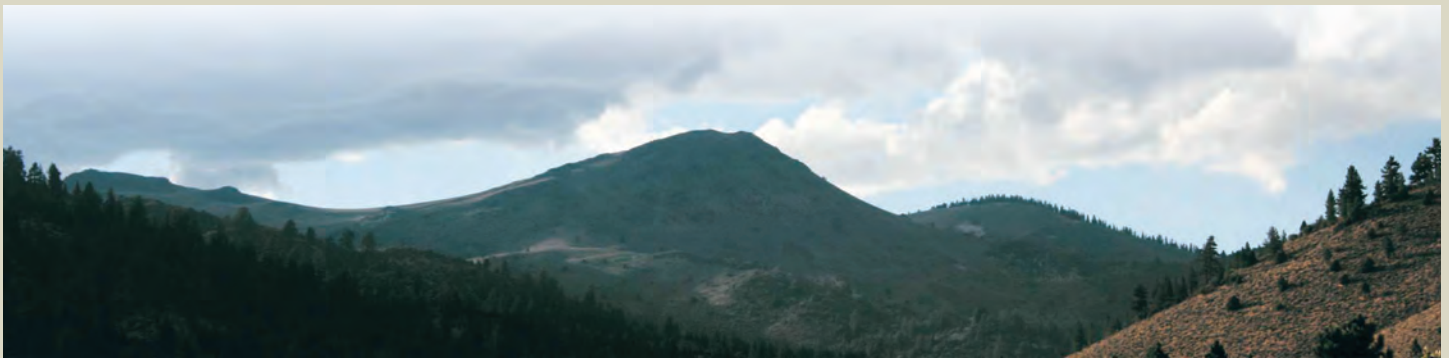


Environmental Assessment for Enhancement of Operations and Training Proficiency at MCMWTC Bridgeport



October 2017

Acronyms and Abbreviations

AAV	Assault Amphibious Vehicle
AESO	Aircraft Environmental Support Office
AGL	Above Ground Level
AICUZ	Air Installations Compatible Use Zones
AIS	Avalanche Initiation Site
AMS	Aquatic Management Strategy
AOP	Annual Operating Plan
APE	Area of Potential Effect
ATV	all-terrain vehicle
B.P.	Before Present
BLM	Bureau of Land Management
BMP	Best Management Practice
BRI	Bridgeport
Bur	Burcham Flat Road
BWQP	Bureau of Water Quality Planning
BWRA	Bridgeport Winter Recreation Area
CA	Conservation Area
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CALVEG	California Vegetation
Caltrans	State of California Department of Transportation
CAR	Critical Aquatic Refuge
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH ₄	methane
CIED	Counter Improvised Explosive Device
CNDDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNHT	California National Historic Trail
CNPS	California Native Plant Society
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	CO ₂ equivalent
COC	Combat Operations Center
CWHR	California Wildlife Habitat Relationships
dB	decibel
dBA	A-weighted decibel
dBC	C-weighted decibel
dBC CNEL (CCNEL)	C-weighted CNEL
DNL	Day-Night Average Sound Level
DPS	distinct population segment
DoD	Department of Defense
DoN	Department of the Navy
DOPAA	Description of the Proposed Action and Alternatives
DZ	drop zone
EA	Environmental Assessment
EAF	Expeditionary Airfield

