipe	*Gallinago gallinago*	N	√
Wilson's Phalarope	*Phalaropus tricolor*	N	
Red-Necked Phalarope	*Phalaropus lobatus*	N	
Pomarine Jaeger	*Sterorarius pomarinus*	N	
Parasitic Jaeger	*Sterorarius parasiticus*	N	
Franklin's Gull	***Larus pipixcan***	N	
Bonaparte's Gull	*Larus Philadelphia*	N	

Common Name	Scientific Name	Preferred Habitat Occurs in LHTA	Recorded in LHTA
Ring-Billed Gull	*Larus delawarensis*	N	√
California Gull	*Larus californicus*	N	√
Herring Gull	*Larus argentatus*	N	
Iceland Gull	*Larus glaucoides*	N	
Glaucous Gull	*Larus hyperboreus*	N	
Black-Legged Kittiwake	*Rissa tridactyla*	N	
Sabine's Gull	*Xema sabini*	N	
Caspian Tern	***Sterna caspia***	N	
Common Tern	***Sterna hirundo***	N	√
Forster's Tern	***Sterna forsteri***	N	
Black Tern	***Chlidonias niger***	N	
Ancient Murrelet	*Synthliboramphus antiquus*	N	
COLUMBIFORMES			
Rock Dove	*Columba livia*	Y	√
Mourning Dove	*Zenaida macroura*	Y	√
CUCULIFORMES			
Black-Billed Cuckoo	***Coccyzus erythropthalmus***	Y	
STRIGIFORMES			
Flammulated Owl	***Otus flammeolus***	N	
Eastern Screech-Owl	***Otus asia***	N	
Western Screech-Owl	***Otus kennicottii***	N	
Great Horned Owl	*Bubo virginianus*	Y	√
Snowy Owl	*Nyctea scandiaca*	Y (winter)	
Northern Pygmy-Owl	*Glaucidium gnoma*	N	
Burrowing Owl	***Athene cunicularia***	Y	
Barred Owl	*Strix varia*	N	
Great Gray Owl	***Strix nebulosa***	N	
Long-Eared Owl	*Asio otus*	Y	
Short-Eared Owl	***Asio flammeus***	Y	
Boreal Owl	***Aegolius funereus***	N	
Northern Saw-Whet Owl	*Aegolius acadicus*	Y	√
CAPRIMULGIFORMES			
Common Nighthawk	*Chordeiles minor*	Y	√
Common Poorwill	***Phalaenoptilus nuttallii***	Y	
APODIFORMES			
Vaux's Swift	*Chaetura vauxi*	N	
White-Throated Swift	*Aeronautes saxatalis*	Y	√
Black-Chinned Hummingbird	*Archilochus alexandri*	N	
Anna's Hummingbird	*Calypte anna*	N	
Calliope Hummingbird	*Stellula calliope*	N	
Rufous Hummingbird	***Selasphorus rufus***	N	
CORACIIFORMES			
Belted Kingfisher	*Ceryle alcyon*	N	

Common Name	Scientific Name	Preferred Habitat Occurs in LHTA	Recorded in LHTA
PICIFORMES			
Lewis's Woodpecker	***Melanerpes lewis***	N	
Red-Headed Woodpecker	***Melanerpes erythrocephalus***	N	
Williamson's Sapsucker	*Sphyrapicus thyroideus*	N	
Red-Naped Sapsucker	*Sphyrapicus nuchalis*	N	
Downy Woodpecker	*Picoides pubescens*	Y	√
Hairy Woodpecker	*Picoides villosus*	Y	√
American Three-Toed Woodpecker	*Picoides dorsalis*	N	
Black-Backed Woodpecker	***Picoides arcticus***	N	
Northern Flicker	*Colaptes auratus*	Y	√
Pileated Woodpecker	***Dryocopus pileatus***	N	
PASSERIFORMES			
Olive-Sided Flycatcher	*Contopus cooperi*	N	
Western Wood-Pewee	*Contopus sordidulus*	Y	√
Willow Flycatcher	*Empidonax traillii*	N	
Least Flycatcher	*Empidonax minimus*	Y	√
Hammond's Flycatcher	*Empidonax hammondii*	N	
Dusky Flycatcher	*Empidonax oberholseri*	Y	
Cordilleran Flycatcher	*Empidonax occidentalis*	N	
Say's Phoebe	*Sayornis saya*	Y	√
Western Kingbird	*Tyrannus verticalis*	Y	√
Eastern Kingbird	*Tyrannus tyrannus*	Y	√
Horned Lark	*Eremophila alpestris*	Y	√
Tree Swallow	*Tachycineta bicolor*	Y	√
Violet-Green Swallow	*Tachycineta thalassina*	Y	
Northern Rough-Winged Swallow	*Stelgidopteryx serripennis*	Y	√
Bank Swallow	*Riparia riparia*	Y	√
Cliff Swallow	*Petrochelidon pyrrhonota*	Y	√
Barn Swallow	*Hirundo rustica*	Y	√
Gray Jay	*Perisoreus canadensis*	N	
Stellar's Jay	*Cyanocitta stelleri*	N	
Blue Jay	*Cyanocitta cristata*	N	
Pinyon Jay	***Gymnorhinus cyanocephalus***	Y	√
Clark's Nutcracker	***Nucifraga columbiana***	Y	√
Black-billed Magpie	*Pica pica*	Y	√
American Crow	*Corvus brachyrhynchos*	Y	√
Common Raven	*Corvus corax*	Y	√
Black-Capped Chickadee	*Poecile atricapillus*	Y	
Mountain Chickadee	*Poecile gambeli*	Y	√
Red-Breasted Nuthatch	*Sitta canadensis*	Y	√
White-Breasted Nuthatch	*Sitta carolinensis*	Y	
Pygmy Nuthatch	*Sitta pygmaea*	N	
Brown Creeper	***Certhia americana***	N	
Rock Wren	*Salpinctes obsoletus*	Y	√

Common Name	Scientific Name	Preferred Habitat Occurs in LHTA	Recorded in LHTA
Canyon Wren	*Catherpes mexicanus*	Y	√
House Wren	*Troglodytes aedon*	Y	√
Winter Wren	*Troglodytes troglodytes*	N	
Marsh Wren	*Cistothorus palustris*	N	
American Dipper	*Cinclus mexicanus*	N	
Golden-Crowned Kinglet	*Regulus satrapa*	N	
Ruby-Crowned Kinglet	*Regulus calendula*	N	
Western Bluebird	*Sialia mexicana*	N	
Mountain Bluebird	*Sialia currucoides*	Y	√
Townsend's Solitaire	*Myadestes townsendi*	Y	√
Veery	***Catharus fuscescens***	N	
Swainson's Thrush	*Catharus ustulatus*	N	
Hermit Thrush	*Catharus guttatus*	N	
American Robin	*Turdus migratorius*	Y	√
Varied Thrush	***Ixoreus naevius***	N	
Gray Catbird	*Dumetella carolinensis*	Y	√
Northern Mockingbird	*Mimus polyglottos*	N	
Sage Thrasher	***Oreoscoptes montanus***	Y	
Brown Thrasher	*Toxostoma rufum*	Y	
American Pipit	*Anthus rubescens*	N	
Sprague's Pipit	***Anthus Spragueii***	N	
Bohemian Waxwing	*Bombycilla garrulus*	Y	√
Cedar Waxwing	*Bombycilla cedrorum*	Y	
Northern Shrike	*Lanius excubitor*	N	
Loggerhead Shrike	***Lanius ludovicianus***	Y	√
European Starling	*Sturnus vulgaris*	Y	√
Solitary Vireo	*Vireo solitarius*	N	
Warbling Vireo	*Vireo gilvus*	Y	√
White-Eyed Vireo	*Vireo griseus*	N	
Red-Eyed Vireo	*Vireo olivaceus*	N	
Tennessee Warbler	***Vermivora peregrina***	N	
Orange-Crowned Warbler	*Vermivora celata*	N	
Yellow Warbler	*Dendroica petechia*	Y	√
Magnolia Warbler	*Dendroica magnolia*	N	
Yellow-Rumped Warbler	*Dendroica coronata*	Y	√
Townsend's Warbler	*Dendroica townsendi*	N	
Palm Warbler	*Dendroica palmarum*	N	
American Redstart	*Setophaga ruticilla*	Y	√
Ovenbird	***Seiurus aurocapillus***	N	
Northern Waterthrush	*Seiurus noveboracensis*	N	
Macgillivray's Warbler	*Oporornis tolmiei*	N	
Common Yellowthroat	*Geothlypis trichas*	N	
Wilson's Warbler	*Wilsonia pusilla*	N	
Yellow-Breasted Chat	*Icteria virens*	N	

Common Name	Scientific Name	Preferred Habitat Occurs in LHTA	Recorded in LHTA
Western Tanager	*Piranga ludoviciana*	Y	√
Black-Headed Grosbeak	*Pheucticus melanocephalus*	Y	
Lazuli Bunting	*Passerina amoena*	Y	
Indigo Bunting	*Passerina cyanea*	N	
Dickcissel	***Spiza americana***	N	
Green-Tailed Towhee	***Pipilo chlorurus***	Y	√
Spotted Towhee	*Pipilo maculatus*	Y	√
American Tree Sparrow	*Spizella arborea*	Y	
Chipping Sparrow	*Spizella passerina*	Y	√
Clay-Colored Sparrow	*Spizella pallida*	Y	√
Brewer's Sparrow	***Spizella breweri***	Y	√
Vesper Sparrow	*Poocetes gramineus*	Y	√
Lark Sparrow	*Chondestes grammacus*	Y	√
Black-Throated Sparrow	*Amphispiza bileneata*	N	
Sage Sparrow	*Amphispiza belli*	N	
Lark Bunting	*Calamospiza melanocorys*	Y	√
Savannah Sparrow	*Passerculus sandwichensis*	N	
Baird's Sparrow	***Ammodramus bairdii***	N	
LeConte's Sparrow	***Ammodramus leconteii***	N	
Fox Sparrow	*Passerella iliaca*	N	
Song Sparrow	*Melospiza melodia*	N	
Lincoln's Sparrow	*Melospiza lincolnii*	N	
White-Throated Sparrow	*Zonotrichia albicollis*	N	
White-Crowned Sparrow	*Zonotrichia leucophrys*	N	
Harris' Sparrow	*Zonotrichia querula*	N	
Dark-Eyed Junco	*Junco hyemalis*	Y	√
McCown's Longspur	***Calcarius mccownii***	Y	
Lapland Longspur	*Calcarius lapponicus*	N	
Chestnut-Collared Longspur	***Calcarius ornatus***	N	
Snow Bunting	*Plectrophenax nivalis*	Y	√
Bobolink	***Dolichonyx oryzivorus***	N	
Red-Winged Blackbird	*Agelaius phoeniceus*	N	
Western Meadowlark	*Sturnella neglecta*	Y	√
Yellow-Headed Blackbird	*Xanthocephalus xanthocephalus*	N	
Rusty Blackbird	*Euphagus carolinus*	N	
Brewer's Blackbird	*Euphagus cyanocephalus*	Y	√
Common Grackle	*Quiscalus quiscula*	N	
Brown-Headed Cowbird	*Molothrus ater*	Y	√
Bullock's Oriole	*Icterus bullockii*	Y	√
Black Rosy-Finch	***Leucosticte atrata***	N	
Gray-Crowned Rosy Finch	***Leucosticte tephrocotis***	N	
Pine Grosbeak	*Pinicola enucleator*	N	
Purple Finch	*Carpodacus purpureus*	N	
Cassin's Finch	***Carpodacus cassinii***	N	

Common Name	Scientific Name	Preferred Habitat Occurs in LHTA	Recorded in LHTA
House Finch	*Carpodacus mexicanus*	N	
Red Crossbill	*Loxia curvirostra*	N	
White-Winged Crossbill	*Loxia leucoptera*	N	
Common Redpoll	*Carduelis flammea*	Y	
Hoary Redpoll	*Carduelis hornemanni*	Y	√
Pine Siskin	*Carduelis pinus*	Y	√
American Goldfinch	*Carduelis tristis*	Y	√
Evening Grosbeak	***Coccothraustes vespertinus***	Y	
House Sparrow	*Passer domesticus*	Y	√
Mammals			
INSECTIVORA			
Masked Shrew	*Sorex cinereus*	Y	
Preble's Shrew	***Sorex preblei***	Y	
Vagrant Shrew	*Sorex vagrans*	Y	
Dusky or Montane Shrew	*Sorex monticolus*	N	
Dwarf Shrew	***Sorex nanus***	N	
Western Water Shrew	*Sorex navigator*	N	
CHIROPTERA			
Unidentified bats		Y	√[d]
Little Brown Myotis	***Myotis lucifugus***	Y	√[d]
Yuma Myotis	***Myotis yumanensis***	Y	
Long-Eared Myotis	***Myotis evotis***	Y	
Fringed Myotis	***Myotis thysanodes***	Y	
Long-Legged Myotis	***Myotis volans***	Y	
Western Small-Footed Myotis	*Myotis ciliolabrum*	Y	
Silver-haired Bat	***Lasionycteris noctivagans***	Y	√[d]
Big Brown Bat	*Eptesicus fuscus*	Y	√[d]
Hoary Bat	***Lasiurus cinereus***	Y	√[d]
Townsend's Big-Eared Bat	***Corynorhinus townsendii***	Y	√(prob.)[d]
LAGOMORPHA			
Pika	*Ochotona princeps*	N	
Mountain Cottontail	*Sylvilagus nuttallii*	Y	√
Snowshoe Hare	*Lepus americanus*	N	
White-Tailed Jackrabbit	*Lepus townsendii*	Y	√
RODENTIA			
Least Chipmunk	*Tamias minimus*	N	
Yellow-Pine Chipmunk	*Tamias amoenus*	Y	√
Red-Tailed Chipmunk	*Tamias ruficaudus*	N	
Yellow-Bellied Marmot	*Marmota flaviventris*	Y	√
Richardson's Ground Squirrel	*Spermophilus richardsonii*	Y	√
Columbian Ground Squirrel	*Spermophilus columbianus*	Y	√
Golden-Mantled Ground Squirrel	*Spermophilus lateralis*	Y	
Black-Tailed Praire Dog	***Cynomys ludovicianus***	N	
Red Squirrel	*Tamiasciurus hudsonicus*	Y	√

Common Name	Scientific Name	Preferred Habitat Occurs in LHTA	Recorded in LHTA
Northern Flying Squirrel	*Glaucomys sabrinus*	Y	
Northern Pocket Gopher	*Thomomys talpoides*	Y	√
Beaver	*Castor canadensis*	N	
Deer mouse	*Peromyscus maniculatus*	Y	√
Northern Grasshopper Mouse	*Onychomys leucogaster*	Y	
Bushy-Tailed Woodrat	*Neotoma cinerea*	Y	√
Southern Red-Backed Vole	*Clethrionomys gapperi*	Y	√
Heather Vole	*Phenacomys intermedius*	N	
Meadow Vole	*Microtus pennsylvanicus*	Y	
Montane Vole	*Microtus montanus*	Y	
Long-Tailed Vole	*Microtus longicaudus*	Y	
Water Vole	***Microtus richardsoni***	N	
Sagebrush Vole	*Lemmiscus curtatus*	Y	
Muskrat	*Ondatra zibethicus*	N	
Western Jumping Mouse	*Zapus princeps*	N	
Porcupine	***Erethizon dorsatum***	Y	√
CARNIVORA			
Coyote	*Canis latrans*	Y	√
Gray Wolf	*Canis lupus*	N	
Red Fox	*Vulpes vulpes*	Y	√
Black Bear	*Ursus americanus*	Y	√
Grizzly Bear	***Ursus arctos***	N	
Raccoon	*Procyon lotor*	Y	√
American Marten	*Martes americana*	N	
Fisher	***Martes pennanti***	N	
Short-Tailed Weasel	*Mustela erminea*	N	
Long-Tailed Weasel	*Mustela frenata*	Y	
Mink	*Mustela vison*	N	
Wolverine	***Gulo gulo***	N	
Badger	*Taxidea taxus*	Y	√
Western Spotted Skunk	***Spilogale gracilis***	N	√
Striped Skunk	*Mephitis mephitis*	Y	
Northern River Otter	*Lutra canadensis*	N	
Mountain Lion	*Puma concolor*	Y	√
Lynx	***Lynx canadensis***	N	
Bobcat	*Lynx rufus*	Y	√
ARTIODACTYLA			
Elk	*Cervus elaphus*	Y	√
Mule Deer	*Odocoileus hemionus*	Y	√
White-Tailed Deer	*Odocoileus virginianus*	Y	
Moose	*Alces alces*	N	√
Pronghorn	*Antilocapra americana*	Y	√
Mountain Goat	*Oreamnos americanus*	N	
Bighorn Sheep	*Ovis Canadensis*	Y	√

[a]Nomenclature, distribution and habitat preferences from Montana Bird Distribution Committee 1996; Hart et al. 1998; Foresman 2001; Holton and Johnson 2003; Maxell et al. 2003; Montana Natural Heritage Program 2004

[b]See Chapter 4 of Farmer et. al 2004 for habitat type descriptions

[c]Habitat possibly present

[d]Butts (1995, 1997), WESTECH (1997)

* Species in **bold text** are Montana Species of Concern (MTNHP 2021).

Appendix F
Mission Impacts on Natural Resources

APPENDIX F MISSION IMPACTS ON NATURAL RESOURCES

1.1 LAND USE AT FORT HARRISON TRAINING AREA

The FHTA is composed of 6,692 acres, approximately 90 percent (6,056 acres) of which are unimproved lands. The following training facilities exist within FHTA:

- 8 basic marksmanship ranges;
- 1 direct fire gunnery range (multiple integrated laser engagement system only);
- 1 special live fire range;
- multiple maneuver training areas; and
- 3 other, non-live fire facilities.

Table F-1 and **Figure F-1** show general types of land use in the FHTA.

Table F-1. Military Land Use in the Fort Harrison Training Area

Military Land Use	Size of Area (acres)	Percent of Total Area
Off-Limits (Wetland Protection, Cultural Site)	30	0.45
Cantonment Area	251	3.75
Light-Maneuver Training	6,411	95.8
Total	**6,692**	**100**

Granite Creek Training Area

Cherry Creek Training Area

Birdseye Road

Head Lane

Helena

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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0 3,000 Feet

NewFields

- Fort Harrison Training Area
- Roads
- Airstrip
- Marshall Drop Zone
- Fire Breaks
- IED Course
- Training Ranges/Areas
- Land Navigation Points
- Ammo Storage

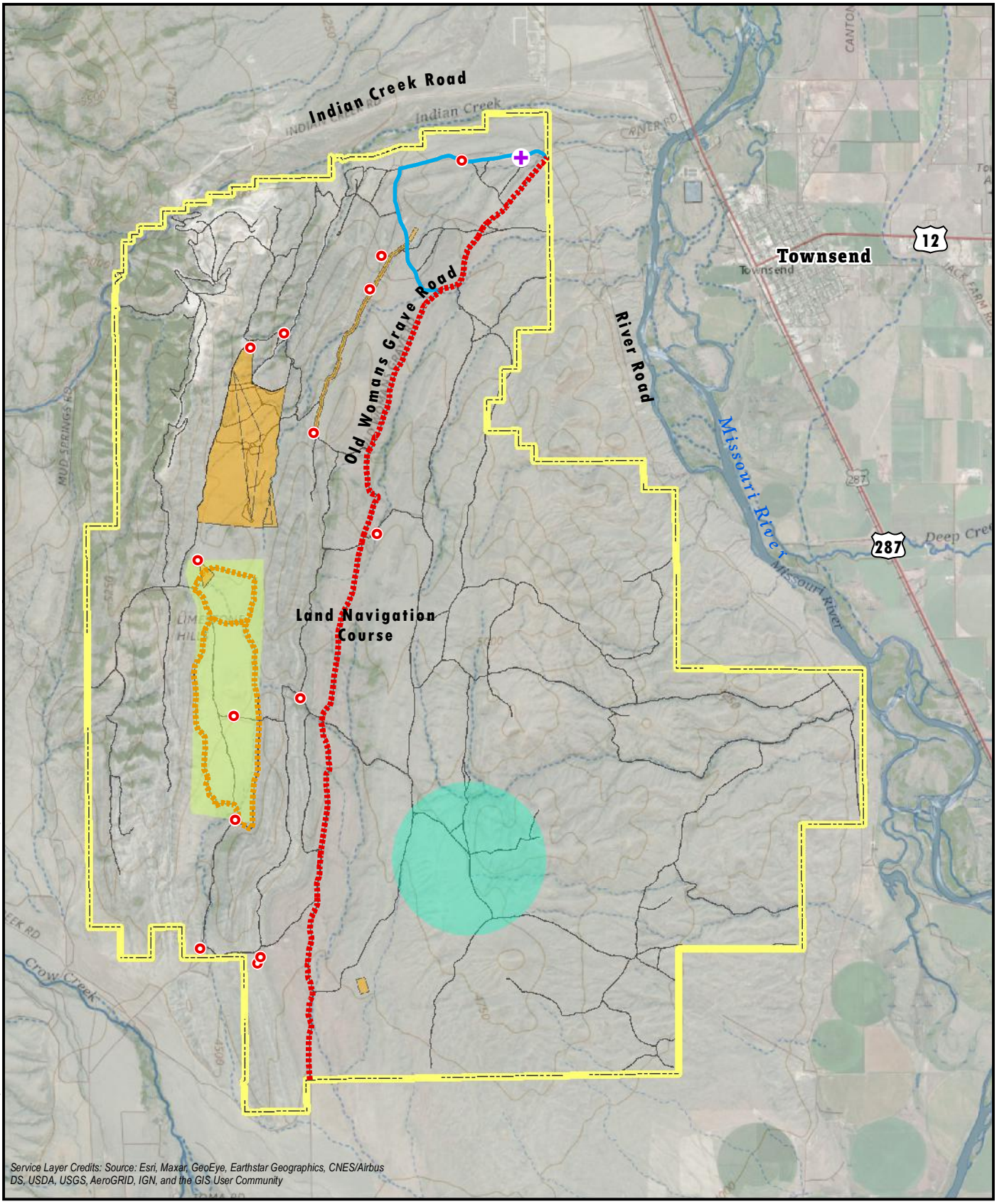
Land Use Map Depicting Administrative (Cantonment), Maneuver, Ranges and Impact Areas
Fort Harrison Training Area
MTARNG INRMP
Lewis and Clark County, Montana
FIGURE F-1

1.2 Land Use at Limestone Hills Training Area

The LHTA is composed of 21,494 acres, most of which are unimproved lands. The area labeled "compound" in **Figure F-2** is semi-improved and there are additional semi-improved areas associated with the range area. Of the 21,494 acres, approximately 17,351 acres are available for military training. The high-explosive impact area consists of 715 acres which has limited use for training events, such as mortar firing, but is not used for maneuver training. Excluding this area, there are 17,351 acres of remaining training areas capable of supporting light maneuver training. **Table F-2** and **Figure F-2** show land use in the LHTA.

Table F-2. Military Land Use in Limestone Hills Training Area

Military Land Use	Size of Area (acres)	Percent of Total Area
Off-Limits (Graymont Mine)	3,428	16
High-Explosive Impact Area	715	3
Light-Maneuver Training	17,351	81
Total	**21,494**	**100**



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N

0 1.5
Miles

NewFields

- Limestone Hills Training Area
- High Explosive Impact Area
- Copenhagen Drop Zone
- Multi-Purpose Tank Range
- Old Woman's Grave Road
- Tracked Vehicle Course
- Fire Breaks
- Training Ranges/Area
- Compound

Land Use Depicting Administrative (Cantonment), Maneuver, Ranges and Impact Areas
Limestone Hills Training Area
MTARNG INRMP
Broadwater County, Montana
FIGURE F-2

1.3 CURRENT POTENTIAL IMPACTS

The MTARNG recognizes that a healthy and viable natural resources base is required to support the military mission. To be effective, the natural conditions of the training areas must be maintained to provide realism. Areas that are obviously degraded by previous training activity detract from the realism of the current training activity. This INRMP helps to ensure that environmental considerations are an integral part of planning activities and that natural resources are protected in accordance with Army regulations and policies.

Ongoing military operations performed at FHTA and LHTA in support of the MTARNG's mission alter the environmental setting and condition of the natural resources. The absence of long-term management measures to properly conserve and restore natural resources could impede the MTARNG's ability to continue to adequately train soldiers. Military training has impacts to the environment that are avoided and mitigated to ensure compliance with all environmental laws and regulations and to support sustainment of the military mission. Environmental damage can place other artificial constraints on training, such as the following:

- Loss of training acreage;
- Decreased tactical maneuverability;
- Increased land and natural resources maintenance costs;
- Increased safety hazards; and
- Civil or criminal liability.

Because the primary mission of the MTARNG is to conduct readiness training, promote survivability of soldiers, and provide combat-ready forces for worldwide deployment, any environmental initiatives and plans are generally considered secondary and should be managed so as not to inhibit meeting military requirements. Existing natural resources can influence the manner in which the MTARNG's mission is executed. Although natural resources provide a realistic training environment for meeting mission requirements, their existence also has the potential to limit certain military plans and activities. Therefore, not only is proper management of natural resources and their use by the military a sound environmental practice, but it also directly supports the MTARNG's mission to provide realistic training. This INRMP considers the effects of such natural resources on the mission. Examples of training activities and their effects on the environment, as well as examples of how degradation to natural resources adversely affects the military mission, are provided in **Table F-3.**

Table F-3. Mission Activities and Potential Effects

Activity/Use	Potential Effect on Natural Resources	Potential Effect on Training/Combat Readiness
Vehicles operated off-road	▪ Degradation of soil, water, and vegetation ▪ Erosion gullies ▪ Soil compaction ▪ Soil and water contamination from field maintenance ▪ Wildlife disturbance, particularly big game species	▪ Loss of training realism ▪ Safety hazards in eroded areas ▪ Contamination of soils could limit availability of training areas ▪ Increased maintenance costs
Bivouac areas	▪ Soil compaction and/or erosion ▪ Loss of vegetation/	▪ Loss of training realism ▪ Limit usable training areas
Cutting of vegetation for camouflage/field fortifications	▪ Wilting and discoloration of cut vegetation; contrasts with natural background ▪ Eventual loss of vegetation	▪ Loss of training realism ▪ Exposed fighting position
Field maneuvers/ range firing	▪ Soil compaction, erosion, and inversion ▪ Loss of vegetation/forest understory and overstory ▪ Noxious weeds invade disturbed soils ▪ Wildfires from pyrotechnics, tracer ammunition, or shell detonation ▪ Litter from ammunition brass, plastic paint ball containers, communication wire, concertina wire ▪ Wildlife disturbance, particularly big game species	▪ Accidental fires result in loss of usable training areas ▪ Loss of training realism ▪ Immobilized vehicles mired in mud ▪ Potential administrative restrictions as a result of disturbance to species of concern or habitat

1.4 Potential Future Impacts

Any changes to training intensity or frequency could adversely impact natural resources and must be properly planned to ensure damage to natural resources is minimized to the extent possible. These effects could range from very minor to major. These changes will influence natural resources and the challenges of managing these resources to meet regulatory and stewardship requirements.

Impacts of the future military mission on the installations' natural resources are expected to be similar to those experienced at the installations today, but to a greater extent with cumulative effects on ecosystem functionality, particularly in areas exposed to maneuver damage. The challenge for natural resource managers is to respond to these impacts with an equally effective environmental awareness program and damage minimization and mitigation program. If this INRMP cannot accommodate future mission changes, the Plan will be reconsidered and updated as required to meet changes to mission requirements.

The MTARNG regularly makes changes to training exercise scenarios to better prepare soldiers for changing world conditions and threats. This process, to one degree or another, will always be ongoing. Such changes in training scenarios may change impacts of training on natural resources and are evaluated as they arise.

The Fort Harrison Range Complex Master Plan (RCMP) (MTARNG 2020a) will guide development at the FHTA and LHTA for a period of 6 to 7 years with appropriate updates on an annual basis. An update to the RCMP is anticipated to be approved in April 2021. No major development projects are planned for the next several years. See the RCMP (MTARNG 2020a) for planned projects at the FHTA and LHTA.

1.5 Natural Resources Needed to Support the Military Mission

Soldiers need to train in the kind of environment they can expect to see in combat. Training environments must be maintained in as natural condition as possible to achieve combat conditions. As discussed previously, the FHTA and LHTA INRMP uses an ecosystem approach to natural resources management intended to integrate military training activities with the conservation of ecological integrity and biodiversity. A major focus of this approach is the maintenance of naturally occurring structural diversity. This includes providing for a diversity of native plant species. At the landscape level, it includes maintenance of a variety of community types, successional stages, and patch sizes. The biodiversity at FHTA and LHTA provides soldiers with a variety of training opportunities in different vegetation communities.

Stable soils are a very important natural resource required to support the military mission at the FHTA and LHTA. Soil erosion and sediment deposition can be significant environmental issues on military training lands. Accurate modeling and mapping of current erosion conditions and potential erosion risk can assist military land managers and trainers in optimizing training schedules, delineating training areas, and monitoring the impacts of training over time. Soil erosion status is also a primary criterion used to determine environmentally sustainable levels of military activities (CEMML 2012).

Military training is the primary use of the FHTA and LHTA natural resources; therefore, efforts are made to minimize any potential conflicts between military training and natural resources. No primary issues exist that potentially create incompatibilities between natural resources conservation and the military mission at the FHTA and LHTA.

1.6 Natural Resources Constraints to Missions and Mission Planning

The Sikes Act Improvement Act (SAIA) requires that INRMPs provide for, "…no net loss in the capability of military installation lands to support the military mission of the installation" (16 USC §670 *et seq*.). This INRMP enables the installations to meet the requirements of the military mission within the limitations and legal restrictions of the baseline natural resources at FHTA and LHTA.

Training restrictions for the purposes of ecosystem protection will be imposed on all military activities at the FHTA and LHTA. All military activities will be conducted in accordance with the Leader's Handbook, Montana Guard Training Areas (MTDMA 2006) and all subsequent updates, Army regulations governing environmental protection and enhancement of military ranges (Army Regulation 200-1), the FHTA and LHTA INRMP as updated, the *Sikes Act,* and DoDI 4715.03. Environmental planning requirements addressed under these guidance and requirements include an environmental assessment and documentation required by the NEPA, wetlands protection, protection of terrain from tracked vehicles, protecting trees and shrubs, soil protection, bivouac protection, wildlife protection, cultural resources protection, noise reduction, solid waste disposal, and spill prevention/cleanup. These documents will assist the MTARNG in planning for training at the FHTA and LHTA, assessing and reducing environmental damage, and ensuring compliance with environmental laws and regulations.

The following measures are used to minimize damage to the FHTA and LHTA and surrounding natural resources:

- Range Control, in coordination with the Environmental Bureau, may restrict tracked vehicle movements due to wet or saturated soils.
- Tracked vehicles are not allowed on steep hills.
- Vehicles are to avoid driving on road shoulders and in ditches.
- Neutral steers of vehicles are prohibited.
- All wetland areas are to be avoided for training.
- Driving is not permitted within 50 meters of stream banks.
- All ground-disturbing activities (i.e., tank ditches/traps, fire lines) must have prior approval.
- Wastewater from field showers and mess facilities must be controlled or retained.
- Field laundry facilities are not authorized in range areas.
- Vehicles may only be washed in authorized washracks.

- Certain areas may be off-limits due to special concerns, such as cultural resources, special status species, wetlands, seeps and springs, high biodiversity value, etc. These will be described as mine fields, friendly forces, towns, etc. in training scenarios to add to the realism of off-limits areas. They will be marked with siber (Seibert) stakes, off-limits signs, barbed wire, or barricades as necessary for each area.

- Cutting vegetation for training or other purposes is prohibited unless specifically approved by Environmental Bureau on a case-by-case basis.

- All wire and pyrotechnics will be removed by the training force as soon as possible after completion of training activities.

- All live-fire training activities will adhere to the wildfire hazard rating system used by the Helena-Lewis and Clark National Forest and systematically begin to restrict live-fire training activities based on the weather-related potential for wildfires.

- All vehicles (wheeled and tracked) are restricted to existing roads. No off-road travel allowed.

- Garbage/solid waste management.

- Provide secondary containment for fuel, oil, etc.

1.7 Encroachment Partnering – Army Compatible Use Buffer (ACUB) Program

The Army Compatible Use Buffer (ACUB) Program seeks to maintain, and if possible, enhance, the current operational areas within the FHTA and LHTA in order to protect the ability of each installation to fulfill current and future mission requirements and maintain the quality of important habitats located in and around each installation. The MTARNG is committed to continue sound management practices within the FHTA and LHTA by:

- Maximizing the availability of training lands to enable soldier training;

- Minimizing impacts to natural and cultural resources to the extent that the mission allows;

- Complying with all applicable Federal, State and local environmental laws and regulations, and to any other requirements to which the MTARNG subscribes;

- Considering relevant environmental requirements early in planning processes related to training, equipment fielding, and construction (MTARNG 2020b).

The ACUB Program creates partnerships between the Army and eligible organizations to protect undeveloped land surrounding installation boundaries from development that is incompatible with the military mission. Title 10, Section 2684a of the United States Code allows the DoD to establish compatible use buffer areas around installations and work with eligible partners through established funded cooperative agreements to seek land protection opportunities surrounding training and testing areas. This authority is implemented through the ACUB Program.

Funding is provided by the joint efforts of the Army and its partners. The Army's partners use ACUB Program funds and other cash and in-kind match to acquire an interest (conservation easement or fee title) from willing landowners. This mutual effort preserves natural resources and limits land development that is incompatible with military training. The MTARNG ACUB Program was established in July 2015, with the updated ACUB plan approved in December 2020 (MTARNG 2020b) As of September 2020, 685 acres of open space around FHTA has been permanently preserved.

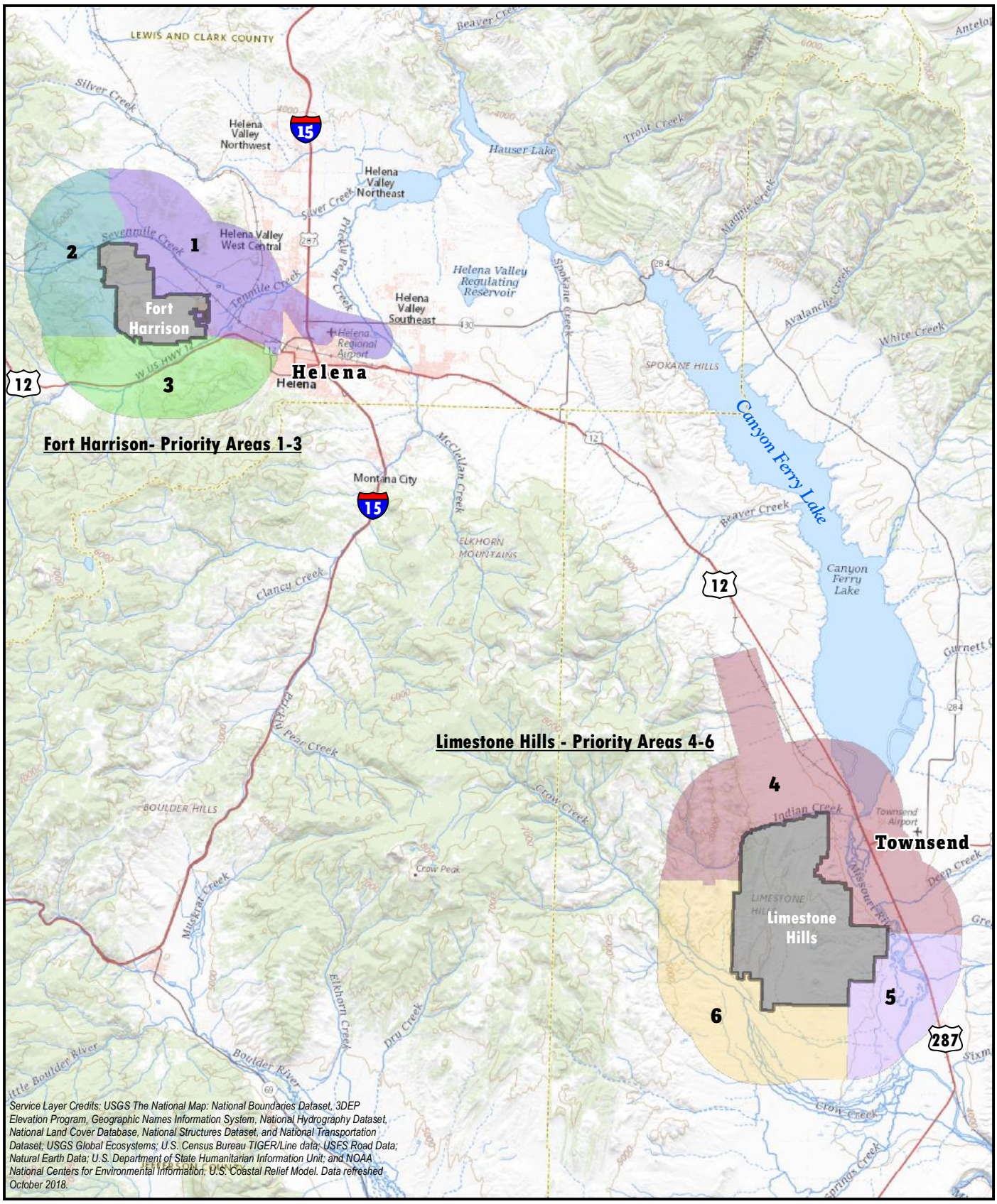
The partnership only works with willing sellers who may be interested in preserving their lands for future generations. Any fee title or easement secured with funding under the ACUB program must be held by partner entities, not the DoD. No military training can occur on land or land interests acquired under the ACUB program. **Figure F-3** shows the general ACUB buffer areas surrounding both the FHTA and LHTA as of 2020.

1.8 Climate Change

Over the coming decades DoD installations will experience significant risks from climate-driven changes in the environment, which could compromise the capacity of these lands and waters to support readiness activities (Stein et al. 2019). Current data reveal the past 20 years as the warmest period on record for Montana, including a below average number of very cold days, indicative of warming in the region. Higher spring temperatures and earlier warming may also result in earlier melting of the snowpack, further decreasing water availability during the summer months. While projections of overall annual precipitation are uncertain, an increase is projected for winter and spring precipitation (NOAA 2016). However, despite this increase in precipitation early in the year, increases in temperature during the growing season will increase the rate of soil moisture loss during dry spells, therefore increasing the likelihood of more intense summer droughts and an increase in the occurrence and severity of wildfires (Frankson et al. 2017).

To address this risk, the DoD implemented a policy for installations to address climate considerations within the Integrated Natural Resources Management Plan (Stein et al. 2019). Potential climate change impacts to MTARNG training lands are rising temperatures, changes in precipitation patterns, increases in storm intensity, increased frequency and severity of wildfires, and soil loss due to drought conditions. Assessment of MTARNG natural resource vulnerabilities and the challenges to project goals and objectives are key in determining the most appropriate adaptive responses to these changes.

The stability and resiliency of vegetation communities on MTARNG training lands is vital to the continuation of the training mission and stable temperature and precipitation regimes are key factors in maintaining healthy ecosystems on the training lands. These projected temperature increases, and a seasonal precipitation decrease will likely benefit the spread of invasive vegetation species across the training lands. Many invasive plants can be more resilient during drought and quickly bounce back when rain returns, overwhelming the native plant community. Additionally, invasive species (i.e., cheatgrass) are often key drivers of wildfires and increasing fire frequencies and intensities, which inhibits the recovery of the native plant community.



Service Layer Credits: USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed October 2018.

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Note: Army Compatible Use Buffers shown on figure represent plan update, approved 2020.

Army Compatible Use Buffers
Limestone Hills Training Area and Fort Harrison Training Area
MTARNG INRMP
Lewis and Clark and Broadwater Counties, Montana
FIGURE F-3

One of the biggest challenges on MTARNG training lands is the spread of invasive species and the rehabilitation of native plant communities impacted by training activities. Systems that are already degraded or stressed from non-climate stressors have lower adaptive capacity and resilience; therefore, some of the most effective actions that should be undertaken is to strategically restore and conserve areas that support valued species and habitat. However, these actions will be most effective when they consider future conditions in addition to historical agents (USGCRP 2018) Annual reviews of the INRMP goals and objectives will be necessary in order to validate their relevance or identify need for refinement or modifications. Should adaptation of goals and objectives prove necessary, all possible adaptation options will be critically evaluated in order to determine the most effective ecologically and most feasible socially, technically and financially. Adaptation options will be prioritized and implemented as funding becomes available. Following implementation, monitoring will be undertaken to track the effectiveness and ecological responses of the adaptation actions and determine whether there need to be additional adjustments in strategies and actions.

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Appendix G
Soil Erosion Control Management

APPENDIX G SOIL EROSION CONTROL MANAGEMENT

As described in **Appendix A**, in accordance with DoD and U.S. Army Policy, the MTARNG Environmental Office manages natural resources at FHTA and LHTA using an ecosystem management approach. This approach is based upon establishing main goals and supporting objectives, implementing projects to reach objectives, and monitoring progress toward objectives. This appendix describes soil management issues, goals, objectives, monitoring metrics, and projects collectively established by MTARNG natural resources managers for both FHTA and LHTA. As outlined below, based upon a series of main goals, MTARNG natural resources managers have developed objectives to guide management, metrics to meet those objectives and a schedule of monitoring activities for the next 5 years. Specific projects designed to achieve each objective and, in some instances, measure ecosystem conditions and progress toward objectives are described.

1.1 SOIL MANAGEMENT ISSUES

Erosion and sedimentation can negatively impact waterways and delay or obstruct training maneuvers. Common erosion problems include sheet, rill, and gully erosion on roads, training ranges, tank trails, and firebreaks. Of particular concern are areas where sediment is reaching waterbodies and where culverts have been removed or damaged and water is passing over dirt roads during and after rain events.

Soil conservation and management on FHTA and LHTA involves preventing and/or minimizing the development of bare and disturbed soil areas, identifying soil erosion, and restoring areas undergoing or susceptible to erosion. A layer of soil types is maintained in the GIS database and is used to identify highly erodible soils during project scoping and site selection. Soils and vegetation that are disturbed, by anthropogenic or natural causes, are stabilized and repaired as quickly as possible. Installation sources of erosion and sedimentation, runoff, and dust are controlled to the maximum extent practicable to prevent damage to land, water resources, equipment, and facilities.

1.2 MANAGEMENT GOALS AND OBJECTIVES

Soil erosion represents a threat to the long-term sustainability of the training lands. Impacts from training and neglect can reduce, and in some cases, eliminate the vegetative cover. Most of the problems associated with soil erosion on the installations occur in areas where vegetation has been removed or disturbed on steep slopes (>2:1), or on long, moderately steep slopes, primarily associated with fire breaks. Installation sources of erosion and sedimentation, runoff, and dust will also be controlled to prevent damage to land, water resources, equipment, and facilities on both the installations and adjacent properties.

As outlined in **Appendix A** and **Appendix B**, respectively, soil erosion control management goals and objectives and associated projects within the FHTA and LHTA include:

Goals:

- **1A**. Reduce erosion by remediating existing areas of bare/damaged soil.
- **1B**. Prevent soil erosion and its potential impacts on water quality, habitat, and mission objectives.

Objective 1a: Implement the LRAM program to rehabilitate areas of bare/damaged soil.

- **Monitoring Metric:** Using RTLA procedures, monitor rehabilitated sites. Evaluate vegetative cover. Allow no more than 10% loss in native vegetative cover annually.
- **Project 1:** Annual survey to identify and rehabilitate bare soil areas within active training areas.

Objective 1b: Utilize RTLA procedures to conduct annual installation-wide surveys to identify areas that need rehabilitation in order to reduce the amount of soil movement and prioritize degraded or eroded areas requiring rehabilitation.

- **Monitoring Metric:** Soil erosion indicators (i.e., plant pedestalling, rills, gullies, wind scouring)
- **Project 1:** Identify training areas experiencing soil erosion and loss.

Appendix H
Fish and Wildlife Management

APPENDIX H FISH AND WILDLIFE MANAGEMENT

As described in **Appendix A**, in accordance with DoD and U.S. Army Policy, the MTARNG Environmental Office manages natural resources at FHTA and LHTA using an ecosystem management approach. This approach is based upon establishing main goals and supporting objectives, implementing projects to reach objectives, and monitoring progress toward objectives. This appendix describes fish and wildlife management issues, goals, objectives, monitoring metrics, and projects collectively established by MTARNG natural resources managers for both FHTA and LHTA. As outlined below, based upon a series of main goals, MTARNG natural resources managers have developed objectives to guide management, metrics to meet those objectives and a schedule of monitoring activities for the next 5 years. Specific projects designed to achieve each objective and, in some instances, measure ecosystem conditions and progress toward objectives are described.

1.1 Fish and Wildlife Management Issues

MTARNG strives to maintain a diverse, self-sustaining ecosystem that includes populations of native game and non-game wildlife. As stated in the Sikes Act, installation commanders and Army natural resource managers are required to develop and implement strategies to maintain viable populations of native plants and animals, maintain natural genetic variability, maintain the full spectrum of functioning ecosystems and biological communities, and integrate human activities with the conservation of biological diversity.

Game and non-game species are managed primarily with an ecosystem-based approach, which emphasizes maintaining diversity and suitability of native habitat types so that native communities of wildlife become self-sustaining. Management of migratory birds is guided by the Migratory Bird Treaty Act (MBTA) and Executive Order 13186 “Responsibilities of Federal Agencies to Protect Migratory Birds.”