EO	Executive Order
ESA	Endangered Species Act
°F	degrees Fahrenheit
FEX	Final Exercise
Forest Plan	Toiyabe National Forest Land and Resource Management Plan
Forest Service	U.S. Forest Service
FSH	Forest Service Handbook
FSR	Forest Service Road
ft	feet/foot
GBUAPCD	Great Basin Unified Air Pollution Control District
GHG	greenhouse gas
GIS	Geographic Information System
GPM	gallon per minute
GWP	global warming potential
HAP	hazardous air pollutant
HMMWV	High Mobility Multipurpose Wheeled Vehicle
HTNF	Humboldt-Toiyabe National Forest
HWAD	Hawthorne Army Depot
ICRMP	Integrated Cultural Resources Management Plan
IED	Improvised Explosive Device
INRMP	Integrated Natural Resources Management Plan
IRA	Inventoried Roadless Areas
ITV	Internally Transportable Vehicle
JAB	Joint Assault Bridge
JLTV	Joint Light Tactical Vehicle
Kir	Kirman Lake Road
LBP	Lucky Boy Pass
LCT	Lahontan cutthroat trout
Ldn _{mr}	Onset-Rate Adjusted Monthly DNL
L _{max}	Maximum Sound Level
Lob	Lobdell Lake Road
LOP	Limited Operating Period
LSE	Large Scale Exercise
LZ	landing zone
m	meter(s)
Mas	Masonic Road
M-ATV	MRAP-All Terrain Vehicle
MAGTF	Marine Air Ground Task Force
MBTA	Migratory Bird Treaty Act
MC	munitions constituents
MCAGCC	Marine Corps Air Ground Combat Center
MCMWTC	Marine Corps Mountain Warfare Training Center
MCICOM	Marine Corps Installations Command
MCO	Marine Corps Order
MGB	Medium Girder Bridge
MIS	Management Indicator Species
MIT	Mobile Infantry Target
µg/m ³	micrograms per cubic meter
MOA	Memorandum of Agreement
MPC	Marine Personnel Carrier
MRAP	Mine Resistant Ambush Protected

MR_NMAP	Military Operation Area and Range Noise Model
MSL	Mean Sea Level
MTR	Military Training Routes
MVUM	Motor Vehicle Use Map
N/A	not applicable
NAAQS	National Ambient Air Quality Standards
NAVFAC SW	Naval Facilities Engineering Command Southwest
NDCNR	Nevada Department of Conservation and Natural Resources
NEPA	National Environmental Policy Act
NFS	National Forest System
NHPA	National Historic Preservation Act
NNHP	Nevada Natural Heritage Program
N ₂ O	nitrous oxide
NO ₂	nitrogen dioxide
NO _x	oxides of nitrogen
NRHP	National Register of Historic Places
O ₃	ozone
PAC	Protected Activity Center
Pb	lead
PCE	Primary Constituent Elements
PCT	Pacific Crest Trail
PEM	Palustrine Emergent (wetlands)
PFO	Palustrine Forested (wetlands)
PK 15	Peak Sound Pressure Level Exceeded by 15% of Events
PL	Public Law
PM _{2.5}	particulate matter less than or equal to 2.5 microns in diameter
PM ₁₀	particulate matter less than or equal to 10 microns in diameter
ppm	parts per million
PSD	Prevention of Significant Deterioration
PSS	Palustrine Scrub-Shrub (wetlands)
PUB	Palustrine Unconsolidated Bottom (wetlands)
RCA	Riparian Conservation Area
RCRA	Resource Conservation and Recovery Act
RDX	cyclotrimethylene trinitramine
REVA	Range Environmental Vulnerability Assessment
RHU	Relocatable Housing Unit
ROI	region of influence
RAICUZ	Range AICUZ
RNM	Rotorcraft Noise Model
ROS	recreation opportunity spectrum
RWQCB	Regional Water Quality Control Board
SARNAM 2	Small Arms Range Noise Assessment Model
SDZ	Surface Danger Zone
SEL	Sound Exposure Level
SHPO	State Historic Preservation Office(r)
SIP	State Implementation Plan
SIT	Stationary Infantry Target
SNFPA	Sierra Nevada Forest Plan Amendment
SNYLF	Sierra Nevada yellow-legged frog
SO ₂	sulfur dioxide
SOF	Special Operations Forces

SoI	species of interest
SOP	Standard Operating Procedures
SR	State Route
SS	sensitive species
SUAS	Surrogate Unmanned Aerial System
SUP	Special Use Permit
SWtr	Sweetwater Airstrip
TA	training area
TCO	Training Center Order
TNT	2,4,6-trinitrotoluene
TTPs	Tactics, Techniques, and Procedures
UAS	Unmanned Aerial System
UAV	Unmanned Aircraft Vehicle
U.S.	United States
USC	U.S. Code
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USMC	U.S. Marine Corps
VOC	volatile organic compound
VQO	visual quality objective
YT	Yosemite toad

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ENVIRONMENTAL ASSESSMENT

Co-Lead Agencies for the EA:	U.S. Forest Service and U.S. Marine Corps
Action Proponent:	U.S. Marine Corps
Title of Proposed Action:	Enhancement of Operations and Training Proficiency at MCMWTC Bridgeport
Affected Jurisdiction:	Humboldt-Toiyabe National Forest
Designation:	Environmental Assessment

Abstract

This Environmental Assessment (EA) has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), 42 United States Code (USC) §§ 4321-4370h, as implemented by the Council on Environmental Quality (CEQ) Regulations, and 40 Code of Federal Regulations (CFR) Parts 1500-1508. The United States Marine Corps (USMC) operates the Marine Corps Mountain Warfare Training Center (MCMWTC) in Mono County, California on National Forest System (NFS) lands that are managed by the Humboldt-Toiyabe National Forest (HTNF), Bridgeport Ranger District. The USMC and United States Department of Agriculture (USDA) United States Forest Service (Forest Service) are co-leads in preparing this EA to evaluate long-term use and authorization of NFS lands currently authorized annually under multiple permits for MCMWTC training, and to evaluate the use of a new suite of USMC vehicles and equipment to replace or supplement existing vehicles and equipment within the MCMWTC training areas. The purpose of the Proposed Action is to enhance MCMWTC operations and training proficiency and to improve the planning and management of MCMWTC activities on NFS lands by authorizing a long-term Special Use Permit (SUP) in accordance with Congress' direction in Public Law (PL) 100-693 to make NFS lands within the HTNF available for use for military training activities. This EA analyzes the potential environmental consequences associated with the Proposed Action and No-Action Alternative. The following resource areas were evaluated for environmental impacts: soils and water resources; biological resources; cultural resources; public health and safety; air quality; transportation; noise; and recreation.

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October 2017

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Executive Summary

This Environmental Assessment (EA) has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), 42 United States Code (USC) §§ 4321-4370h, as implemented by the Council on Environmental Quality (CEQ) Regulations, and 40 Code of Federal Regulations (CFR) Parts 1500-1508.

The United States Marine Corps (USMC) operates the Marine Corps Mountain Warfare Training Center (MCMWTC) in Mono County, California on National Forest System (NFS) lands managed by the Humboldt-Toiyabe National Forest (HTNF), Bridgeport Ranger District. In Section 5 of Public Law (PL) 100-693, Congress directed that these NFS lands were to be made available for use by the MCMWTC subject to appropriate restrictions for the protection of “the natural, environmental, aesthetic, scientific, cultural, and other resources and values of such lands.” The United States Department of Agriculture (USDA) United States Forest Service (Forest Service) currently provides for this use as primary training areas via (1) a 40-year Special Use Permit (SUP) that covers 43,920 acres (referred to as the “Limited Use Area”) and expires in 2049; and (2) four “Special Use Areas,” comprising approximately 18,000 acres, the use of which is authorized annually in SUPs. Proposed MCMWTC activities in the permit areas are described each year in Annual Operating Plans (AOPs) which are reviewed before authorization by the HTNF and are subject to the terms and conditions of the SUPs.

The USMC and Forest Service are co-leads in preparing this EA to evaluate long-term use and authorization of NFS lands that are currently authorized annually under multiple permits for MCMWTC training, and to allow for proposed new training events, including the use of new training corridors, aircraft landing zones (LZs), landing points, and drop zones (DZs), and new vehicles, equipment, and weaponry. This EA analyzes the potential environmental consequences associated with the Proposed Action and a No-Action Alternative.