As detailed in **Appendix E**, fish and fish habitat are a very minor component of the FHTA and LHTA faunal assemblage.

1.2 Management Goals and Objectives

As outlined in **Appendix A** and **Appendix B**, respectively, wildlife management goals and objectives and associated projects within the FHTA and LHTA include:

Goal:

- **2A**. Restore and maintain indigenous wildlife species using integrated ecosystem management principles while accommodating military training needs.

Objective 2a: Continue monitoring of nesting bird and big game species to determine if trends exist related to military training and/or land management practices.

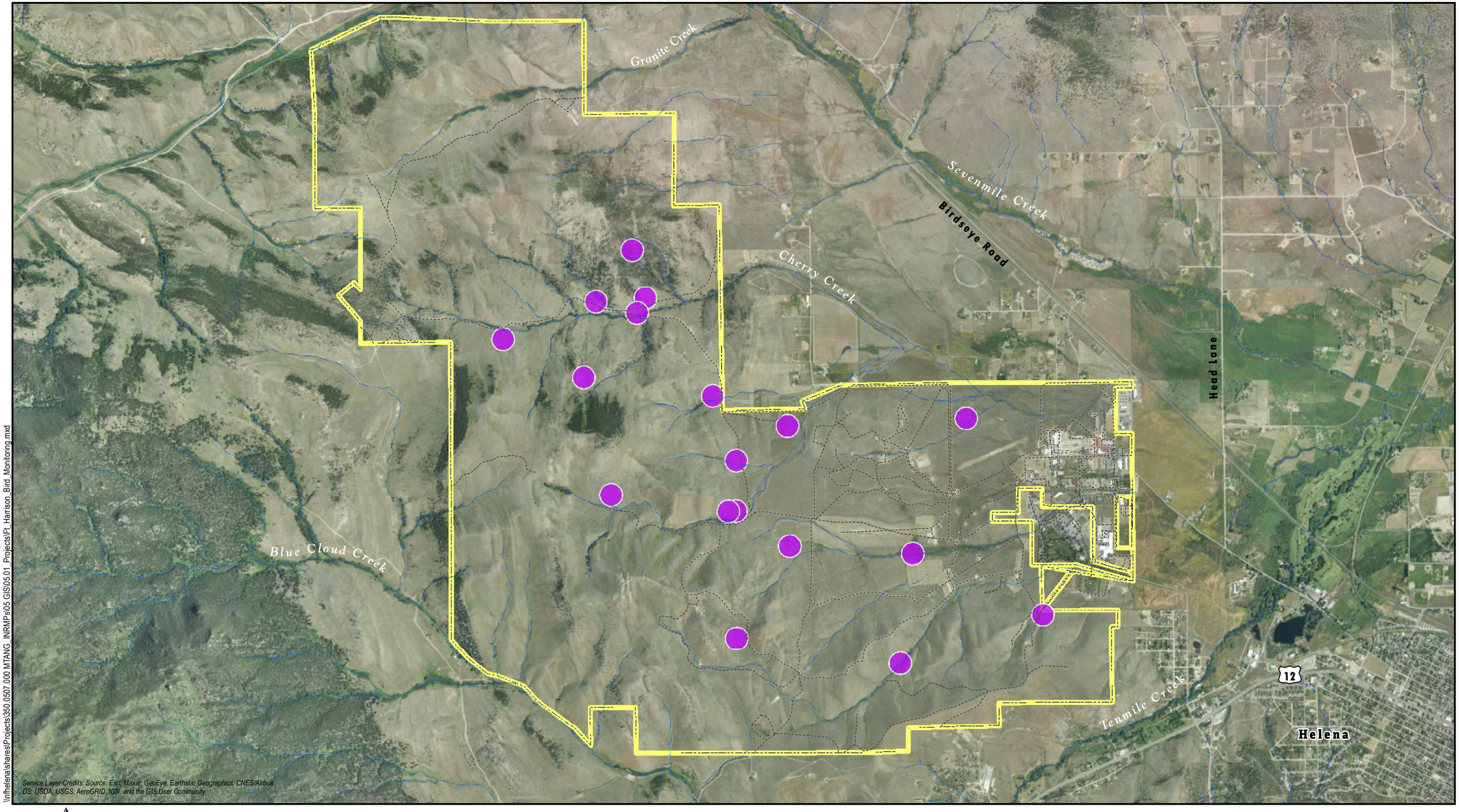
- **Monitoring Metric:** Species richness and diversity
- **Project 1**: Survey to assess current fauna populations, distributions, and presence as well as the presence of T&E species.
- **Project 2:** Project will conduct point counts for landbirds to avoid future noncompliance with MBTA. **Figures H-1 and H-2** show existing landbird monitoring plots at FHTA and LHTA, respectively.

Objective 2b (FHTA-Specific): Modify fence lines to be wildlife friendly per MTFWP guidelines and remove any unnecessary fence with approval from ENV.

- **Monitoring Metric:** Length (feet) of wildlife friendly fence and fence removed.
- **Project 1:** Project will entail inspection of the southern boundary fence and adjust wire spacing to facilitate wildlife movement.

Objective 2c (LHTA-Specific): Maintain fenced exclosures around all water sources to ensure a sustainable and reliable water source for livestock and wildlife.

- **Monitoring Metric:** Length (feet) of fence.
- **Project 1**: Project will include biannual inspections of wildlife water source protection barriers.



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N

0 3,000
Feet

NewFields

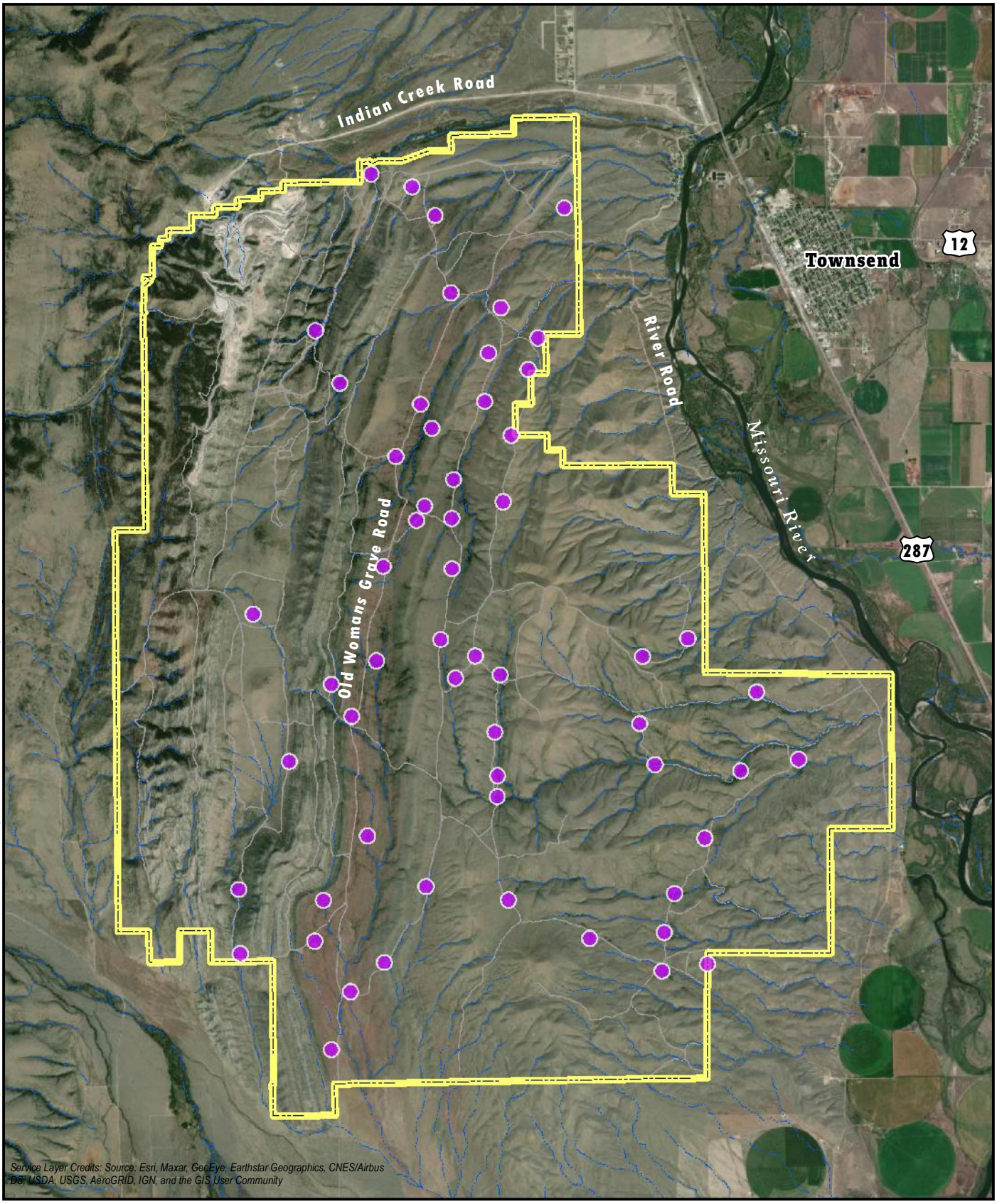
Fort Harrison Training Area

Landbird Monitoring Plots (Established 2011)

Roads

Streams

Landbird Monitoring Plots
Fort Harrison Training Area
MTARNG INRMP
Lewis and Clark County, Montana
FIGURE H-1



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N

0 1.5
Miles

Limestone Hills Training Area
Landbird Monitoring Plots (Established 2011)
Roads
Streams

NewFields

Landbird Monitoring Plots
Limestone Hills Training Area
MTARNG INRMP
Broadwater County, Montana
FIGURE H-2

Appendix I
Habitat Management

APPENDIX I HABITAT MANAGEMENT

As described in **Appendix A**, in accordance with DoD and U.S. Army Policy, the MTARNG Environmental Office manages natural resources at FHTA and LHTA using an ecosystem management approach. This approach is based upon establishing main goals and supporting objectives, implementing projects to reach objectives, and monitoring progress toward objectives. This appendix describes habitat management issues, goals, objectives, monitoring metrics, and projects collectively established by MTARNG natural resource managers for both FHTA and LHTA. As outlined below, based upon a series of main goals, MTARNG natural resources managers have developed objectives to guide management, metrics to meet those objectives and a schedule of monitoring activities for the next 5 years. Specific projects designed to achieve each objective and, in some instances, measure ecosystem conditions and progress toward objectives are described.

1.1 HABITAT MANAGEMENT ISSUES

MTARNG manages terrestrial habitat for the purpose of conserving and enhancing existing flora and fauna and to conserve, protect, and sustain biological diversity while supporting the military mission. Terrestrial habitat management activities are directed towards maintenance of healthy ecosystems and restoration of degraded ecosystems to their historic functions and values. As detailed in **Appendix E**, no federally listed, proposed, or candidate endangered or threatened wildlife or plant species, or their designated critical habitats, have been documented on the FHTA or LHTA; however, Grizzly bear and Canada lynx, both listed threatened under the ESA, may be present within both installations. Primary management consideration is given to the management of native species and state plant and animal Species of Concern and their habitats.

Vegetation monitoring inventories have been conducted for the FHTA and LHTA annually since 1997. Vegetation transects were initially used to collect data and then beginning in 2001, a different methodology was employed. In 2001, "Ecodata" plot methodology was used to establish and monitor 0.10-acre "Ecodata" plots to more effectively assess the impacts of MTARNG exercises on vegetation. The intention of Ecodata plot monitoring at FHTA and LHTA is to create a comprehensive vegetation sampling schedule based on the established data and methodology to accomplish two goals:

1. promote sustainable management of range, forest, and wetland resources (e.g., through noxious weed control, training impact assessment, and livestock management); and
2. facilitate vegetation trend analyses (e.g., range condition).

Data collected from the Ecodata plots determines range condition and trend. Equally useful, however, is the benefit of on-the-ground qualitative observations collected during travel within the properties. Casual observations of noxious weed populations, range condition, erosion, or other targeted concerns often result in early identification of problems and consequently more efficient solutions. Regularly scheduled observations over a defined monitoring cycle facilitate estimated costs.

Previous data is reviewed and incorporated annually to provide a progressive analysis of range condition and trend**. Figures I-1 and I-2** illustrate the location of Ecodata plots at the FHTA and LHTA, respectively.

1.2 Habitat Management Goals and Objectives

As outlined in **Appendix A** and **Appendix B**, respectively, Native Ecosystem Restoration and Enhancement goals and objectives and associated projects within the FHTA and LHTA include:

Goal:

- **3A**. Assess and monitor the health, vigor, diversity, and trend of native vegetation types on both FHTA and LHTA.

Objective 3a: Quantify the vegetation health of native plant communities.

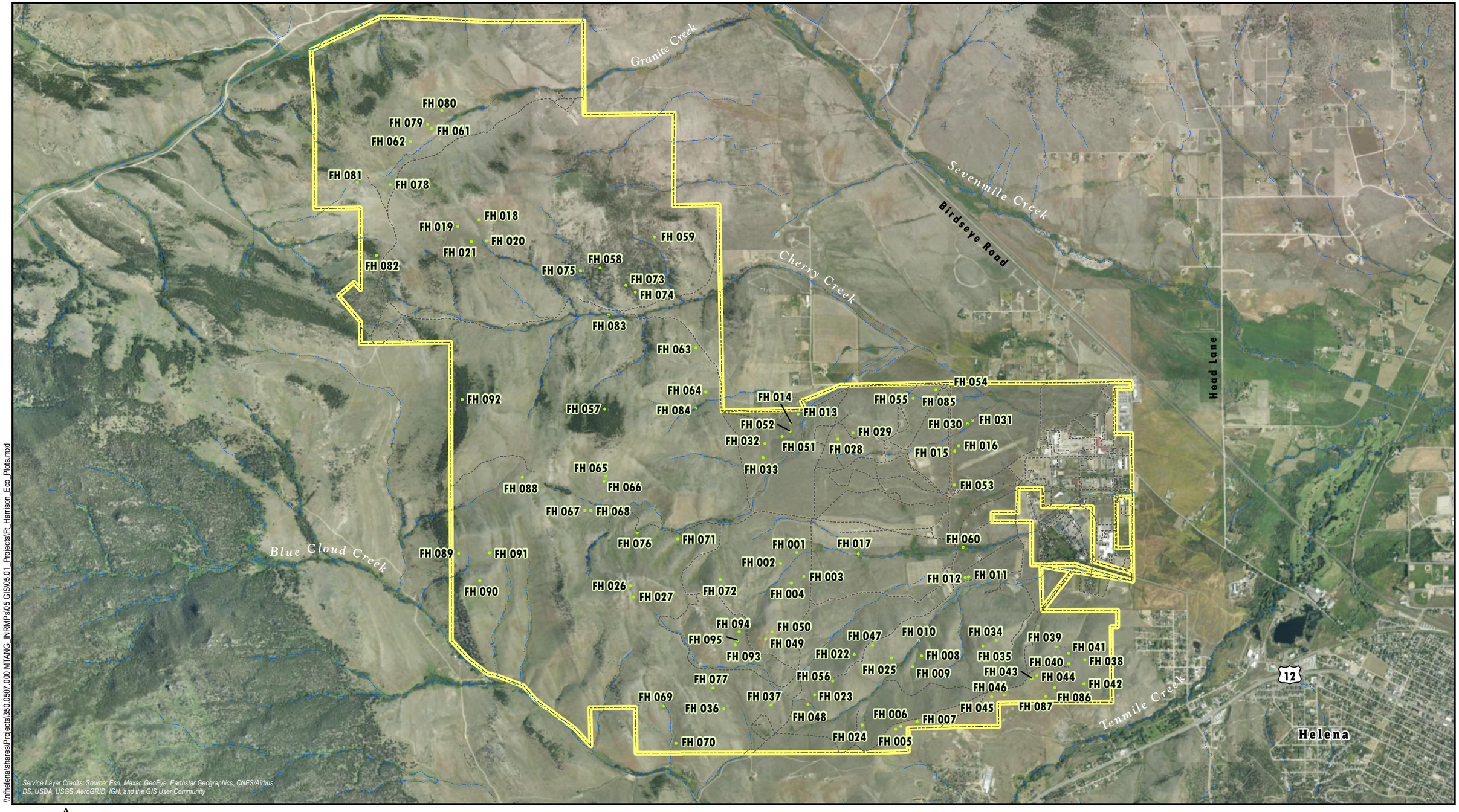
- **Monitoring Metric:** Vegetation Score as detailed in Ecodata plot reports.
    - PFC (Proper Functioning Condition [Healthy]) = score rating from 80 to 100 percent
    - FAR (Functional At Risk [Healthy, but with Problems]) = score rating from 60 to 80 percent
    - NF (Nonfunctional [Unhealthy]) = score rating below 60 percent
- **Project 1:** Monitor a sample of existing Ecodata plots on an annual rotating basis.

Objective 3b (FHTA-Specific): Identify plant communities dominated by non-native vegetation for the most cost-effective locations to re-establish native vegetation as the dominant component.

- **Monitoring Metric:** Greater than 75% native vegetation.
- **Project 1:** Project will identify areas where the plant community is greater than 40% non-native and target these areas for native plant re-establishment.

Objective 3c (LHTA-Specific): Re-establish native shrubs, specifically Cercocarpus ledifolius, within suitable habitat where the shrub component has been removed due to historic fires.

- **Monitoring Metric:** Seedling density per acre/Percent cover native shrubs
- **Project 1:** Project will identify appropriate sites and install transplants or broadcast native shrub seed into these sites.



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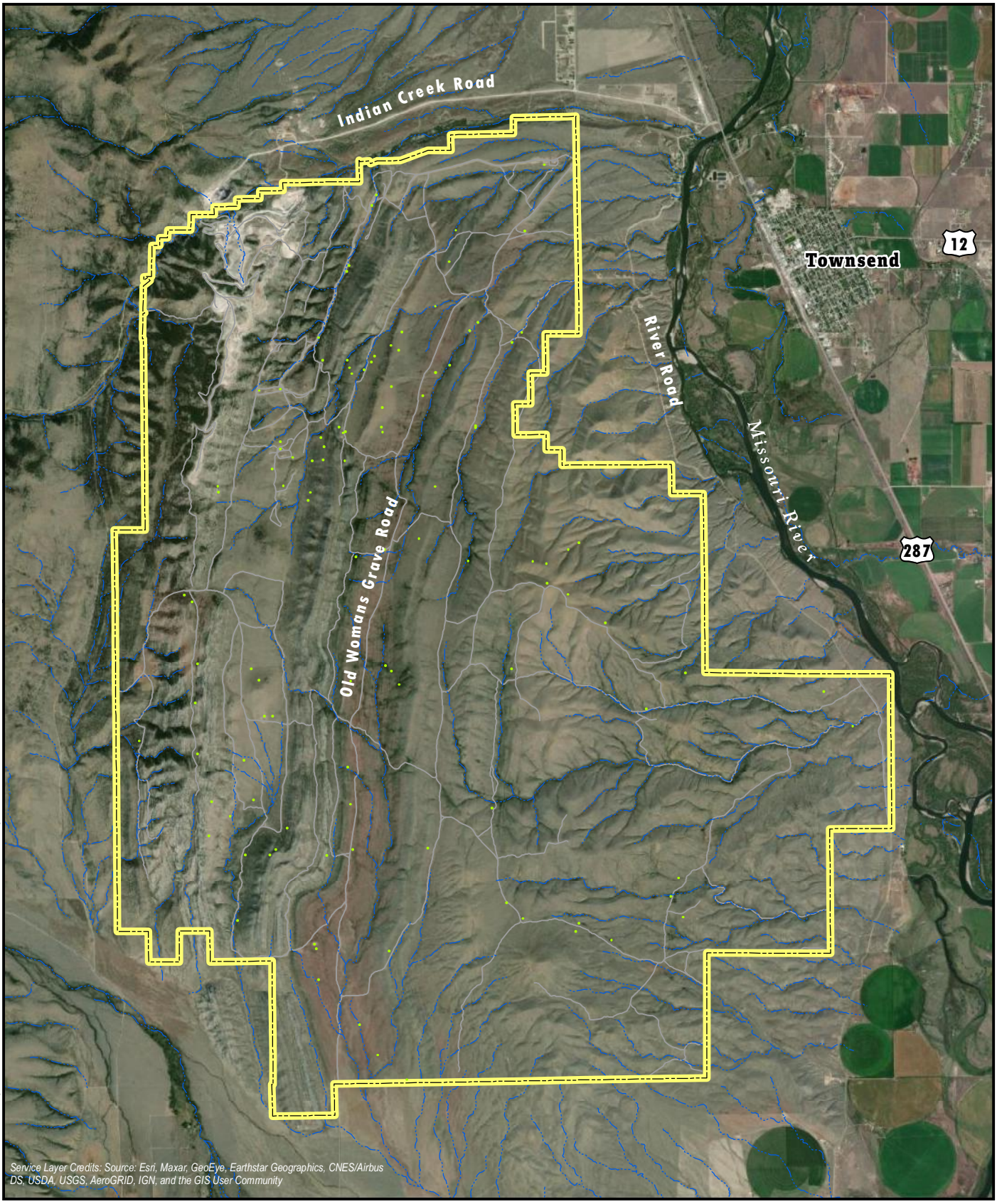
0 3,000
Feet

NewFields

Fort Harrison Training Area
Ecodata Plots
Roads
Streams

Ecodata Plots
Fort Harrison Training Area
MTARNG INRMP
Lewis and Clark County, Montana
FIGURE I-1



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N

0 1.5
Miles

Limestone Hills Training Area
Roads
Streams
Ecodata Plots

Note: There are 116 Ecodata Plots, Due to density, plot IDs are not shown.

NewFields

Ecodata Plots
Limestone Hills Training Area
MTARNG INRMP
Broadwater County, Montana
FIGURE I-2

Appendix J
Wetlands and Water Management

APPENDIX J WETLANDS AND WATER MANAGEMENT

As described in **Appendix A**, in accordance with DoD and U.S. Army Policy, the MTARNG Environmental Office manages natural resources at FHTA and LHTA using an ecosystem management approach. This approach is based upon establishing main goals and supporting objectives, implementing projects to reach objectives, and monitoring progress toward objectives. This appendix describes wetlands and water management issues, goals, objectives, monitoring metrics, and projects collectively established by MTARNG natural resources managers for both FHTA and LHTA. As outlined below, based upon a series of main goals, MTARNG natural resources managers have developed objectives to guide management, metrics to meet those objectives and a schedule of monitoring activities for the next 5 years. Specific projects designed to achieve each objective and, in some instances, measure ecosystem conditions and progress toward objectives are described.