PURPOSE OF AND NEED FOR THE ACTION

Action is needed to enhance operations and training proficiency at MCMWTC by allowing the use of new vehicles, equipment, and training activities within permitted areas. The need for the action is consistent with the Toiyabe National Forest Land and Resource Management Plan, as amended, and would not require a Forest Plan Amendment.

The purpose of the Proposed Action is to provide appropriate authorizations in the current 40-year permit and to enhance operations and training proficiency and improve the planning and management of MCMWTC activities on NFS lands by updating and consolidating the existing SUPs under a single long-term SUP. The Proposed Action is needed for the MCMWTC to train and maintain proficiency in operating in steep, mountainous, high altitude, and cold weather environments using the latest generation of tactical vehicles, weaponry, aircraft, and equipment. USMC training doctrine prescribes that Marines must “train as they fight” under conditions that most closely resemble those encountered in the battlefield, to maximize preparedness, ensure readiness, and maintain capability in defense of the United States (U.S.).

Mountainous, high altitude, and cold weather environments are characterized by dramatic elevation changes over short distances and extreme and rapidly changing weather conditions. Weather and terrain conditions found in mountainous regions throughout the world alter the ways in which maneuverability and mobility, firing, intelligence, command and control, logistics, and force protection operations are conducted. Vehicles are often constrained to existing tracks, while decreased air density and reduction in conventional navigational aids affect both aircraft performance and navigation. The primary means of movement is on foot, units become more compartmentalized and widely dispersed, and the terrain itself can undergo sudden extreme, and often unpredictable, change from weather events. Specific small-unit training needs include

overland movement by foot and land navigation; over the snow training; avalanche initiation and rescue training; snow caves, ice breaching, and winter survival training; small arms live fire; rock climbing; rope suspension bridge training; Improvised Explosive Device and ambush training; and “Leave No Trace” training.

NO-ACTION ALTERNATIVE

Under the No-Action Alternative, training activities would be limited to the vehicles, weapons systems, engineer systems, aircraft, ordnance, and equipment currently utilized by the USMC and other military agencies as authorized in the 40-year SUP (Forest Service 2009a) and the four annual SUPs. No new training exercises would be permitted within the existing Training Areas (TAs) or along proposed new training corridors. The existing SUPs and supporting AOPs can only be updated on a year-to-year basis, which hampers long-term planning and management by the lead agencies. While the No-Action Alternative does not meet the purpose of and need for the Proposed Action as it would not allow for the enhancement of operational proficiency at MCMWTC, it does provide a baseline against which to analyze the potential environmental consequences associated with implementation of the Proposed Action.

PROPOSED ACTION

The Proposed Action would (1) authorize a long-term SUP in accordance with Congress’ direction in PL 100-693 to make NFS lands within the HTNF available for use by the USMC under appropriate restrictions – referred to as design features; and (2) authorize the use of a new suite of USMC vehicles and equipment (e.g., new models of wheeled Mine Resistant Ambush Protected vehicles, tilt-rotor aircraft) to replace or supplement existing vehicles and equipment throughout the MCMWTC training areas.

The USMC proposes to incorporate all TAs (1-16) and Special Use Areas into a single multi-year SUP to continue using all permitted areas and performing all permitted activities, as discussed under the No-Action Alternative. In addition, the following would occur within MCMWTC training area boundaries under the Proposed Action:

- Continue using permitted aircraft LZs, DZs, and Expeditionary Air Fields (EAFs) in all TAs (1-16) during authorized operating periods. The LZs also contain landing points, which are primarily designated areas for landing MV-22 Osprey tilt-rotor aircraft.
- Use Combat Operation Centers and Relocatable Housing Units in previously disturbed areas (not only within the LZs, as authorized under exiting permits) within the training areas;
- Conduct vehicle convoy training on four existing training corridors and one new corridor;
- Conduct two new stream-crossing training events;
- Update associated training using the latest generation of USMC vehicles and equipment throughout the MCMWTC; and
- Use TAs 10 and 11 (Leavitt Lake SUP Area) from 15 November to 15 April when there is a minimum 2-ft of snowpack, subject to the applicable resource restrictions and design features. Group size would continue to be limited to one group of 60 individuals or less within TA-10 and one group of 60 individuals or less in TA-11.

The Proposed Action would use current or previously authorized MCMWTC facilities, TAs, EAFs, DZs, ranges, training routes, and training corridors, as well as new or currently unused LZs, landing points, and training corridors. No new facility or road construction is required and there would be no increase in the approximately 15,000 military personnel trained annually at the MCMWTC.

Due to the past adjustments to the 40-year SUP, the addition of temporary and annual SUPs, and the introduction of the proposed training events, equipment, vehicles, and weaponry, there is a need for the Forest Service to amend the 40-year SUP or issue a new multi-year SUP with appropriate terms and conditions that would coincide with the duration of the existing 40-year SUP.

The Forest Supervisor, HTNF, is the responsible official that would decide whether to amend the 40-year SUP (including required design features) to incorporate TAs, training corridors, training activities, and equipment/vehicles/weaponry currently authorized for use under temporary SUPs, as well as new training corridors, training activities, and equipment/vehicles/weaponry under the Proposed Action. The Commanding Officer, MCMWTC, is the responsible official that would make decisions affecting Marine Corps training exercises and activities, including (but not limited to) when and how to conduct military training to meet readiness requirements.

PUBLIC INVOLVEMENT

The public was invited to review and comment on the Description of the Proposed Action and Alternatives (DOPAA) during a public review period from 1 June 2011 through 15 August 2011. Appendix B presents the issues raised by the public during the public comment period as well as the full list of comments received. Issues were identified for multiple resource areas including biological resources, water quality, noise, recreation, socioeconomics, transportation and safety, and cultural resources.

The USMC and Forest Service initiated the public review of the Preliminary EA with the publication of a legal notice in the *Reno Gazette-Journal* on 13 May 2016. The EA was made available for public review on the [Forest Service website](#) and a hard copy was provided at the Bridgeport Public Library. The 30-day public review period ended on 12 June 2016. The USMC and Forest Service initiated a second follow-on public review of the EA to ensure sufficient opportunity for public input, with the publication of another legal notice in the *Reno Gazette-Journal* on 25 June 2016 and distribution of notification emails/mailers to stakeholders. The Preliminary EA was made available for public review on the [Forest Service website](#) and a hard copy was provided at the Bridgeport Public Library. The second 30-day public review period ended on 25 July 2016 and five public comment submissions were received.

ENVIRONMENTAL CONSEQUENCES

The following resource areas were evaluated in detail: soils and water resources, biological resources, cultural resources, public health and safety, air quality, transportation, noise, and recreation. No significant impacts would occur to any resource area under the No-Action Alternative or with implementation of the Proposed Action. For a detailed description and analysis, refer to Chapter 3, *Affected Environment, Environmental Consequences, and Cumulative Effects*.

POTENTIAL IMPACTS OF IMPLEMENTING THE PROPOSED ACTION

The potential impacts of the Proposed Action would be similar in scope, context, and intensity to the No-Action Alternative as authorized under the existing 40-year and annual SUPs; while the use of new vehicles, aircraft, equipment, and some new training activities would be authorized, the overall footprint of these activities would not change. No new facilities would be constructed, and the numbers of personnel, vehicles, and aircraft using the training areas at any given time would be the same under the Proposed Action and the No-Action Alternative but could vary from year to year as USMC training adapts to national needs and the world situation.