1.1 WETLANDS AND WATER MANAGEMENT ISSUES

Waters of the United States (WOTUS), including jurisdictional wetlands, are protected by the CWA under Sections 401 and 404. The USACE and USEPA jointly administer Section 404 of the CWA, and states implement Section 401. Activities that may require permits under the CWA include discharge of material into WOTUS, stream relocations, road crossings, stream bank protection, construction of boat ramps, certain ditching, mechanically clearing a wetland, and building in a wetland.

Executive Order 11990 requires federal agencies minimize any significant action that contributes to the loss or degradation of wetlands and requires proactive enhancement of their natural value. Department of the Army policy is to avoid adverse impacts on existing aquatic resources and offset those adverse impacts which are unavoidable. Additionally, the Army strives to avoid net loss of the value and functions of existing wetlands and permits no overall net loss of wetlands on Army-controlled lands. The Department of the Army takes a progressive approach toward protecting existing wetlands, rehabilitating degraded wetlands, restoring former wetlands, and creating wetlands in an effort to increase the quality and quantity of the Nation's wetland resources. DoD natural resources policy states that wetlands will be protected to the extent possible. All activities that affect wetlands require an environmental analysis to be completed in accordance with AR 200-1, 32 CFR 651 and applicable federal and state laws and regulations.

As described in **Appendix D**, an updated inventory of delineated wetland areas within the FHTA was conducted in September 2020. Nineteen (19) wetlands were delineated within the FHTA (**Figure J-1**). Areas of the individual wetlands range from 0.002 acre to 1.748 acres (see **Figures J-2, J-3a, J-3b, and J-4**). The largest wetland (1.748 acres) is in the broad ephemeral drainage (referred to as Cottonwood Spring Drainage) in the middle of FHTA (**Figure J-3a**). Total area for all 19 delineated wetlands in FHTA is 4.077 acres. A pond, present in a wetland area in Granite Creek, is included in the calculation of wetland areas (**Figure J-2**).

The LHTA contains approximately 4.3 acres of potential wetland areas with hydric soils (**Figure J-5**) and approximately 76.3 linear miles of WOTUS as identified in 1998 and described in **Appendix D**.

Vegetative buffers around wetlands provide protection from erosion and sedimentation. In order to reduce the risk to wetlands, an activity-free buffer zone has been established along the FHTA's Cottonwood Drainage, which is where the most extensive wetlands are located on FHTA.

1.2 Management Goals and Objectives

As outlined in **Appendix A** and **Appendix B**, respectively, wetland management goals and objectives and associated projects within the FHTA and LHTA include:

Goals:

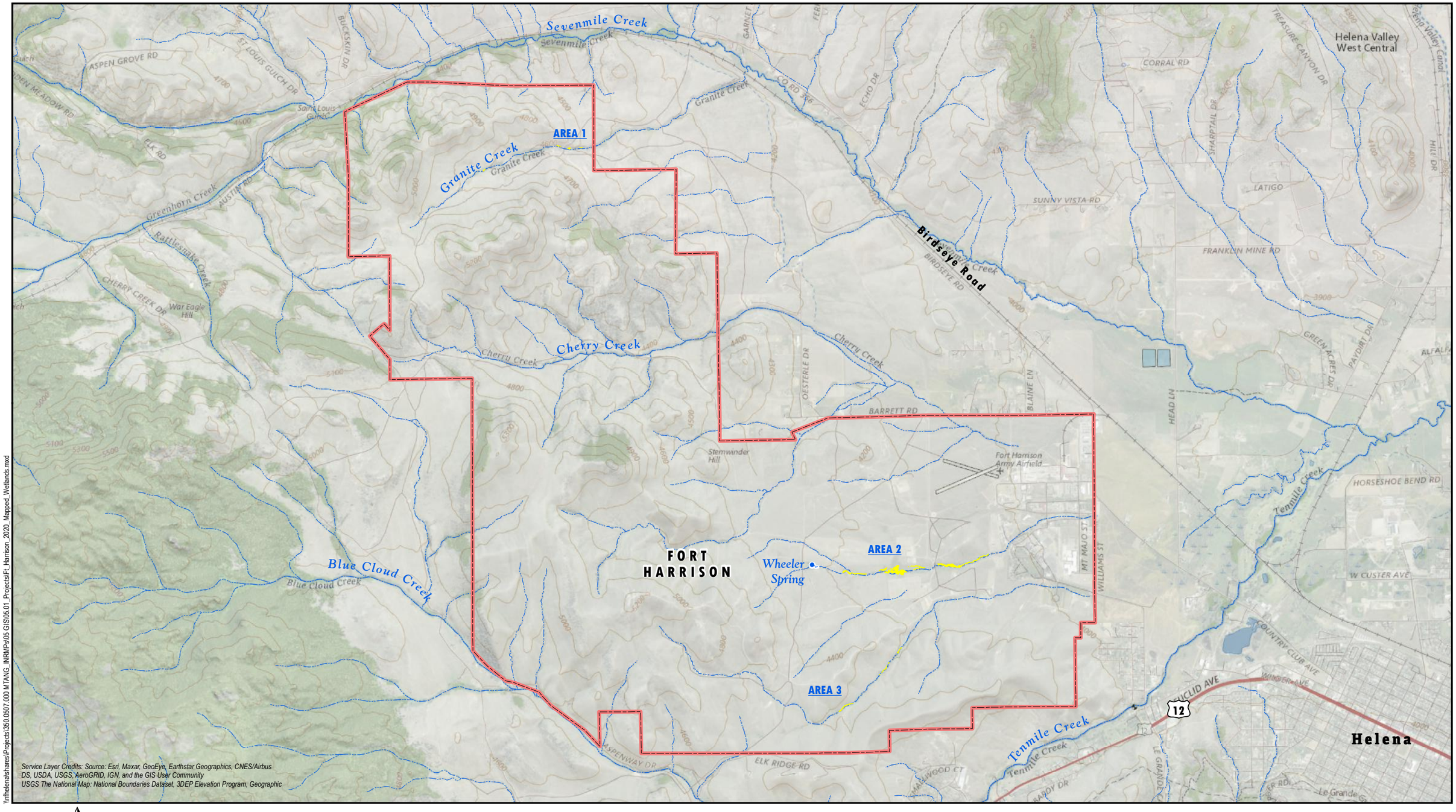
- **4A**. Protect and rehabilitate vegetative buffers on waterways.
- **4B**. Minimize nutrient and sediment inputs from watersheds.
- **4C.** Maintain functional, healthy wetlands that are resilient to minor, inadvertent encroachments and impacts.

Objective 4a: No net loss of wetland acreage, function, or value.

- **Monitoring Metric:** Monitor minimum area of 0.1 acres of wetlands and sensitive areas.
- **Project 1:** Annual monitoring to identify and prevent unauthorized activity into wetland buffer areas.
- **Project 2**: Site survey of LHTA to update potential wetland boundaries and avoid future non-compliance issues.

Objective 4b: Identify wetland and riparian buffer needs.

- **Monitoring Metric**: Area (square feet)
- **Project 1**: Annual monitoring to identify riparian areas in need of protection or restoration/repair.



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0 4,000
Feet

NewFields

Fort Harrison Training Area

2020 Mapped Wetlands

2020 Wetland Inventory
Fort Harrison Training Area
MTARNG INRMP
Lewis and Clark County, Montana
FIGURE J-1

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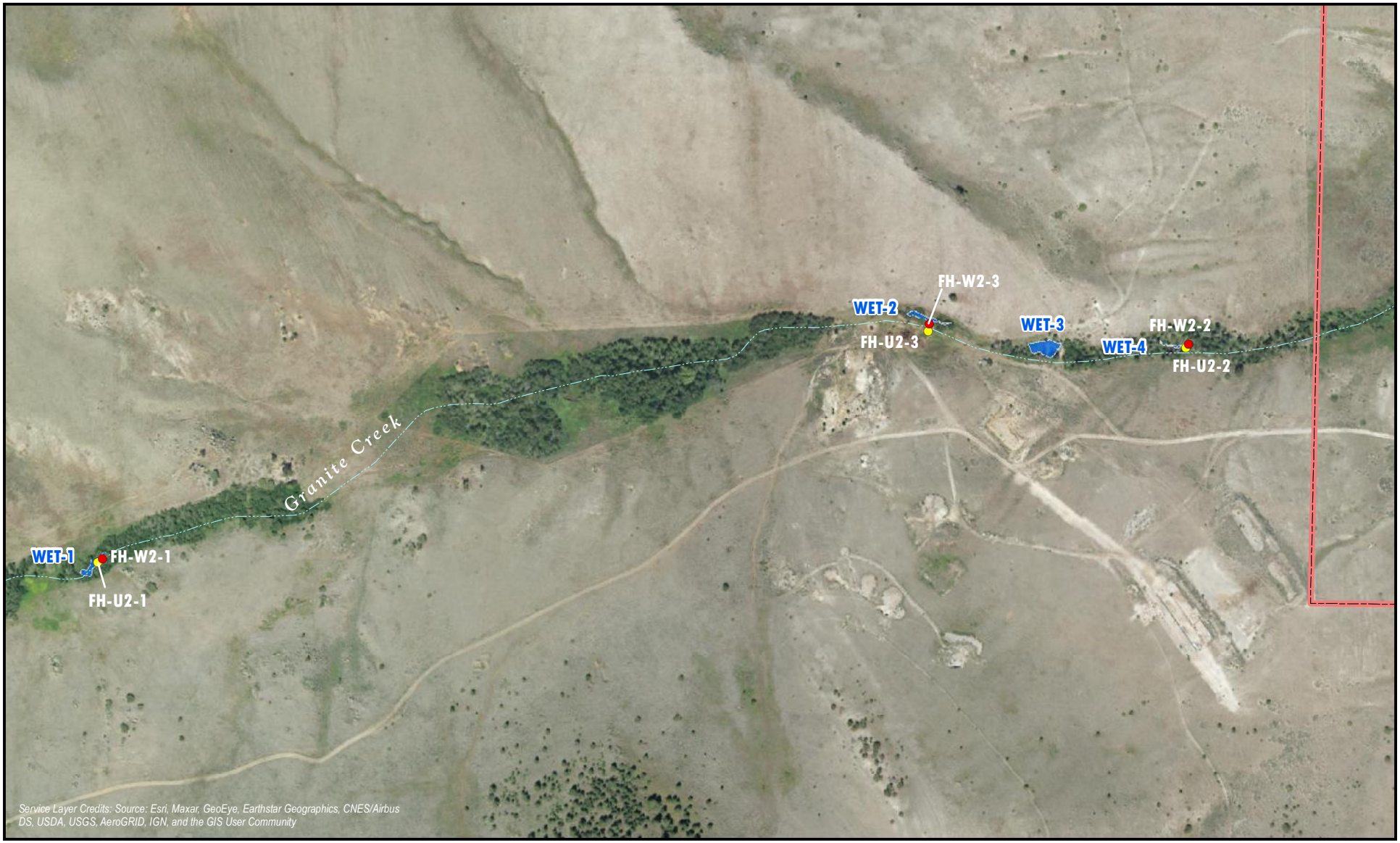

N

0 Feet 400

NewFields

Fort Harrison Training Area

2020 Mapped Wetlands

3 Parameter Data Point Wetland

3 Parameter Data Point Upland

Granite Creek Mapped Wetlands 2020
Fort Harrison Training Area
MTARNG INRMP
Lewis and Clark County, Montana
FIGURE J-2

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N

0 Feet 400

NewFields

2020 Mapped Wetlands

3 Parameter Data Point Wetland

3 Parameter Data Point Upland

Cottonwood Spring Drainage Mapped Wetlands 2020
Fort Harrison Training Area
MTARNG INRMP
Lewis and Clark County, Montana
FIGURE J-3a

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N

0 Feet 400

NewFields

2020 Mapped Wetlands

3 Parameter Data Point Wetland

3 Parameter Data Point Upland

Cottonwood Spring Drainage Mapped Wetlands 2020
Fort Harrison Training Area
MTARNG INRMP
Lewis and Clark County, Montana
FIGURE J-3b

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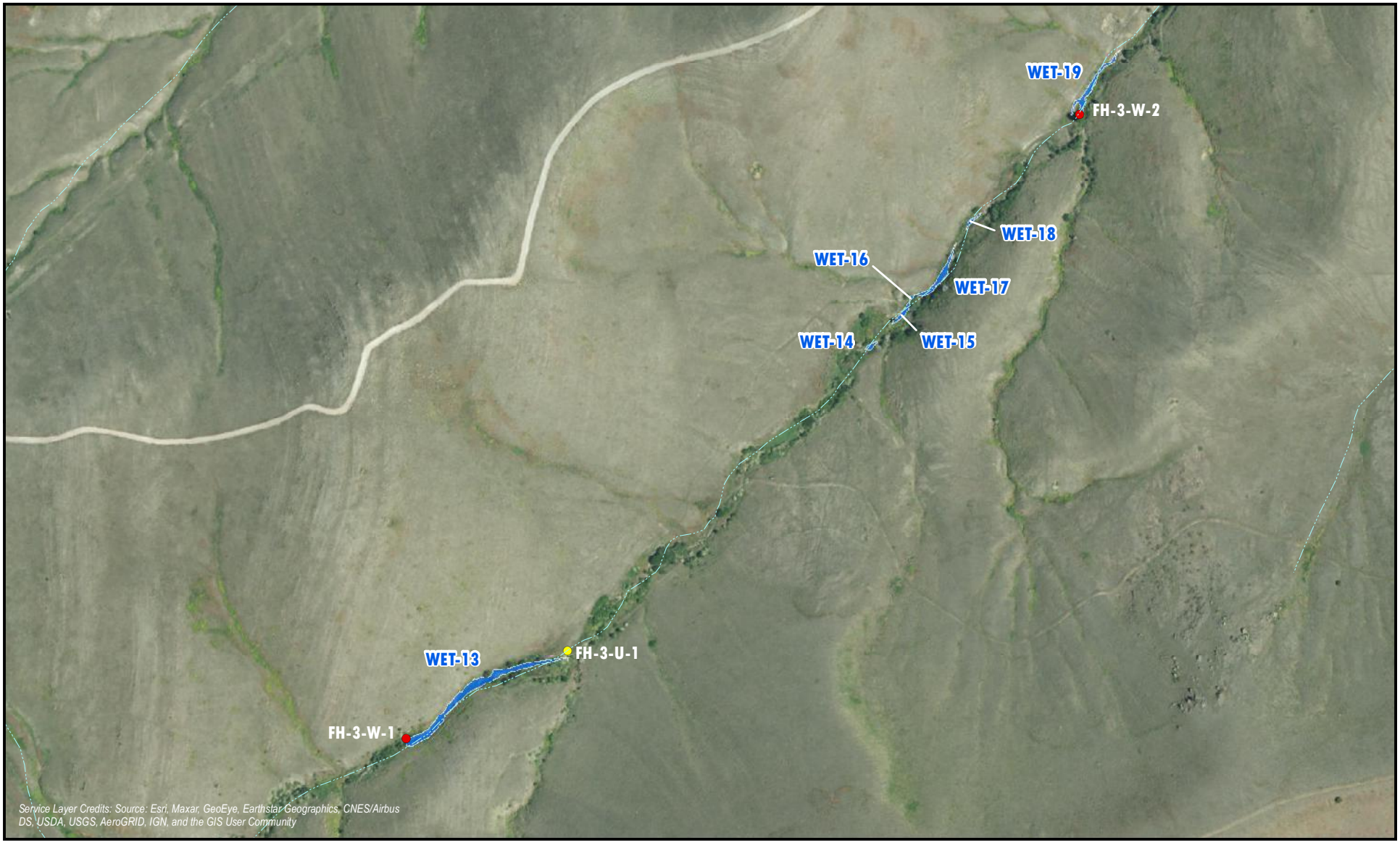

N

0 Feet 400

NewFields

Fort Harrison Training Area

2020 Mapped Wetlands

3 Parameter Data Point Wetland

3 Parameter Data Point Upland

Blue Cloud Training Area Drainage Mapped Wetlands 2020
Fort Harrison Training Area
MTARNG INRMP
Lewis and Clark County, Montana
FIGURE J-4

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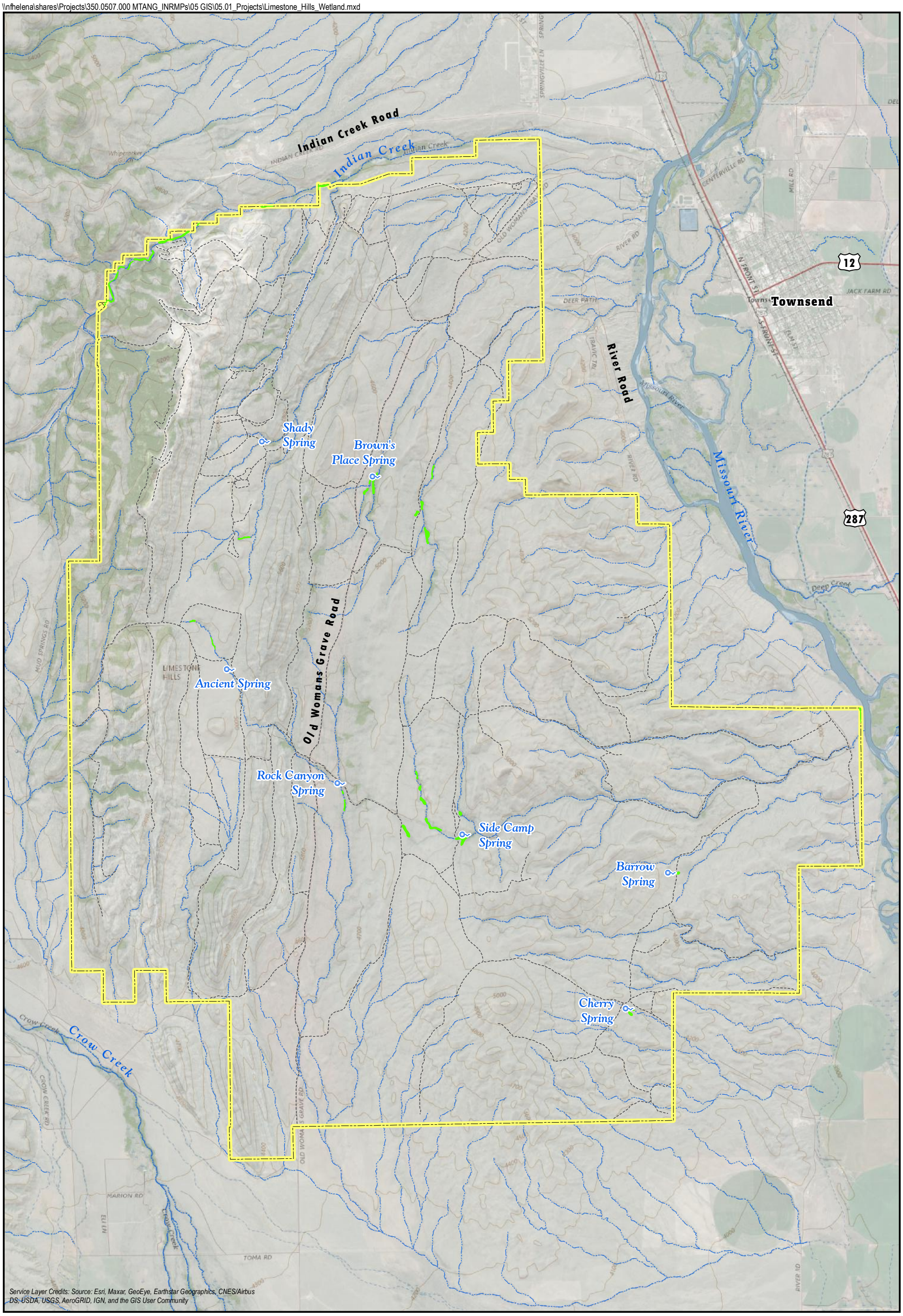


0 1 Miles

NewFields

Limestone Hills Training Area
Roads
Streams
Wetlands (MTARNG)
Spring

Surface Water, Springs, and Wetland Areas
Limestone Hills Training Area
MTARNG INRMP
Broadwater County, Montana
FIGURE J-5

Appendix K
Wildland Fire Management

APPENDIX K WILDLAND FIRE MANAGEMENT

As described in **Appendix A**, in accordance with DoD and U.S. Army Policy, the MTARNG Environmental Office manages natural resources at FHTA and LHTA using an ecosystem management approach. This approach is based upon establishing main goals and supporting objectives, implementing projects to reach objectives, and monitoring progress toward objectives. This appendix describes wildland fire management issues, goals, objectives, monitoring metrics, and projects collectively established by MTARNG natural resource managers for both FHTA and LHTA. As outlined below, based upon a series of main goals, MTARNG natural resources managers have developed objectives to guide management, metrics to meet those objectives and a schedule of monitoring activities for the next 5 years. Specific projects designed to achieve each objective and, in some instances, measure ecosystem conditions and progress toward objectives are described.

1.1 WILDLAND FIRE MANAGEMENT ISSUES

Military training, especially in the dry summer months, may lead to wildfires. Although the protocol is to extinguish and suppress all fires caused by training, some fires will escape containment and have unintended consequences. All wildfires halt training and restrict the ability of soldiers to train. Fire breaks are maintained at both FHTA and LHTA. Approximately 3.2 miles of maintained fire breaks are located west of the training ranges at the FHTA (**Figure K-1**). An approximate 5.2-mile fire break is maintained around the LHTA's high explosive impact area to contain fires caused by mortar firing activities (**Figure K-2**).

Army policy requires each installation to have a current Integrated Wildland Fire Management Plan (IWFMP). The MTARNG IWFMP will be reviewed annually with TCHQ to identify specific goals and issues. The CFMO-NRM and TCHQ will continue to develop and implement strategies to minimize the risk of fires that interrupt military training and/or that could negatively impact adjoining properties or cause structural damage. Fire prevention strategies will focus on fuel conditions, the need for new fire breaks, and fuel reduction by mowing.

Controlling the spread of cheatgrass **(Appendix N)** is important since it has been shown to increase fire frequency, creating a positive feedback loop that promotes non-native species at the expense of native plants and animals. Promoting sustainable grazing either by domestic animals or wildlife can also influence fire frequency and burn severity by removing herbaceous vegetation and reducing fuel loads. In forested areas, limbing and selective thinning are effective means of managing fuels.

1.2 Management Goals and Objectives

As outlined in **Appendix A** and **Appendix B**, respectively, wildland fire management goals and objectives and associated projects within the FHTA and LHTA include:

Goal: 5A. Promote vegetation structure and fuel conditions that are fire-resilient and that do not contribute to severe fire conditions.

Objective 5a: Review and update the current Integrated Wildland Fire Management Plan (IWFMP) to better reflect the goals of the INRMP.