There would continue to be widely dispersed, relatively light impacts of training on Forest Service lands due to the imposition of project design features which buffer sensitive resources, habitats, and species from activities that are potentially disturbing. The Proposed Action would implement monitoring and the

adaptive management of training activities to track the condition of resources within the MCMWTC and ensure that habitats are not degraded or populations of sensitive species reduced by training activities.

**ENVIRONMENTAL ASSESSMENT
ENHANCEMENT OF OPERATIONS AND TRAINING PROFICIENCY
AT MCMWTC BRIDGEPORT**

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CHAPTER 1

PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

The United States Marine Corps (USMC) operates the Marine Corps Mountain Warfare Training Center (MCMWTC) base facilities and primary training areas on USMC lands and National Forest System (NFS) lands that are managed by the United States Department of Agriculture (USDA) United States Forest Service (Forest Service), Humboldt-Toiyabe National Forest (HTNF), Bridgeport Ranger District. In Section 5 of Public Law (PL) 100-693, Congress directed that these NFS lands were to be made available for use by the MCMWTC, subject to appropriate restrictions for the protection of “the natural, environmental, aesthetic, scientific, cultural, and other resources and values of such lands.” The Forest Service currently provides for this use as primary training areas via a 40-year Special Use Permit (SUP) that expires in 2049, four annual SUPs, and an Annual Operating Plan (AOP) (refer to Section 1.5; Appendix A).

The USMC and Forest Service are co-leads in preparing this Environmental Assessment (EA) to evaluate long-term use and authorization of NFS lands currently authorized annually for MCMWTC training, and to authorize the use of a new suite of USMC vehicles and equipment (e.g., new models of wheeled Mine Resistant Ambush Protected [MRAP] vehicles, tilt-rotor aircraft) to replace or supplement existing vehicles and equipment within the MCMWTC training areas. This EA analyzes the potential environmental impacts associated with the Proposed Action and a No-Action Alternative (continuation of current management and use of existing vehicles/equipment as authorized under the 40-year SUP, AOP, and annual SUPs; refer to Section 2.1). The Proposed Action is further explained in Chapter 2, Section 2.2. Design features to avoid or minimize potential effects associated with MCMWTC activities under the Proposed Action have been thoroughly reviewed and updated in support of this EA and are presented in Section 2.2.5. Design features under the No-Action Alternative and existing permits are described in Section 2.1.6. Implementation of the Proposed Action would begin in 2018 pending the completion of Section 7 consultation and other requirements.

The USMC and Forest Service have prepared this EA in accordance with the National Environmental Policy Act (NEPA) of 1969, 42 United States Code (USC) §§ 4321-4370h, as implemented by the Council on Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), as well as the following NEPA regulations and policy:

- USDA NEPA Policies and Procedures (7 CFR Part 1b);
- Forest Service NEPA Procedures (36 CFR Part 220);
- Forest Service Manual 1900 (Planning), Chapter 1950, Environmental Policy and Procedures;
- Forest Service Handbook (FSH) 1909.15, NEPA Handbook;
- Department of Navy (DoN) procedures for implementing NEPA (32 CFR Part 775);
- Environmental Compliance and Protection Manual, Marine Corps Order (MCO) P5090.2A, Change 3, August 2013; and
- USMC NEPA Manual (Headquarters Marine Corps, 8 September 2011, Version 2.0).

Following Chapter 1, this EA is organized as follows: Chapter 2 describes the No-Action Alternative and the Proposed Action; Chapter 3 describes the affected environment, environmental consequences, and cumulative effects of each alternative in conjunction with other past, present, and reasonably foreseeable (future) projects in the area; Chapter 4 provides the references; Chapter 5 lists the preparers and contributors; and Chapter 6 lists the agencies consulted. The following resource areas are evaluated in detail in Chapter 3: soils and water resources, biological resources, cultural resources, public health and safety, air quality, transportation, noise, and recreation. Resources not evaluated in detail in this EA include: airspace, community services, land use, population and housing, socioeconomics and environmental justice, visual resources, and utilities, because the potential for impacts was considered negligible or non-existent as described in Section 3.1, Information *on Other Resources*.