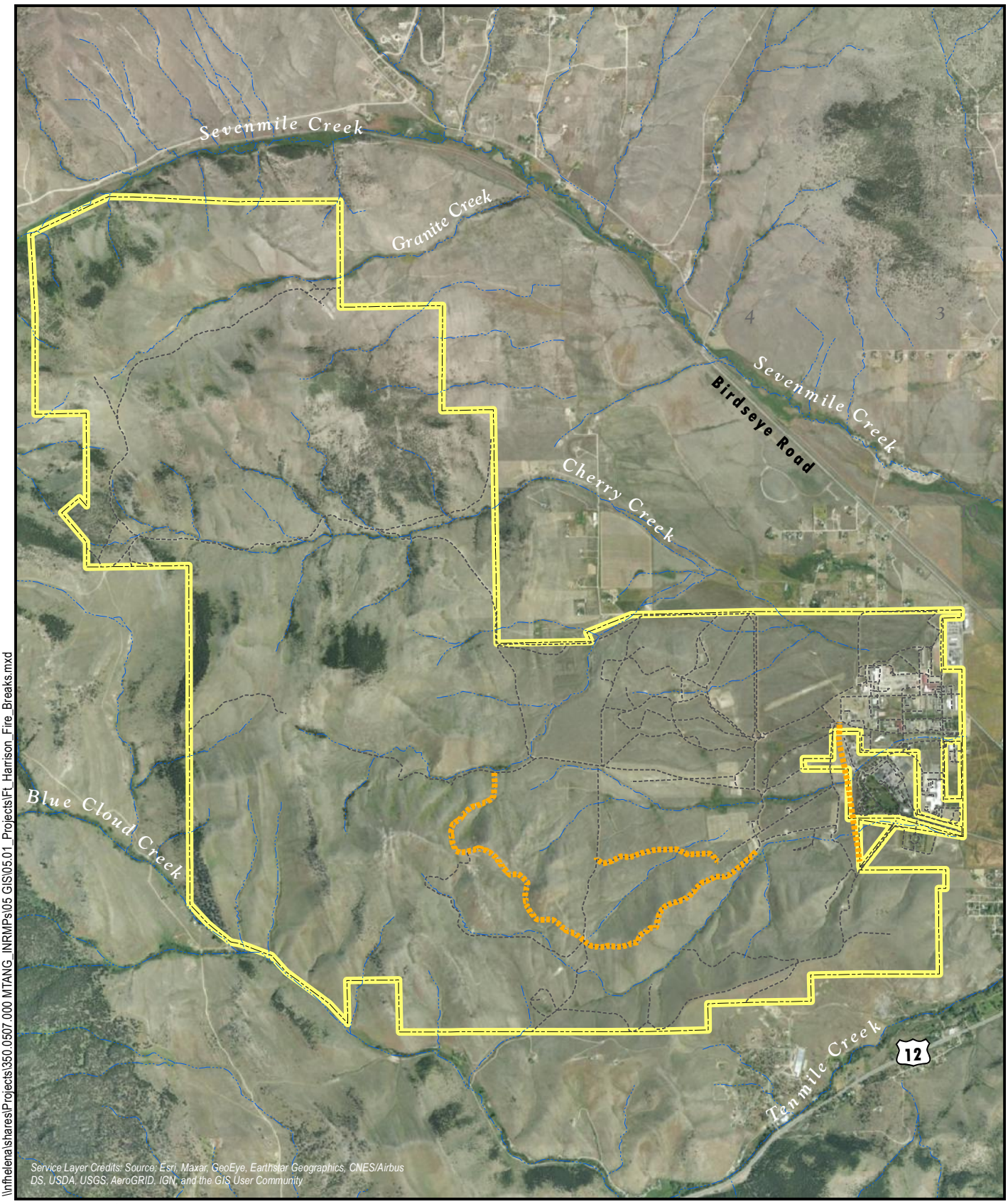
- **Monitoring Metric**: Integrated Wildland Fire Management Plan (IWFMP)
- **Project 1:** Finalize draft IWFMP.

Objective 5b: Develop and implement strategies to minimize the risk of fires that interrupt military training and/or that could negatively impact adjoining properties.

- **Monitoring Metric**: Collaboration with TCHQ and USFS.
- **Project** 1: Maintain existing fire breaks with total vegetation control while preventing erosion issues and manage cheatgrass and other fine fuels on active firing ranges.

Objective 5c (LHTA-Specific): Develop a fuels mitigation strategy.

- **Monitoring Metric:** Area (acres) of vegetation mitigated.
- **Project 1:** Increase fire break buffer through vegetation thinning and removal.



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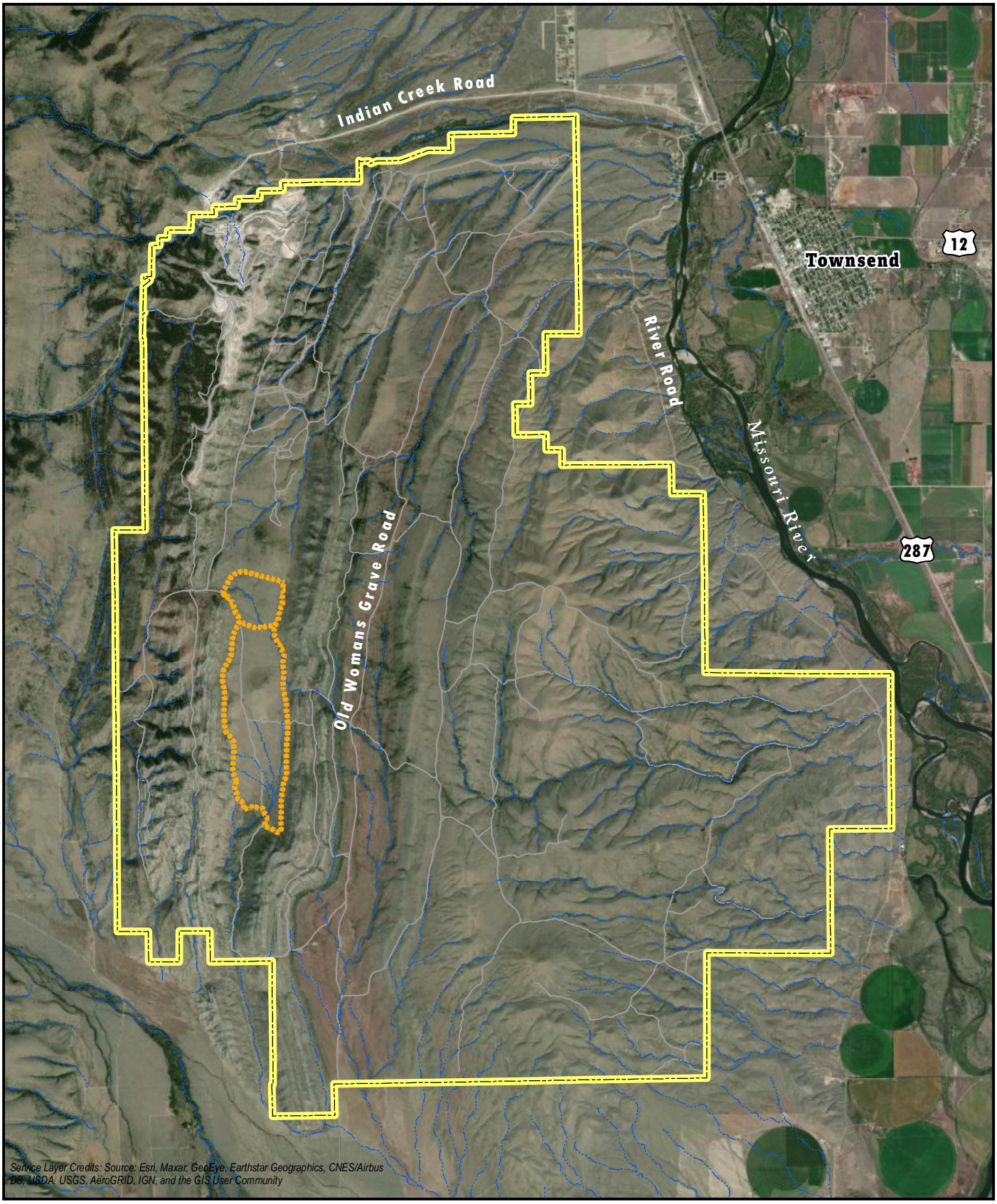
N

0 5,000
Feet

Fort Harrison Training Area
Fire Breaks
Roads
Streams

NewFields

Fire Breaks
Fort Harrison Training Area
MTARNG INRMP
Lewis and Clark County, Montana
FIGURE K-1



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N

0 1.5
Miles

Limestone Hills Training Area
Fire Breaks
Roads
Streams

NewFields

Fire Breaks
Limestone Hills Training Area
MTARNG INRMP
Broadwater County, Montana
FIGURE K-2

Appendix L
Special Status Species Management

APPENDIX L SPECIAL STATUS SPECIES MANAGEMENT

As described in **Appendix A**, in accordance with DoD and U.S. Army Policy, the MTARNG Environmental Office manages natural resources at FHTA and LHTA using an ecosystem management approach. This approach is based upon establishing main goals and supporting objectives, implementing projects to reach objectives, and monitoring progress toward objectives. This appendix describes special status species management issues, goals, objectives, monitoring metrics, and projects collectively established by MTARNG natural resources managers for both FHTA and LHTA. As outlined below, based upon a series of main goals, MTARNG natural resources managers have developed objectives to guide management, metrics to meet those objectives and a schedule of monitoring activities for the next 5 years. Specific projects designed to achieve each objective and, in some instances, measure ecosystem conditions and progress toward objectives are described.

1.1 SPECIAL STATUS SPECIES MANAGEMENT ISSUES

As described in **Appendix E**, "Species of Concern" are defined by the MTNHP as native plant and animal species that are "rare, threatened, and/or have declining populations and as a result are at risk or potentially at risk of extirpation in Montana" (MTNHP 2021). Designation as a "Species of Concern" is not a statutory or regulatory classification. Instead, these designations provide a basis for resource managers and decision-makers to make proactive decisions regarding species conservation and data collection priorities in order to maintain viable populations and avoid extirpation of species from the state.

Species designated with federal status under the U.S. Endangered Species Act (ESA) include federally listed, proposed, or candidate, endangered or threatened species identified by the USFWS, or as "sensitive" by the USFS or the BLM. Although no federally listed plant or animal species have been documented within the FHTA or LHTA, Grizzly bear and Canada lynx, both listed threatened under the ESA, may be present within both installations.

Seven Species of Concern have been recorded in FHTA: ferruginous hawk, golden eagle, bald eagle, long-billed curlew, Lewis' woodpecker, Clark's nutcracker, and bobolink. Of these 7 species, only the long-billed curlew is known to nest/reproduce in FHTA. One state plant Species of Concern, lesser rushy milkvetch, occurs in FHTA.

Bald and golden eagles have been recorded within the LHTA. No evidence of active nesting by either species has been observed or recorded in the LHTA. Preferred habitat is available for six birds listed as "sensitive" by the BLM and as "S3" State Species of Concern. The ferruginous hawk, golden eagle, peregrine falcon, burrowing owl, and loggerhead shrike have not been observed to nest in the LHTA but may occur as migrants. The Brewer's sparrow has been recorded in the LHTA during the nesting season and may nest there. Lesser rushy milkvetch and sword Townsend daisy are two state plant Species of Concern which occur in LHTA.

Preferred habitat for 7 mammals listed as either "sensitive" by the BLM and/or a Species of Concern is available in the LHTA. The Preble's shrew could occur in a variety of habitats, including sagebrush habitat throughout the area. There are comparatively few records of this species from Montana, and it is not known to occur in the vicinity of the LHTA. Long-eared myotis, fringed myotis, long-legged myotis, Townsend's big-eared bat, hoary bat, little brown myotis, and silver-haired bat could all roost in crevices or caves in limestone and sandstone formations; all but the fringed myotis have been identified along Indian Creek.

1.2 Management Goals and Objectives

As outlined in **Appendix A** and **Appendix B**, respectively, special status species management goals and objectives and associated projects within the FHTA and LHTA include:

Goal: 6A. Maintain accurate information about species of concern on FHTA and LHTA.

Objective 6a (FHTA-Specific): Identify State Species of Concern including areas of use and habitat on Fort Harrison and include State Species of Concern as part of the overall range management criteria.

- **Monitoring Metric:** Monitor percent cover of known populations of lesser rushy milkvetch to evaluate the effects of land use on the plant population.
- **Project 1:** Survey to identify plant species of concern to avoid future compliance issues.

Objective 6b (FHTA-Specific): Map and monitor areas where long-billed curlews have been observed; and work with MTFWP to sustainably manage long-billed curlew habitat on FHTA.

- **Monitoring Metric:** Area (acres) of long-billed curlew habitat; number of individual long-billed curlews observed.
- **Project 1**: Conduct Long-billed Curlew survey to locate and map populations and habitat.

Objective 6c (FHTA-Specific): Monitor likely habitat for burrowing owls and mountain plover.

- **Monitoring Metric:** Area (acres) of burrowing owls and mountain plover potential habitat; number of individual burrowing owls and mountain plover observed.
- **Project 1:** Conduct installation-wide survey to identify suitable habitat for burrowing owl and mountain plover that will inform potential future monitoring efforts for the species.

Objective 6d (LHTA-Specific): Identify places where road upgrades or relocations can mutually benefit troop travel and natural resources conservation.

- **Monitoring Metric:** Improved culverts and additional water bars for better water diversion and decreased soil erosion.
- **Project 1:** Project will identify and recommend areas benefitting from road and drainage upgrades to enhance troop travel and natural resources conservation.

Objective 6e (LHTA-Specific): Monitor percent cover of known populations of lesser rushy milkvetch and monitor populations of sword Townsend daisy when identified, to evaluate the effects of land use on the plant populations.

- **Monitoring Metric:** Area (acres) of lesser rushy milkvetch and sword Townsend daisy.
- **Project 1:** Survey to identify plant species of concern to avoid future compliance issues.

Objective 6f: Identify and monitor wildlife special status species and their areas of use and/or possible habitat on the LHTA.

- **Monitoring Metric:** Area (acres) of wildlife special status species habitat; number of individual wildlife special status species observed.
- **Project 1**: Project will survey FHTA and LHTA for Little brown myotis and other state species of concern.

Appendix M
Resource Protection Guidelines

APPENDIX M RESOURCE PROTECTION GUIDELINES

The projects identified in this INRMP are intended to improve the management and conservation of the natural resources on FHTA and LHTA. In addition to large-scale projects, however, appropriate care is necessary in the day-to-day operations and activities of the installations to ensure excessive damage is not inflicted through misuse or carelessness. The following sections provide guidance for the major activity categories occurring on the installations to ensure that the MTARNG abides by all relevant laws and regulations, the intent of this INRMP, and good stewardship in its use and management of the training sites' resources.

1.1 TRAINING OPERATIONS

FHTA and LHTA exist for the purpose of training National Guardsmen, and that training does have environmental impacts. The following guidelines should be incorporated into all training activities.

1.1.1 Bivouacking

Bivouacking is an essential component of military training and established bivouac sites are available for use. Established bivouac sites are located away from environmentally sensitive areas in open rangeland with adjacent road access. Bivouac setup outside of established locations is prohibited without prior approval from CFMO-ENV. Adherence to the following guidelines will reduce the potential for significant environmental damage.

- All vehicular traffic is prohibited outside established bivouac boundaries.
- Bivouac sites should be rotated to allow sites to recover from disturbance.
- Intentional vegetation removal on bivouac sites is prohibited at all times.
- Sites will be cleaned, and garbage removed upon termination of training. The USFWS recommends implementation of the following (or similar) conservation measures to manage potential bear attractants and reduce the risk of human-grizzly bear conflicts:
    - Promptly clean up any spills, litter, garbage, debris, etc.
    - Store all food, food related items, petroleum products, antifreeze, garbage, personal hygiene items, and other attractants inside a closed, hard-sided vehicle or commercially manufactured bear resistant container.
    - Remove garbage from the project site daily and dispose of it in accordance with all applicable regulations.
    - Notify the Environmental Program Manager of any animal carcasses found in the area.

- Notify the Environmental Program Manager of any bears observed in the vicinity of the area.

1.1.2 Roads and Vehicles

Military vehicles and heavy equipment are a standard component of many training exercises. The following guidelines will help to minimize damage to soil and vegetation.

Track vehicles are restricted to trails and hardened crossings when authorized to move between training areas.

- When required for training or fire-fighting operations, off-road heavy vehicles will be allowed on existing roads and firebreaks only.
- No new entrances or roads will be made into any training area or range. Exceptions may be made if suitable training area access cannot be found but must be approved by TCHQ and CFMO-ENV.
- Vehicle use on steep slopes, in stream bottoms, and during wet conditions will be avoided.
- Vehicles brought to the installations from off-site should be thoroughly washed upon arrival in the Cantonment Area before entering the training site to minimize the spread of invasive species.

1.1.3 Plants and Animals

- Personnel will comply with MTFWP and USFWS regulations.
- Disturbance of nests or nesting wildlife is prohibited at all times.
- Interaction with wildlife should be avoided due to health and safety concerns. Harassment of wildlife is illegal.
- Report dead, diseased, or injured wildlife to CFMO-ENV.
- Do not disturb wildlife management equipment or facilities.
- Snags will be left undisturbed except when they pose a threat to safety. Snags are standing dead trees that provide essential habitat for wildlife species, including food and cavities for nesting. Many birds that live in snags eat insects, which help prevent insect and disease problems in other living trees.
- Understory and native shrub vegetation will be left intact to provide nesting habitat and cover for birds and small mammals.

1.1.4 Streams and Wetlands

- Special Management Zones (SMZs) shall be identified around all water bodies. Perennial and intermittent streams will have an SMZ extending 100 feet to either side of the stream for a total width of 200 feet. There shall be an SMZ 100 feet wide surrounding all wetland areas.

- Avoid operating vehicles in SMZs.
- Road crossings of riparian zones and streams will only be conducted at designated points.
- Spills will be immediately contained and reported according to the installations' SPCC Plan.
- Foot traffic is allowed in wetlands but must be kept to a minimum.
- Vehicular traffic is not allowed in wetlands.
- There will be no dredging, filling, or dumping of material within wetlands areas.

1.1.5 Wildfire Management

- Open burning is not allowed without a permit.
- Avoid spark-producing activities in dry weather.
- The use of tracer rounds will be suspended during periods of very high fire danger.
- Accidental fires in training areas will be combated by the unit occupying the area, or the nearest unit to an unassigned area, immediately upon discovery.
- The discoverer of a fire will immediately notify Range Control and the immediate superior officer. Range Control will immediately notify the CFMO-ENV.
- Each succeeding commander in the chain of command will act as appropriate to provide forces to extinguish or control fires pending arrival of firefighting specialists.
- Prescribed fires may be initiated by trained MTARNG personnel. If the military mission requires an area of the installation to be burned, this information will be provided to the NRM within two weeks of the desired burn window in order for the CFMO-ENV to properly evaluate the site for potential UXO, cultural resources, and environmentally sensitive species.

1.2 Land Rehabilitation and Maintenance (LRAM) and Construction

Activities which disturb the vegetation and soil can be particularly damaging to natural resources if improper methods lead to erosion and sedimentation problems. Even actions intended to improve conditions, such as LRAM projects, can cause damage if not handled appropriately. LRAM and Construction are the two areas which routinely involve earth moving activities and are both subject to the following guidelines:

- Schedule and perform LRAM projects as soon as possible following disturbance, allowing sufficient time for soils to recover. Seed during optimum seeding periods for individual species.
- Include all necessary rehabilitation work, Best Management Practices (BMPs), and associated costs in project proposals and construction contracts and specifications.

- Only native seed mix and plant species approved by the NRM will be used for reclamation work, wherever feasible.
- Areas that fail to establish vegetative cover will be reseeded as soon as such areas are identified and weather permits.
- Present all construction or other ground-disturbing project plans to the CFMO-ENV for review as far in advance as possible in order for the CFMO-ENV to properly evaluate the site for potential UXO, cultural resources, and environmentally sensitive species. Special permits are required when disturbing federal jurisdictional wetlands or perennial or intermittent streams and will take time to obtain.

1.2.1 Construction Management Measures

- If the area to be disturbed is one acre or greater, a Montana Construction General Permit is required. The Notice of Intent must be submitted to the State prior to any disturbance of the site. Land disturbing activities shall not start until written approval is obtained from the MDEQ.
- Acquisition and administration of the Stormwater Construction General Permit is the responsibility of the contractor or unit(s) conducting the ground-disturbing activities.
- Implementation of MDEQ BMP's is the responsibility of the contractor or unit(s) conducting ground disturbance projects within the training areas.

All BMP's shall comply with the MDEQ Storm Water Management During Construction Field Guide for Best Management Practices, as included within this appendix.

1.2.2 Vegetative Controls

- Vegetation ground cover shall not be destroyed, removed, or disturbed more than 15 calendar days prior to grading.
- Permanent soil stabilization with perennial native vegetation shall be applied as soon as practicable after final grading.

1.3 Facilities Management

- Maintenance of an attractive, tidy facility is important; however, even activities in a heavily modified cantonment area can impact the environment. Mowing, landscaping, and pesticide use in the managed landscape should be carried out with consideration for this impact.
- Avoid mowing open grasslands from April to July for the protection of nesting birds.
- The use of native species is highly recommended for landscaping and replanting purposes. Native plants are better adapted to local conditions and generally require less fertilizer and herbicide/pesticide input. Use of natives also limits the spread of invasive, exotic species.

- Consider seasonal variables (e.g., timing and quantity of average rainfall, appropriate planting season) in planning and scheduling projects.
- Consider erosion factors when choosing sites for training, construction, or management activities.
- Always include appropriate surface restoration, fertilization, and seeding (or other revegetation practice) as the final stage of any project which disturbs the soil or vegetation.
- Apply MDEQ BMPs to all MTARNG projects.
- Use biological control methods wherever feasible and economical. Only apply pesticides when effective biological or mechanical control methods cannot be found or are prohibitively expensive. See the MTARNG Integrated Pest Management Plan (IPMP) for more information.
- Pesticides and herbicides can only be applied by certified applicators and must be reported to the CFMO-ENV.
- Herbicides will be utilized to control weedy vegetation in the most time and cost-effective manner.
- A National Pollutant Discharge Elimination System (NPDES) permit may be required if pesticides (including herbicides) are applied in or near WOTUS or wetlands. NPDES permits are required for any point source discharge to WOTUS from the application of (1) biological pesticides and (2) chemical pesticides that leave a residue. The USEPA identified four pesticide use patterns that generally include the full range of pesticide application activities that meet this condition, including mosquitoes and other flying insect pests, weeds and algae, animal pests, and forest canopy pests.

1.4 Road Construction and Maintenance

Roads can be a significant source of sediment, as well as an on-going drain on funds, if poorly designed. Proper placement, design, and construction can alleviate many of the problems associated with unpaved roads, even when utilized by heavy wheeled and track vehicles.

1.4.1 Access Road Location

Access roads shall be designed and located to prevent sediment from entering the WOTUS. Methods to prevent sedimentation to streams include, but are not limited to, the following:

- Minimize the amount of road to be constructed using existing roads where practical.
- Locate roads as far from streams as possible and practical.
- Locate roads as far as practical from SMZs.
- Avoid stream crossings.

- Avoid sensitive areas that could interfere with drainage and cause soil compaction or erosion.
- Removal of poorly designed or located roads contributing to soil erosion problems.

1.4.2 Access Road Construction

Access roads shall be constructed to prevent sediment from entering the WOTUS. Methods to prevent sedimentation include, but are not limited to, the following:

- To the extent possible, construct and revegetate new roads several weeks or longer in advance of use.
- Avoid road construction during periods of wet weather.
- Construct roads on grades of 2 to 12 percent where possible. Runoff from roads should not directly discharge into a stream channel. Runoff from stream crossings should be minimized. Control runoff from roads using techniques such as varying the slope of the road, crowning, out-sloping, wing ditches, sediment traps, sediment control structures, broad-based dips, rolling dips, water bars and cross drain culverts and other measures recommended by the USFS. Steeper grades are acceptable for short distances provided additional attention is given to water control/drainage structures.
- When necessary, trees and shrubs cleared for road corridors should be pushed to the downhill side of the road to assist in trapping sediment.
- Avoid excessive soil disturbance during road construction.
- Revegetate exposed soil in potential problem areas (*i.e.* culverts, stream crossing, fill areas).

1.5 Water Resources

The water resources on FHTA and LHTA include several different ecotypes: intermittent streams, the riparian areas surrounding the streams, and wetlands. While the characteristics of these areas can vary widely, they share the key factor of water and a significant role in the water cycle as well as being important habitat for many creatures. Protection of water resources is important, and they are habitats that can be easily damaged by accident or careless action. One of the simplest BMPs for protection of water resources is the establishment and use of SMZs.

SMZs are buffer strips adjacent to streams or other bodies of water within which activities are limited in order to protect water quality. They shall be designated and managed to buffer water temperatures, prevent sediment and other pollutants from entering WOTUS, and provide travel corridors and habitat for wildlife. SMZs should be established along any stream or water body where the potential exists for the movement of sediment or pollutants into the stream or water body. Methods to prevent sedimentation to streams include, but are not limited to, the following:

- Establish SMZs along any stream or water body where the potential exists for the movement of sediment into the stream or water body.

- In association with wetlands, establish SMZs at least 100 feet in width surrounding the wetland area.
- There shall be no digging for training purposes or construction activities within an SMZ without prior review and permission from the CFMO-NRM.
- Certain activities may require a state or federal permit prior to initiation of activity.
- Avoid operating any vehicles or other equipment within an SMZ.

1.5.1 Streams and Riparian Areas

In addition to protection of SMZs, other actions and/or limitations are essential to maintain high water quality and habitat quality.

- Training is allowed in riparian areas outside of the SMZ in accordance with guidelines. Use extra caution to avoid causing sedimentation or other contamination of the associated waterway.
- Spills will be immediately contained and reported according to the installation spill response requirement. Dumping of any substance on the training site is not allowed.
- Minimize stream crossings. If regular crossing of a creek or seasonal conveyance is necessary, hardened crossings provide more protection. Contact the CFMO-ENV prior to making any alterations to any stream crossing.
- Monitor for erosion problems along stream banks. Report any erosion, exposed soil, or stream bank collapse to the CFMO-ENV as soon as possible.
- Utilize native species for plantings to stabilize banks. Vegetative structures are preferable to riprap or concrete structures in most situations.
- Use MDEQ approved erosion control BMPs, as described within the document attached to this appendix, during all LRAM projects, road construction and relocation, and maintenance.
- Any activity that will impact a stream or wetland must be presented to the CFMO-ENV at least one year in advance of the planned action date. Special permits are required when disturbing federal jurisdictional wetlands or perennial or intermittent streams, and these permits take time to obtain.

1.5.2 Wetlands

- Foot traffic is allowed in wetlands when necessary but should be avoided.
- Vehicular traffic is not allowed in wetlands.
- Any non-foot traffic, training, or land management activity to be conducted within a wetland should be coordinated with the CFMO-ENV.

- There will be no dredging, filling, or dumping of any material within wetland areas. Any exceptions will have to be approved by the CFMO-ENV and required state and/or federal permits obtained.
- Only herbicides and pesticides on the approved MTARNG State Pesticide Use List (SPUL) and labeled for wetland/surface water use will be applied within wetland boundaries. Within 50 feet of any wetland boundary, foliar application of herbicides will be limited to those products labeled for application to water because of the risk of drift. All other herbicide applications made within the SMZ area will be made via stem treatments (cut stump, basal bark, or stem injection).
- A NPDES permit may be required if pesticides (including herbicides) are applied in or near WOTUS.
- Any ground disturbing activities near wetland areas that might alter the hydrology of the system must be reviewed by the CFMO-ENV before any work takes place.
- Present all construction plans to the CFMO-ENV for review at least one year in advance of planned activities. Special permits are required when disturbing federal jurisdictional wetlands or perennial or intermittent streams and will take time to obtain.

1.6 Pest Management

Pest management is an important part of maintaining facilities and protecting the health and safety of personnel, as well as the integrity of natural ecosystems. MTARNG pest management activities are regulated by federal and state law and by DoD regulation. These restrictions and the management goals and guidelines for pest control on MTARNG facilities are presented in the statewide IPMP.

- All applications of herbicide or pesticide on the installations must be by a State or DOD certified applicator.
- All applications of herbicide or pesticide must be reported to the MTARNG CFMO-ENV.
- Use non-chemical control methods wherever feasible and economical. Only apply pesticides when effective biological or mechanical control methods cannot be found or are prohibitively expensive.
- Pesticides and herbicides should be applied at the time when they will be most effective against the pest in order to achieve maximum control for minimum application. See the MTARNG IPMP for more information.
- A NPDES permit may be required if pesticides (including herbicides) are applied in or near WOTUS.
- Invasive plant species control will follow the methods and guidelines presented in the Invasive Species Management Plans.
- Only native species are recommended in landscaping and in reclamation work.

Contractors who apply pesticides on FHTA and LHTA must:

- Show proof of liability insurance.
- Have State commercial pesticide certification and licensing in the category or categories of work to be performed.
- Use only USEPA registered pesticides or herbicides that are on the MTARNG SPUL (see the IPMP).
- Furnish MTARNG personnel with legible copies of specimen labels and the Safety Data Sheets of all pesticides proposed for use.
- Furnish MTARNG personnel with the information required for pest management record keeping (see the IPMP).
- Pesticides must be mixed, stored, and disposed of in accordance with Federal, State, and local regulations and with procedures established by the MTARNG.

1.7 Endangered Species Monitoring and Protection

Currently, no federally listed proposed, candidate endangered or threatened species have been documented on the FHTA or LHTA; however, Grizzly bear and Canada lynx, both listed threatened under the ESA, may be present within both installations. Guidance for the protection of any listed species discovered will be developed as needed.

Appendix N
Invasive Species Management

APPENDIX N INVASIVE SPECIES MANAGEMENT

As described in **Appendix A**, in accordance with DoD and U.S. Army Policy, the MTARNG Environmental Office manages natural resources at FHTA and LHTA using an ecosystem management approach. This approach is based upon establishing main goals and supporting objectives, implementing projects to reach objectives, and monitoring progress toward objectives. This appendix describes invasive species management issues, goals, objectives, monitoring metrics, and projects collectively established by MTARNG natural resources managers for both FHTA and LHTA. As outlined below, based upon a series of main goals, MTARNG NRMs have developed objectives to guide management, metrics to meet those objectives and a schedule of monitoring activities for the next 5 years. Specific projects designed to achieve each objective and, in some instances, measure ecosystem conditions and progress toward objectives are described.

1.1 INVASIVE SPECIES MANAGEMENT ISSUES

Leafy spurge, spotted knapweed, houndstongue, and Dalmatian toadflax are sprayed annually in summer and fall months. Infestations of these noxious weeds occur along hill slopes and roadsides as well as moderate infestations in many drainages. Increasing concern about the negative effects of the repeated use of picloram (i.e., Tordon®) and other chemicals on the native forb and shrub community has led to an investigation into alternative invasive weed management practices.

MTARNG will increase the use of GPS to better map weed infestations on FHTA and LHTA. Increased mapping of weed infestations will improve the Early Detection and Rapid Response (EDRR) program. Next to prevention, the most time and cost-effective way to manage the potential negative impacts of new invasive plants is through EDRR efforts. EDRR efforts include detecting noxious weed infestations when they first establish in a given area while their populations are still localized and small, and then rapidly begin the control of these species. These efforts greatly increase the likelihood that new invasions will be addressed successfully, and new weeds will be prevented from becoming established and widespread in a given area. The costs associated with controlling weeds before they are well-established are also dramatically less than those of long-term invasive species management for noxious weeds that have already become widespread.

Implementation of an EDRR program on FHTA and LHTA will require a system to detect new invasive species. This could be done through regular surveys and by soliciting reports of the species from other individuals working on FHTA and LHTA. Whenever a previously unknown invasive species population is detected, a rapid deployment of a control team to the reported location would occur. A critical part of any EDRR program is to have the involvement of several partners. Potential partners include adjacent private landowners, county noxious weed coordinators, the BLM, and the USFS.

Beginning in 1999, insects were released as biological control (biocontrol) agents in an isolated infestation of Dalmatian toadflax. Since 1999, multiple biocontrol releases have occurred at both the FHTA and LHTA for multiple noxious weeds (**Tables N-1** and **N-2**, respectively). The use of biocontrol agents is preferred for controlling isolated weed populations or noxious weed populations which are difficult to access by

ATV or backpack sprayer. The ARNG and the DoD have a mandate for all states to decrease the use of pesticides.

Table N-1. Biological Control of Noxious Weeds Using Insects on FHTA

Year	Number of Releases	Target Plant	Insect[1]	Number of Insects Released
2012	3	Leafy spurge	APLA	12,000
2012	2	Dalmatian toadflax	MEJA	800
2012	1	Spotted knapweed	CYAC	300
2019	1	Dalmatian toadflax	MEJA	750
2020	1	Leafy spurge	APNI/LA	1000

[1] *Cyphocleonus achates* = CYAC, *Mecinus janthiniformis* = MEJA, *Apthona lacertosa* = APLA, *Apthona nigricustis/lacertosa* = APNI/LA
Source: J. Stone, MTARNG Natural Resource Manager, personal communication, 2 February 2021

Table N-2. Biological Control of Noxious Weeds Using Insects on LHTA

Year	Number of Releases	Target Plant	Insect[1]	Number of Insects Released
2003	7	Unknown	Unknown	Unknown
2012	1	Spotted knapweed	CYAC	100
2012	1	Spotted knapweed	CYAC	200
2012	2	Dalmatian toadflax	MEJA	400
2017	2	Spotted knapweed	CYAC	200
2020	12	Spotted knapweed	LAMI/OB	1200
2020	10	Spotted knapweed	CYAC	1050

[1] *Cyphocleonus achates* = CYAC, *Mecinus janthiniformis* = MEJA, *Apthona lacertosa* = APLA, *Apthona nigricustis/lacertosa* = APNI/LA, *Larinus minutus/obtusus* = LAMI/OB
Source: J. Stone, MTARNG Natural Resource Manager, personal communication, 2 February 2021

Figure N-1 shows cheatgrass management areas, leafy spurge biocontrol release sites, and noxious weeds sprayed in 2020 on FHTA. **Figure N-2** shows cheatgrass management areas, spotted knapweed biocontrol release sites, and noxious weeds sprayed in 2020 on LHTA.

1.2 MANAGEMENT GOALS AND OBJECTIVES

As outlined in **Appendix A** and **Appendix B**, respectively, invasive species management goals and objectives and associated projects within the FHTA and LHTA include:

Goal: 7A. Control and/or eradicate invasive species on the installation.

Objective 7a: Analyze known locations of weeds and schedule more surveys to improve mapping of weed populations using GIS.

- **Monitoring Metric:** Area (acres) surveyed per year.
- **Project 1:** Analyze vegetation monitoring data to identify potential locations of weed populations.

Objective 7b: Evaluate current weed management strategies to determine success rate.

- **Monitoring Metric**: Change in percent cover of noxious weeds in a defined area between years.
- **Project 1**: Project will evaluate previously sprayed noxious weed populations to evaluate effectiveness of weed management strategies.

Objective 7c: Eradicate noxious weeds (2 acres per year at each installation)

- **Monitoring Metric**: Percent cover or stems/0.01 acre
- **Project 1**: Project to manage noxious weeds to increase resilience of training range vegetation and maintain training continuity and compliance with State of MT and Federal mandates.

Objective 7d: Increase successful, sustainable control and management of cheatgrass on FHTA and LHTA using herbicides and reseeding.

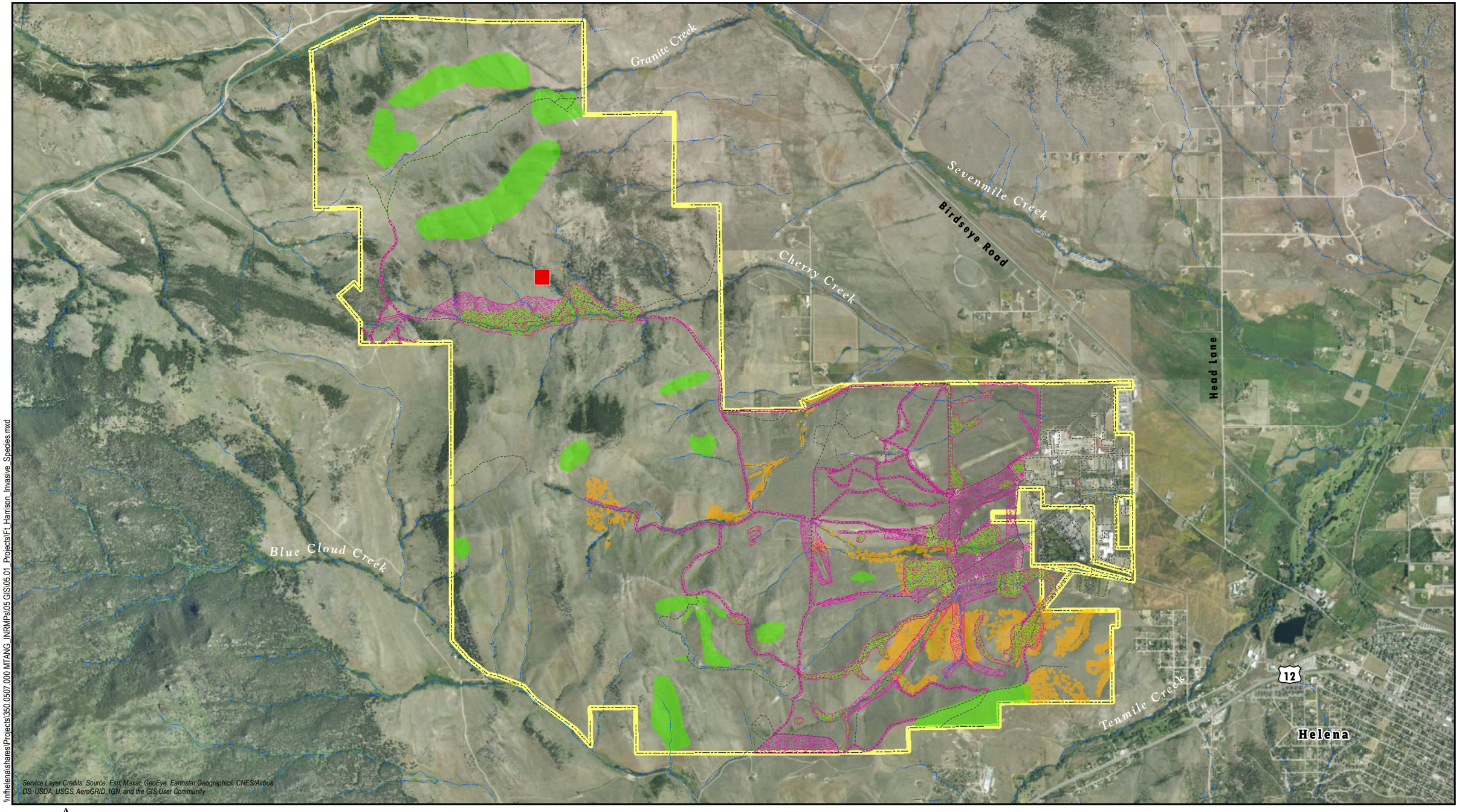
- **Monitoring Metric**: Area (acres) of cheatgrass in a defined area
- **Project 1**: Project will map, treat, and rehabilitate cheatgrass infestation areas to enhance range resilience, mitigate fire danger, and ensure mission continuity.

Objective 7e: Decrease the use of herbicides on FHTA and LHTA by introducing biological control agents to control noxious weeds.

- **Monitoring Metric**: Number of biocontrol introductions; and area (acres) of noxious weeds
- **Project 1**: Project will identify and map suitable sites for biocontrol release.

Objective 7f: Increase outreach to visiting units and soldiers to increase awareness of noxious weeds on FHTA and LHTA.

- **Monitoring Metric:** Number of new infestations reported by Range users.
- **Project 1:** Project will create environmental awareness pamphlet for soldier distribution.



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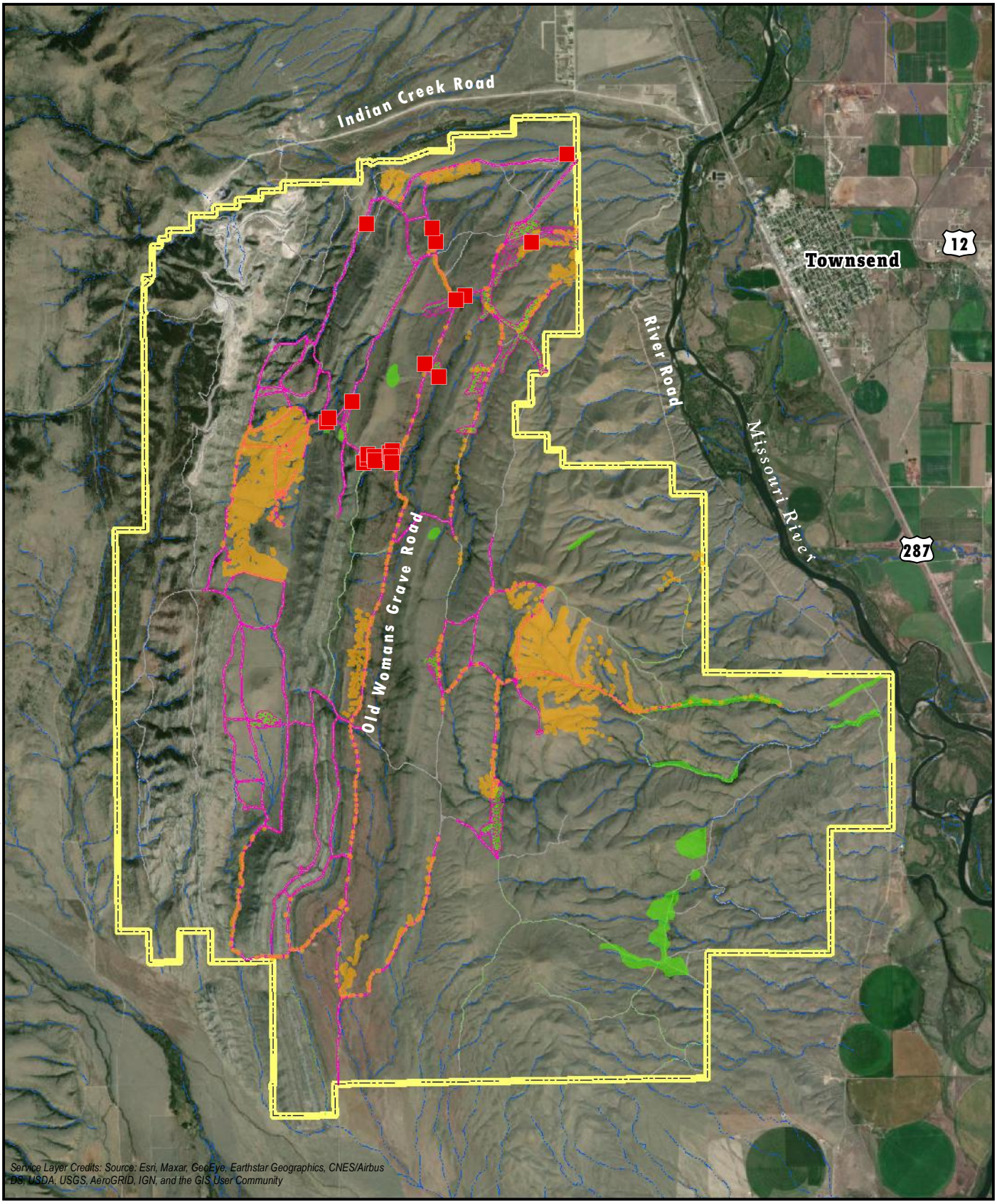
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 Feet 3,000

NewFields

- Fort Harrison Training Area
- Roads
- Streams
- Cheatgrass Management Area - Mapped Summer 2020
- Cheatgrass Management Area - Sprayed Fall 2020
- Leafy Spurge Biocontrol Release Site
- Noxious Weeds Sprayed 2020

Invasive Species Management
Fort Harrison Training Area
MTARNG INRMP
Lewis and Clark County, Montana
FIGURE N-1



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Miles

- Limestone Hills Training Area
- Roads
- Streams
- Cheatgrass Management Area - Mapped Summer 2020
- Cheatgrass Management Area - Sprayed Fall 2020
- Spotted Knapweed Biocontrol Release Site
- Noxious Weeds Sprayed 2020

NewFields

Invasive Species Management
Limestone Hills Training Area
MTARNG INRMP
Broadwater County, Montana
FIGURE N-2

Appendix O
Agricultural / Grazing Management

APPENDIX O AGRICULTURAL/GRAZING MANAGEMENT

As described in **Appendix A**, in accordance with DoD and U.S. Army Policy, the MTARNG Environmental Office manages natural resources at FHTA and LHTA using an ecosystem management approach. This approach is based upon establishing main goals and supporting objectives, implementing projects to reach objectives, and monitoring progress toward objectives. This appendix describes grazing management issues, goals, objectives, monitoring metrics, and projects collectively established by MTARNG natural resource managers for both FHTA and LHTA. As outlined below, based upon a series of main goals, MTARNG natural resource managers have developed objectives to guide management, metrics to meet those objectives and a schedule of monitoring activities for the next 5 years. Specific projects designed to achieve each objective and, in some instances, measure ecosystem conditions and progress toward objectives are described.