1.2 PROJECT LOCATION

The MCMWTC is located in Mono County, California, in the mountains of the eastern Sierra Nevada range. It is situated north of Yosemite National Park, east of the Sonora Pass, and south of Lake Tahoe, and is bounded by United States (U.S.) Highway 395 to the east and California State Route (SR) 108 to the south. The MCMWTC is comprised of a base camp, 16 Training Areas (TAs), and one Conservation Area (CA) in California; a permanent dirt runway which functions as an Expeditionary Airfield (EAF) at Sweetwater Airstrip in Lyon County, Nevada; and four training corridors: Burcham Flat Road (California Forest Service Road [FSR] 031), Kirman Lake Road (California FSR 137), Lucky Boy Pass Road (Nevada FSRs 028 & 199), and Masonic Road (California and Nevada FSR 046). The region is sparsely populated. The town of Bridgeport, California (population approximately 850) lies 24 miles south of the Main Gate of the MCMWTC base camp and is the largest town within 50 miles of the MCMWTC. Other communities in the vicinity include the towns of Walker (population approximately 500) and Coleville (population approximately 400) in California, located approximately 20 miles and 23 miles to the north, respectively (Figure 1.4-1).

All areas directly or indirectly affected by the proposed federal action comprise the “action area” as the term is used in this and related documents (e.g., the Biological Assessment). This includes all areas covered under the permits and additional areas where, depending on the resource, direct or indirect effects may occur.

1.3 PURPOSE OF AND NEED FOR THE ACTION

The MCMWTC mission is to train Marines and other service members (i.e., Joint and Allied Forces) in high-altitude, mountainous, and cold weather Tactics, Techniques, and Procedures (TTPs) due to its ideal location. The topography and geography of the area replicate many parts of the world where Marines operate or may be required to operate. Elevations at MCMWTC range from 6,800 feet (ft) to nearly 12,000 ft above sea level, similar to elevations where most mountain warfare occurs throughout the world. Snow accumulation in the higher elevation MCMWTC training areas averages 2 to 6 ft in depth from December to May (Western Region Climate Center 2015).

The Proposed Action is needed to enhance operations and training proficiency at MCMWTC by allowing the use of new vehicles, equipment, and training activities within permitted areas. The need for the action is consistent with the Toiyabe National Forest Land and Resource Management Plan (Forest Plan) (Forest Service 1986), as amended, and would not require a Forest Plan Amendment.