1.1 GRAZING MANAGEMENT ISSUES

Cattle grazing occurs on a total of approximately 3,304 acres at FHTA (**Figure O-1**). The grazing areas consist of the former Burnham - RV Ranch lands which were acquired by the MTDMA in 2017. The northern portion of the Burnham – RV Ranch lands are in an area of the FHTA referred to as Cherry Creek. Overlapping with the northern portion of the Burnham – RV Ranch lands is the Granite Creek grazing allotment (BLM-administered) (**Figure O-1**). The Cherry Creek area and the area to the south are the two grazing areas administered by the CFMO-ENV. Each of these grazing areas extend to the west beyond the FHTA boundary onto Burnham property (Prickly Pear Simmental Ranch) since there is no fence on the western boundary of the FHTA.

As outlined in the August 22, 2018 signed Implementation Agreement, the BLM manages all grazing allotments within the LHTA. BLM continues to manage and administer land use permits, authorizations, and leases regarding the Indian Creek Mine and grazing for the public land included within the LHTA. Additionally, the BLM conducts range health assessments every five years and makes these assessments available to CFMO-ENV. **Figure O-2** shows the four BLM-administered grazing allotments within the LHTA.

Cattle grazing on FHTA and LHTA has direct and indirect impacts on wildlife. Direct impacts include the removal and/or trampling of vegetation that would otherwise be used for food and cover, and livestock-wildlife interactions that may result in wildlife displacement or disease transmission. In human-controlled grazing systems, the detrimental or beneficial effects of grazing are largely determined by how and where grazing is used. The negative impacts of livestock grazing are often the result of misuse. The benefits of domestic livestock grazing rarely come by accident, and are likely the result of careful program design, regular monitoring, and flexibility in modifying treatments. The ecological impacts of grazing depend on the type of ecosystem, plant community, and conditions of a particular site.

1.2 Management Goals and Objectives

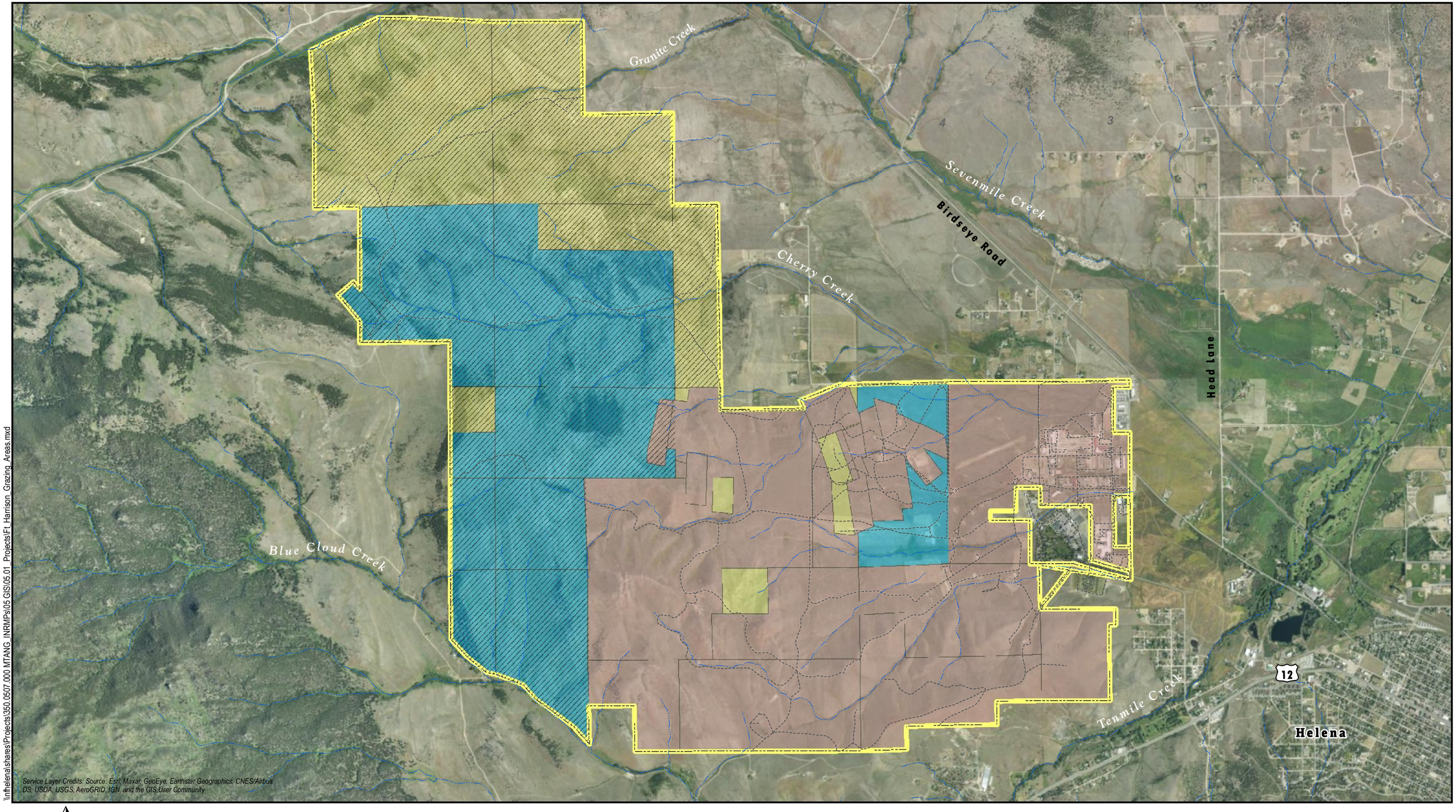
As outlined in **Appendix A** and **Appendix B**, respectively, grazing management goals and objectives and associated projects within the LHTA include:

Goal: 8A. Assess and monitor the health, vigor, diversity, and trend of native vegetation types on LHTA.

Objective 8a (LHTA-Specific): Maintain an active role in grazing management to include annual spring meetings to discuss grazing rotations, assistance in range improvement projects, and scheduling around major military training events.

- **Monitoring Metric:** Number of grazing meetings and collaborations; number of range improvement projects.

- **Project 1:** Maintain an active participatory role in annual spring grazer meetings as organized by the BLM to include providing suggestions on management activities related to wetland, riparian, and range health.



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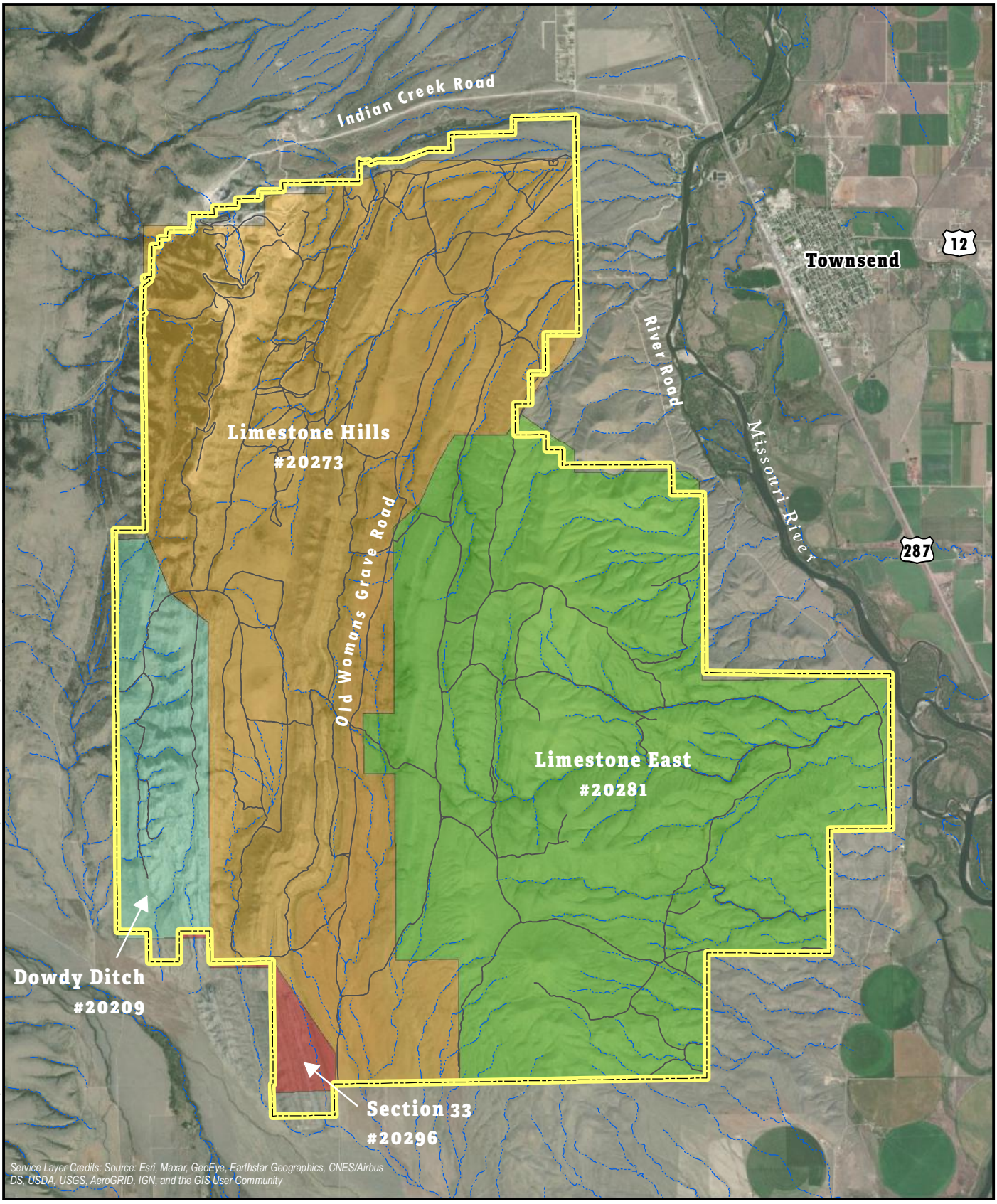
0 3,000
Feet

NewFields

State of Montana
USA-BLM
US Department of the Army
Fort Harrison Training Area
Roads
Streams
Grazing Allotments

Grazing Areas
Fort Harrison Training Area
MTARNG INRMP
Lewis and Clark County, Montana
FIGURE O-1



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N

0 1.5
Miles

NewFields

Grazing Allotment Name and Numbers

- Limestone Hills Training Area
- Roads
- Streams
- Dowdy Ditch
- Limestone East
- Limestone Hills
- Section 33

Grazing Areas
Limestone Hills Training Area
MTARNG INRMP
Broadwater County, Montana
FIGURE 0-2

Appendix P
Annual Review Summaries, and 5 Year Reviews for Operation and Effect

APPENDIX P ANNUAL REVIEW SUMMARIES AND 5 YEAR REVIEWS FOR OPERATION AND EFFECT

1.1 ANNUAL REVIEW AND COORDINATION REQUIREMENTS

Per DoD policy, the MTARNG will review the INRMP annually in cooperation with the USFWS and MTFWP. The MTARNG will converse with the agencies annually to determine if changes or issues indicate the need for a meeting. If warranted, a meeting will be held at FHTA with the USFWS and MTFWP and documented by meeting minutes. If a meeting is not necessary, the conversation will be documented via e-mail correspondence or record of conversation. A memorandum for record detailing the annual review will be prepared, which shall include the names and offices of all attendees, responses to the Annual Review Template (**Table P-1**), and whether an Update or Revision is necessary. An updated INRMP Implementation Table does not necessitate an official INRMP Update. Annual review documents shall be kept on file to document compliance with the Sikes Act. NRM will forward a copy of the annual review memorandum for record and updated Project Implementation Table to ARNG G9 at the end of each fiscal year. According to the Army National Guard (ARNG) Installations and Environment (I&E) Directorate Policy for INRMPs, dated 20 March 2019, annual reviews will address the considerations in the Annual Review Template (**Table P-1**), and will include an update to the Project Implementation Table (**Appendix B**).

Table P-1. INRMP Annual Review Template

Attendees			
Name	**Agency**	**Phone**	**Email**
Name	*State ARNG*	*Phone*	*Email address*
Name	*USFWS*	*Phone*	*Email address*
Name	*ITAM*	*Phone*	*Email address*
Invited - Not in Attendance			
Name	**Agency**	**Phone**	**Email**
Name	*MTFWP*	*Phone*	*Email address*
INRMP Project Implementation			
(1) Are INRMP projects, including follow-up inventorying and monitoring work, properly identified, developed, and submitted for funding?			
(2) Has project funding been received, obligated, and expended?			

(3) What projects have been completed and do they meet expected objectives?
(4) What new projects are proposed?
Federal ESA Listed Species and Critical Habitat
(1) Are conservation efforts effective?
(2) Does the INRMP provide conservation benefits necessary to preclude USFWS Critical Habitat designation?
(3) Are Species at Risk identified and are steps being undertaken to preclude listing?
Partnerships Effectiveness
(1) Has the INRMP review team (State ARNG, USFWS, ARNG I&E, and the State Wildlife Agency) been effective in ensuring the INRMP's implementation?
(2) Are other partnerships needed to meet the INRMP goals?
(3) Have other partnerships been effectively used to meet INRMP goals?
(4) Are internal stakeholders (training, facilities, etc.) effectively coordinating projects?
Fish and Wildlife Management and Public Use
(1) Are public recreational opportunities such as hunting, fishing, and wildlife viewing available to soldiers and employees?
(2) Are public recreational opportunities such as hunting, fishing, and wildlife viewing available to the public?
(3) Does the INRMP and site offer opportunities or facilities for disabled sportsmen?
Team Adequacy
(1) Is the State ARNG's natural resources team adequately resourced to fully implement the INRMP?
(2) Is the State ARNG's natural resources team adequately trained to fully implement the INRMP?
(3) Does the State ARNG encourage retaining existing natural resources personnel to maintain corporate knowledge and manage resources with the most qualified professionals to support the military mission?
Ecosystem Integrity
(1) To what extent are the site's native ecological systems currently intact?
(2) In what ways are the various habitats susceptible to change or damage from different stressors?

(3) What stressors affect each habitat type?
INRMP Impact on the State ARNG Mission.
(1) To what degree (i.e., high, medium, or low) is the INRMP and its associated actions supporting the State ARNG's ability to sustain the current and potential future military mission?
INRMP Updates & Revisions
(1) Does the current INRMP need to be updated or revised?
(2) While the INRMP is being updated/revised, do any stakeholders object to the natural resource management contained in the existing Operational INRMP?

1.2 Five Year Review for Operation and Effect

Per §670a (b)(2) of the SAIA, the INRMP must be reviewed for "Operation and Effect" at least once every five years by the MTARNG, USFWS, MTFWP, and ARNG G9. It is recommended that the Review for Operation and Effect be conducted during an annual INRMP review, and well before the INRMP expires.

The review for Operation and Effect is a comprehensive review of the INRMP by the MTARNG, the USFWS, MTFWP, and ARNG G9 to assess whether the INRMP is being implemented effectively and contributing to the conservation and rehabilitation of natural resources on the installations. The elements of an annual review may be used as a framework for the review of Operation and Effect. The results of a review of Operation and Effect will be agreement among reviewing parties that an INRMP is currently adequate and can be re-signed, or if an Update or Revision are necessary.

The MTARNG will send minutes of the Review for Operation and Effect to the USFWS, MTFWP, and ARNG G9 for review and concurrence. If the INRMP is determined to be effective with no updates required, this must be documented via a new INRMP signature page signed by the MTARNG, ARNG G9, USFWS, and MTFWP.

INRMP Update

If changes to the existing INRMP are required, and the changes are not expected to result in consequences materially different from those in the existing INRMP and analyzed in the existing NEPA document, the MTARNG is not required to conduct an EA under NEPA or provide an additional opportunity for public comment. The INRMP Update will be documented with a Record of Environmental Consideration (REC) that confirms the adequacy of the previous EA in accordance with the Army NEPA regulations. Updates can be made to the INRMP in the form of addendums, page replacements, or by other such manner that keeps the INRMP current, organized, and readable.

INRMP Revision

A revision is required for any change to the INRMP that, if implemented, may result in a significant environmental impact not anticipated by the parties to the existing INRMP or analyzed in the previous EA. Installations that develop INRMP revisions must conduct a new or supplemental EA of the proposed action under NEPA, and make the INRMP and the environmental document available for a 30-day public review and comment, as appropriate.

Appendix Q
Record of Environmental Consideration/Environmental Checklist

Enviro Tracking #:	ARNG ENVIRONMENTAL CHECKLIST	State ARNG
	Enter information in the yellow shaded areas.	

PART A - PROJECT INFORMATION

1. PROJECT NAME:

2. PROJECT NUMBER: (MILCON if applicable)	3. DATE PREPARED:

4. DESCRIPTION AND LOCATION OF THE PROJECT/PROPOSED ACTION:

a. Location (Include a detailed map, if applicable):

b. Description:

c. The proposed action will involve (check all that apply):

- ☐ Training activities/areas
- ☐ Construction
- ☐ Natural resource management
- ☐ Maintenance/repair/rehabilitation
- ☐ Real estate action
- ☐ Environmental plans/surveys
- ☐ Innovative readiness training project
- ☐ Other (Explain):

d. Project size (acres): (if applicable)

Acres of new surface disturbance (proposed): (if applicable)

5. START DATE of PROPOSED ACTION (dd-mmm-yy): Note: This must be a future date.

6. PROGRAMMED FISCAL YEAR (if applicable):

7. END DATE (if applicable):

PART B - DECISION ANALYSIS GUIDE

To use a categorical exclusion, the project must satisfy the following three screening criteria: no segmentation, no exceptional circumstances and a qualifying categorical exclusion that covers the project. The following decision tree will guide the application and documentation of these three screening criteria. The criteria were extracted from 32 CFR Section 651.29 and represent the most common screening conditions experienced in the ARNG. NOTE: Each question in Part B must have an applicable block checked for concurrence with REC.

1. Is this action segmented (the scope of the action must include the consideration of connected, cumulative, and similar actions)? ☐ YES (go to #30) ☐ NO (go to #2)

2. Is there reasonable likelihood of significant environmental effects (direct, indirect,and cumulative)? If action meets screening criteria but is assessed in an existing EA or EIS, check NO and proceed to the next question. ☐ YES (go to #30) ☐ NO (go to #3)

3. Is there a reasonable likelihood of significant effects on public health, safety or the environment? If action meets screening criteria but is assessed in an existing EA or EIS, check NO and proceed to the next question. ☐ YES (go to #30) ☐ NO (go to #4)

4. Is there an imposition of uncertain or unique environmental risks? If action meets screening criteria but is assessed in an existing EA or EIS, check NO and proceed to the next question. ☐ YES (go to #30) ☐ NO (go to #5)

5. Is the project of greater scope or size than is normal for the category of action? If action meets screening criteria but is assessed in an existing EA or EIS, check NO and proceed to the next question. ☐ YES (go to #30) ☐ NO (go to #6)

6. Does the project introduce or employ unproven technology? If action meets screening criteria but is assessed in an existing EA or EIS, check NO and proceed to the next question. ☐ YES (go to #30) ☐ NO (go to #7)

4b. Description:

The Montana Army National Guard (MTARNG) is proposing to update its Integrated Natural Resources Management Plan (INRMP) for the Fort Harrison Training Area (FHTA) and Limestone Hills Training Area (LHTA), and consolidate the separate INRMPs into one comprehensive document. The current plans were completed in 2011 and 2014, respectively, and are used as the guiding management tool for natural resource activities at the training areas.

The updated INRMP will help ensure that the MTARNG is compliant with Army Regulation (AR) 200-1, *Environmental Protection and Enhancement*; the Sikes Act (16 USC 670, et seq.); Department of Defense Manual (DoDM) 4715.03, *INRMP Implementation Manual*; Department of Defense Instruction (DoDI) 4715.03, *Natural Resources Conservation Program*; and 32 CFR Part 651, *Environmental Analysis of Army Actions*.

An update to the INRMPs is appropriate during this time, as the proposed changes within the existing INRMPs "are not expected to result in consequences materially different from those in the existing INRMP". The previous FHTA and LHTA INRMPs were analyzed in an Environmental Assessment in 2001. A copy of the Finding of No Significant Impact (FNSI) is attached to the REC/Checklist. This REC/Checklist confirms the adequacy of the previous EA, in accordance with 32 CFR Part 651, as no substantive changes were required in the updated INRMP.

The focus of the update was to:

- Consolidate the existing INRMPs into one comprehensive document that still contains site-specific natural resource information for the two training locations;
- Update the natural resource goals and objectives for both training areas, making them more measurable;
- Incorporate any changes or updates that have occurred to federal, state, local, and DoD specific regulations since the original INRMP and EA in 2001;
- Address any changes to the structure of the MTARNG, along with updating personnel in the organization; and
- Incorporate any current natural resource specific information into the document, including data from vegetation studies and updated surveys (i.e. wetlands).

PART B - DECISION ANALYSIS (continued)

7. Will there be reportable releases of hazardous or toxic substances as specified in 40 CFR Part 302? If action meets screening criteria but is assessed in an existing EA or EIS, check NO and proceed to the next question.

☐ YES (go to #30) ☐ NO (go to #8)

8. If proposed action is in a non-attainment or maintenance area, will air emissions exceed de minimus levels or otherwise require a formal Clean Air Act (CAA) conformity determination? If action meets screening criteria but is assessed in an existing EA or EIS, check NO and proceed to the next question. ☐ YES (go to #30) ☐ NO (go to #9) NA (go to #9)

9. Will the project have effects on the quality of the environment that are likely to be highly controversial? If action meets screening criteria but is assessed in an existing EA or EIS, check NO and proceed to the next question.

☐ YES (go to #30) ☐ NO (go to #10)

10. Will the project establish a precedent (or make decisions in principle) for future or subsequent actions that are reasonably likely to have future significant effects? If action meets screening criteria but is assessed in an existing EA or EIS, check NO and proceed to the next question. ☐ YES (go to #30) ☐ NO (go to #11)

11. Has federal funding been secured for the Innovative Readiness Training (IRT) project?

☐ N/A (go to #13) ☐ YES (go to #13) ☐ NO (go to #12)

12. NOTE: IRT projects not currently funded can secure approved NEPA documentation. However, once funding is secured State ARNG is required to coordinate with ARNG-ILE-T to complete natural and cultural surveys via proponent funding.

☐ CONFIRMED (go to #27)

13. Do you have a species list from the U.S. Fish and Wildlife Service that is less than 90 days old?

☐ YES (go to #14) Date of List: ☐ NO (update species list return to #13)

14. In reviewing the species list, what determination was made by the State ARNG?

☐ No species present (go to #16)
☐ No affect (go to #16)
☐ May affect but not likely to adversely affect (go to # Date of USFWS concurrence:
☐ May affect likely to adversely affect (go to #15)

15. Does an existing Biological Opinion cover the action?

☐ YES (go to #16) Date of BO: ☐ NO (go to #30)

16. Have the Endangered Species Act, Section 7 requirements completed?

☐ YES (go to #17) Date of Documentation: ☐ NO (complete documentation, return to #16)

17. Does the project involve an undertaking to a building or structure that is 50 years of age or older?

☐ YES (go to #18) ☐ NO (go to #20)

18. Has the building or structure been surveyed for the National Register of Historic Places?

☐ YES (go to #19) ☐ NO (complete inventory, return to #18)

19. Is the building or structure eligible for or listed on the National Register of Historic Places?

☐ YES (go to #20) ☐ NO (go to #20)

20. Does the action involve ground disturbing activities?

☐ YES (go to #21) ☐ NO (go to #22)

21. Has an archaeological inventory or research been completed to determine if there are any archeological resources present?

☐ YES (go to #22) ☐ NO (complete inventory or conduct research, return to #21)

22. In reviewing the undertaking, under the National Historic Preservation Act (NHPA) (for both above and below ground resources), what determination was made by the State ARNG?

☐ No 106 undertaking; no additional consultation required under NHPA (go to question #27)
☐ No properties affected (go to #24) Date of SHPO Concurrence:
☐ No adverse effect (go to #24) Date of SHPO Concurrence:
☐ Adverse effect (go to #23)

23. Has the State ARNG addressed the adverse effect?

☐ YES (place date of MOA or existing PA and explanation of mitigation in box below, go to #24) ☐ NO (go to #30)

23a.

PART B - DECISION ANALYSIS (continued)

24. Per DoDI 4710.02 did the state ARNG determine that tribal consultation was necessary for this project?

☐ YES (go to #25)

☐ NO (Provide reason in this block 24a, go to #27)

24a.

25. Did the Tribes express an interest or respond with concerns about the project?

☐ YES (go to #26) ☐ NO (go to #27) Date of Documentation:

26. Has the State ARNG addressed the Tribal concerns?

☐ YES (place date of MOU or explanation of how State ARNG addressed tribal concerns in box below, go to #27)

☐ NO (address concerns, return to #26)

Complete only if additional documentation is required in question #26

26a.

27. Does the project involve an unresolved effect on areas having special designation or recognition such as those listed below? For any yes responses go to #30 otherwise go to #28. If any No response is a result of negotiated and/or previously resolved effects please describe resolution in box 27a below.

TYPE	Unresolved Effects?	TYPE	Unresolved Effects?
a. Prime/Unique Farmland		e. Wild/Scenic River	
b. Wilderness Area/National Park		f. Coastal Zones	
c. Sole-Source Aquifer		g. 100-year Floodplains	
d. Wetlands		h. National Wildlife Refuges	

27a.

28. Is this project addressed in a separate EA or EIS review?

☐ YES (complete table below; go to Part C, Determination) ☐ NO (go to #29)

Document Title:	
Lead Agency:	
Date of Decision Document:	

29. Does the project meet at least one of the categorical exclusions listed in 32 CFR 651 App B?

☐ YES (complete table below; go to Part C, Determination) ☐ NO (go to #30)

List primary CAT EX code	
Descibe why CAT EX applies	

30. At this time your project has not met all the qualifications for using a categorical exclusion under 32 CFR 651. Unless the scope of the project is changed, it will require an Environmental Assessment or possibly an Environmental Impact Statement. If you feel this is in error, please call your NEPA Regional Manager to discuss. If needed, go to Part C Determination.

Additional Information (if needed):

PART C - DETERMINATION

On the basis of this initial evaluation, the following is appropriate:

- ☐ IAW 32 CFR 651 Appendix B, the proposed action qualifies for a Categorical Exclusion (CX) that does not require a Record of Environmental Consideration.
- ☐ A Record of Environmental Consideration (REC).
- ☐ An Environmental Assessment (EA).
- ☐ A Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS).

Signature of Proponent (Requester)	Environmental Program Manager
Printed Name of Proponent (Requester)	Printed Name of Env. Program Manager
Date Signed	Date Signed

Other concurrence (as needed):

Signature	Signature
Printed Name	Printed Name
Date Signed	Date Signed
Signature	Signature
Printed Name	Printed Name
Date Signed	Date Signed
Signature	Signature
Printed Name	Printed Name
Date Signed	Date Signed

Enviro Tracking #:	ARNG Record of Environmental Consideration	State ARNG
	Enter information in the yellow shaded areas.	

1. PROJECT NAME:

2. PROJECT NUMBER: (MILCON if applicable)	3. DATE PREPARED:

4. START DATE of PROPOSED ACTION (dd-mmm-yy): Note: This must be a future date

5. PROGRAMMED FISCAL YEAR:

6. END DATE (if applicable):

7. DESCRIPTION AND LOCATION OF THE PROPOSED ACTION:

a. Location (Include a detailed map, if applicable):

b. Description:

8. CHOOSE **ONE** OF THE FOLLOWING:

☐ An existing environmental assessment* adequately covers the scope of this project. Attach FNSI if EA was completed by another federal agency (non-ARNG).

EA Date (dd-mmm-yy): Lead Agency:

☐ An existing environmental impact statement* adequately covers the scope of this project.

EIS Date (dd-mmm-yy): Lead Agency:

☐ After reviewing the screening criteria and completing the ARNG environmental checklist, this project qualifies for a

Categorical Exclusion Code:

See 32 CFR 651 App. B

Categorical Exclusion Code:

See 32 CFR 651 App. B

Categorical Exclusion Code:

See 32 CFR 651 App. B

☐ This project is exempt from NEPA requirements under the provisions of:

Cite superseding law:

*Copies of the referenced EA or EIS can be found in the ARNG Environmental Office within each state.

9. REMARKS:

Signature of Proponent (Requester)	Environmental Program Manager
Printed Name of Proponent (Requester)	Printed Name of Env. Program Manager
Date Signed	Date Signed

Proponent Information:

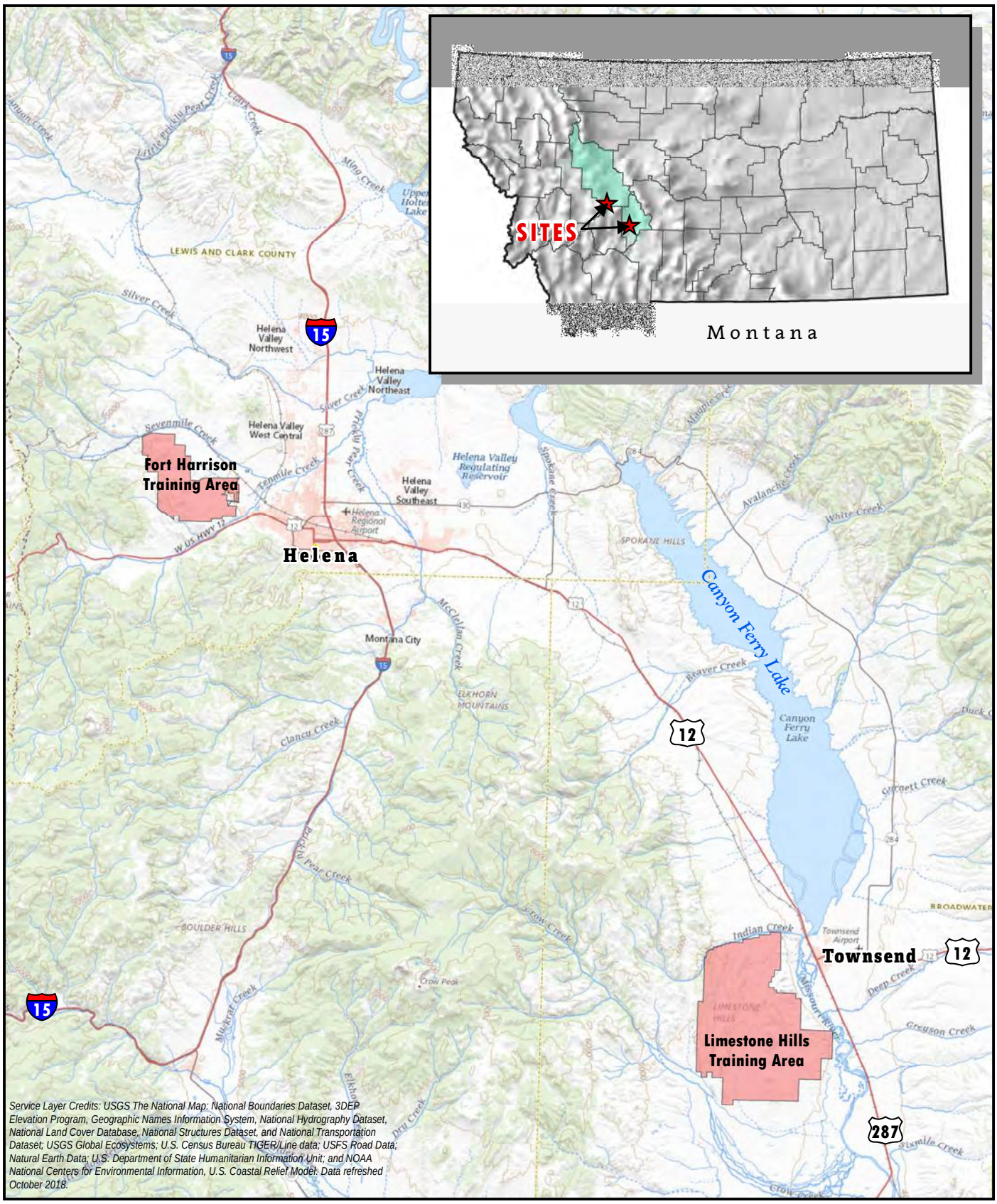
10. Proponent:

11. Address:

12. POC:

13. Comm. Voice:

14. Proponent POC e-mail:



Service Layer Credits: USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed October 2018.

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NewFields

Location Map
MTARNG INRMP
Limestone Hills Training Area
and Fort Harrison Training Area
Lewis and Clark and Broadwater
Counties, Montana
FIGURE 1

JFHQ-CFMO 23 February 2021

MEMORANDUM FOR RECORD

SUBJECT: Section 7 Endangered Species Act Consultation for Implementation of the Montana Army National Guard's Integrated Natural Resources Management Plan

The Montana Army National Guard (MTARNG) is proposing to update of its Integrated Natural Resources Management Plan (INRMP) for the Fort Harrison Training Area (FHTA) and the Limestone Hills Training Area (LHTA). As part of the update, the MTARNG will consolidate the individual INRMPs for the FHTA and the LHTA into one document, while still including site-specific information. The plan describes MTARNG's natural resources management requirements, outlines the resources necessary for program management, and updates the goals and objectives for natural resource management in the next five years. The plan applies to only to the MTARNG Federally-owned sites listed below:

Site Code	Site Name	Ownership	County
30655	Fort William Henry Harrison (FHTA)	DOD Owned	Lewis and Clark County
30816	Limestone Hills Training Area (LHTA)	DOD Owned	Broadwater County

The ARNG Environmental Checklist requires that the MTARNG review and update any endangered species located within the project area county. Completing a search of the US Fish and Wildlife Service's Endangered Species List located online shows the following species listed for Lewis and Clark County and Broadwater County, along with their statuses.

Lewis and Clark County				
Common Name	**Scientific Name**	**Status**	**Habitat Present (Y/N)**	**Determination**
Monarch butterfly	*Danaus plexippus*	Candidate	N	No Effect
Ute ladies'-tresses	*Spiranthes diluvialis*	Threatened	N	No Effect
Grizzly bear	*Ursus arctos horribilis*	Threatened	N	No Effect
Gray wolf	*Canis lupus*	Recovery	N	No Effect
Whitebark pine	*Pinus albicaulis*	Candidate	N	No Effect
Golden eagle	*Aquila chrysaetos*	Species of Concern	N	No Effect
Canada Lynx	*Lynx Canadensis*	Threatened	N	No Effect
North American wolverine	*Gulo gulo luscus*	Resolved Taxon	N	No Effect
Mountain plover	*Charadrius montanus*	Resolved Taxon	N	No Effect

Bald eagle	*Haliaeetus leucocephalus*	Recovery	N	No Effect
Sprague's pipit	*Anthus spragueii*	Resolved Taxon	N	No Effect
Bull Trout	*Salvelinus confluentus*	Threatened	N	No Effect
Red knot	*Calidris canutus rufa*	Threatened	N	No Effect

Broadwater County				
Common Name	**Scientific Name**	**Status**	**Habitat Present (Y/N)**	**Determination**
Monarch butterfly	*Danaus plexippus*	Candidate	N	No Effect
Canada Lynx	*Lynx Canadensis*	Threatened	N	No Effect
Gray wolf	*Canis lupus*	Recovery	N	No Effect
Bald eagle	*Haliaeetus leucocephalus*	Recovery	N	No Effect
North American wolverine	*Gulo gulo luscus*	Proposed Threatened	N	No Effect
Ute ladies-tresses	*Spiranthes diluvialis*	Threatened	N	No Effect
Sprague's pipit	*Anthus spragueii*	Resolved Taxon	N	No Effect
Mountain plover	*Charadrius montanus*	Resolved Taxon	N	No Effect
Golden eagle	*Aquila chrysaetos*	Species of Concern	N	No Effect
Whitebark pine	*Pinus albicaulis*	Candidate	N	No Effect

The INRMP does provide a list of "Species of Concern" for both training areas. Species of Concern are defined by the Montana Natural Heritage Program (MTNHP) as a native plant and animal species that are "rare, threatened, and/or have declining populations and as a result are at risk or potentially at risk of extirpation in Montana." Designation of Species of Concern is not a statutory or regulatory classification, but instead the designations provide a basis for resource managers and decision-makers to make proactive decisions regarding species conservation and data collection priorities to maintain viable populations and avoid extirpation of species from the state.

Fort Harrison Training Area and Limestone Hills Training Area – Species of Concern			
Common Name	**Scientific Name**	**State Rank**	**Location**
Lesser rushy milkvetch	*Astragalus convallarius* var. *convallarius*	S3	FHTA, LHTA
Ferruginous hawk	*Buteo ragalis*	S3B	FHTA, LHTA
Golden eagle	*Aquila chrysaetos*	S3	FHTA, LHTA
Bald eagle	*Haliaeetus leucocephalus*	S4	FHTA
Long-billed curlew	*Numenius americanus*	S3B	FHTA

Lewis' woodpecker	*Melanerpes lewis*	S2B	FHTA
Clark's nutcracker	*Nucifraga columbiana*	S3	FHTA
Bobolink	*Dolichonyx oryzivorus*	S3B	FHTA
Peregrine falcon	*Falco peregrinus*	S3	LHTA
Burrowing owl	*Athene cunicularia*	S3B	LHTA
Loggerhead shrike	*Lanius ludovicianus*	S3B	LHTA
Brewer's sparrow	*Spizella breweri*	S3B	LHTA

The MTARNG will ensure that the management of the natural resources at the FHTA and LHTA ultimately benefit the above listed endangered species and species of concern, and will work to ensure that the habitats and potential critical habitats are maintained.

We have concluded that implementation of the revised MTARNG INRMP for the FHTA and the LHTA will have "no effect" on the above listed species, their habitats, or proposed or designated critical habitats.

The POC for this action is Rebekah Myers at 406-324-3087 or rebekah.l.myers2.nfg@mail.mil.

LTC ADEL JOHNSON
Environmental Program Manager
Department of Military Affairs

U.S. Fish & Wildlife Service

ECOS

ECOS / Species Reports / Species County Report

Listed species believed to or known to occur in Lewis and Clark, Montana

The following report contains Species that are known to or are believed to occur in this county. Species with range unrefined past the state level are now excluded from this report. If you are looking for the Section 7 range (for Section 7 Consultations), please visit theIPaC application.

CSV

Search:

26 Species Listings

Group	Name	Population	Status	Lead Office	Recovery Plan	Recovery Plan Action Status
Insects	monarch butterfly (Danaus plexippus)	Wherever found	Candidate	3		
Flowering Plants	Ute ladies'-tresses (Spiranthes diluvialis)	Wherever found	Threatened	6	Ute Ladies'-Tresses Draft Recovery Plan	Implementatio Progress
Mammals	Grizzly bear (Ursus arctos horribilis)	U.S.A., conterminous (lower 48) States, except where listed as an experimental population	Threatened	6	Draft Northern Continental Divide Ecosystem Grizzly Bear Conservation Strategy	Implementatio Progress
Mammals	Grizzly bear (Ursus arctos horribilis)	U.S.A., conterminous (lower 48) States, except where listed as an experimental population	Threatened	6	Draft Northern Continental Divide Ecosystem Grizzly Bear Conservation Strategy Appendices	Implementatio Progress
Mammals	Grizzly bear (Ursus arctos horribilis)	U.S.A., conterminous (lower 48) States, except where listed as an experimental population	Threatened	6	Grizzly Bear Recovery Plan Supplement: Bitterroot Ecosystem Recovery Plan Chapter	Implementatio Progress
Mammals	Grizzly bear (Ursus arctos horribilis)	U.S.A., conterminous (lower 48) States, except where listed as an experimental population	Threatened	6	Grizzly Bear Recovery Plan Supplement: Habitat-based Recovery Criteria for the Northern Continental Divide Ecosystem	Implementatio Progress
Mammals	Grizzly bear (Ursus arctos horribilis)	U.S.A., conterminous (lower 48) States, except where listed as an experimental population	Threatened	6	Grizzly Bear Recovery Plan Supplement: Habitat-based Recovery Criteria for the Yellowstone Ecosystem	Implementatio Progress
Mammals	Grizzly bear (Ursus arctos horribilis)	U.S.A., conterminous (lower 48) States, except where listed as an experimental population	Threatened	6	Grizzly Bear Recovery Plan Supplement: North Cascades Ecosystem Recovery Plan Chapter	Implementatio Progress

Group	Name	Population	Status	Lead Office	Recovery Plan	Recovery Plan Action Status
Mammals	Grizzly bear (Ursus arctos horribilis)	U.S.A., conterminous (lower 48) States, except where listed as an experimental population	Threatened	6	Grizzly Bear Recovery Plan Supplement: Revised Demographic Recovery Criteria for the Yellowstone Ecosystem	Implementatio Progress
Mammals	Grizzly bear (Ursus arctos horribilis)	U.S.A., conterminous (lower 48) States, except where listed as an experimental population	Threatened	6	Revised Grizzly Bear Recovery Plan	Implementatio Progress

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26 Species Listings

Group	Name	Population	Status	Lead Office	Recovery Plan	Recovery Plan Action Status
Mammals	Gray wolf (Canis lupus)	Northern Rocky Mountain Distinct Population Segment: Montana, Idaho, Wyoming, eastern Washington, eastern Oregon, and north central Utah	Recovery	6		
Conifers and Cycads	Whitebark pine (Pinus albicaulis)	Wherever found	Proposed Threatened	6		
Birds	Golden eagle (Aquila chrysaetos)	Wherever found	Species of Concern	7		
Mammals	Canada Lynx (Lynx canadensis)	Wherever Found in Contiguous U.S.	Threatened	6		Implementatio Progress
Mammals	North American wolverine (Gulo gulo luscus)	Wherever found	Resolved Taxon	6		
Birds	Mountain plover (Charadrius montanus)	Wherever found	Resolved Taxon	6		
Birds	Bald eagle (Haliaeetus leucocephalus)	U.S.A., conterminous (lower 48) States.	Recovery	3		
Birds	Sprague's pipit (Anthus spragueii)	Wherever found	Resolved Taxon	6		
Fishes	Bull Trout (Salvelinus confluentus)	U.S.A., conterminous, (lower 48 states)	Threatened	1	Coastal Recovery Unit Implementation Plan for Bull Trout (Salvelinus confluentus)	Implementatio Progress
Fishes	Bull Trout (Salvelinus confluentus)	U.S.A., conterminous, (lower 48 states)	Threatened	1	Columbia Headwaters Recovery Unit Implementation Plan for Bull Trout (Salvelinus confluentus)	Implementatio Progress

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Search:

26 Species Listings

Group	Name	Population	Status	Lead Office	Recovery Plan	Recovery Plan Action Status
Fishes	Bull Trout (Salvelinus confluentus)	U.S.A., conterminous, (lower 48 states)	Threatened	1	Klamath Recovery Unit Implementation Plan for Bull Trout (Salvelinus confluentus)	Implementatio Progress
Fishes	Bull Trout (Salvelinus confluentus)	U.S.A., conterminous, (lower 48 states)	Threatened	1	Mid-Columbia Recovery Unit Implementation Plan for Bull Trout (Salvelinus confluentus)	Implementatio Progress
Fishes	Bull Trout (Salvelinus confluentus)	U.S.A., conterminous, (lower 48 states)	Threatened	1	Recovery Plan for the Coterminous United States Population of Bull Trout (Salvelinus confluentus)	Implementatio Progress
Fishes	Bull Trout (Salvelinus confluentus)	U.S.A., conterminous, (lower 48 states)	Threatened	1	St. Mary Recovery Unit Implementation Plan for Bull Trout (Salvelinus confluentus)	Implementatio Progress
Fishes	Bull Trout (Salvelinus confluentus)	U.S.A., conterminous, (lower 48 states)	Threatened	1	Upper Snake Recovery Unit Implementation Plan for Bull Trout (Salvelinus confluentus)	Implementatio Progress
Birds	Red knot (Calidris canutus rufa)	Wherever found	Threatened	5	Recovery Outline for the Rufa Red Knot (Calidris canutus rufa)	Implementatio Progress

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Listed species believed to or known to occur in Broadwater, Montana

The following report contains Species that are known to or are believed to occur in this county. Species with range unrefined past the state level are now excluded from this report. If you are looking for the Section 7 range (for Section 7 Consultations), please visit theIPaC application.

CSV

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10 Species Listings

Group	Name	Population	Status	Lead Office	Recovery Plan	Recovery Plan Action Status
Insects	monarch butterfly (Danaus plexippus)	Wherever found	Candidate	3		
Mammals	Canada Lynx (Lynx canadensis)	Wherever Found in Contiguous U.S.	Threatened	6		Implementation Progress
Mammals	Gray wolf (Canis lupus)	Northern Rocky Mountain Distinct Population Segment: Montana, Idaho, Wyoming, eastern Washington, eastern Oregon, and north central Utah	Recovery	6		
Birds	Bald eagle (Haliaeetus leucocephalus)	U.S.A., conterminous (lower 48) States.	Recovery	3		
Mammals	North American wolverine (Gulo gulo luscus)	Wherever found	Resolved Taxon	6		
Flowering Plants	Ute ladies'-tresses (Spiranthes diluvialis)	Wherever found	Threatened	6	Ute Ladies'-Tresses Draft Recovery Plan	Implementation Progress
Birds	Sprague's pipit (Anthus spragueii)	Wherever found	Resolved Taxon	6		
Birds	Mountain plover (Charadrius montanus)	Wherever found	Resolved Taxon	6		
Birds	Golden eagle (Aquila chrysaetos)	Wherever found	Species of Concern	7		
Conifers and Cycads	Whitebark pine (Pinus albicaulis)	Wherever found	Proposed Threatened	6		

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