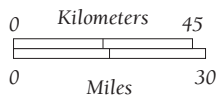
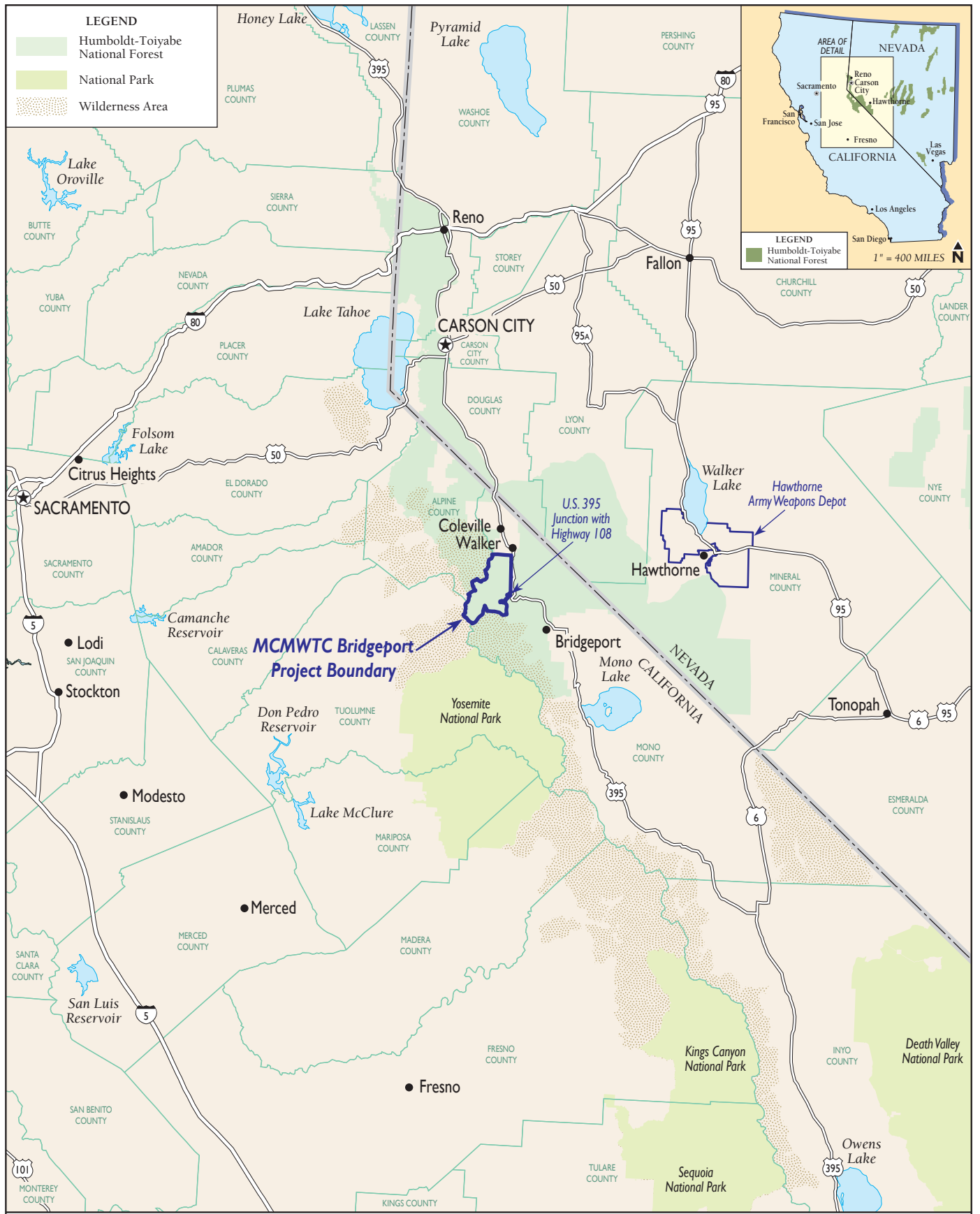


Figure 1.4-1
Regional Project Location



The purpose of the Proposed Action is to provide appropriate authorizations in the current 40-year permit and to enhance operations and training proficiency and improve the planning and management of MCMWTC activities on NFS lands by updating and consolidating the existing SUPs under a single long-term SUP. The Proposed Action is needed for the MCMWTC to train and enhance proficiency in operating in steep, mountainous, high altitude, and cold weather environments using the latest generation of tactical vehicles, weaponry, aircraft, and equipment. USMC training doctrine prescribes that Marines must “train as they fight” under conditions that most closely resemble those encountered in the battlefield, to maximize preparedness, ensure readiness, and maintain capability in defense of the U.S.

As indicated above, mountainous, high altitude, cold weather environments are characterized by dramatic elevation changes over short distances and extreme and rapidly changing weather conditions. Weather and terrain conditions found in mountainous areas worldwide alter the ways in which maneuverability and mobility, firing, intelligence, command and control, logistics, and force protection operations are conducted. Vehicles are often constrained to existing roads or trails, while decreased air density at high elevations and reduction in conventional navigational aids affect both aircraft performance and navigation. In these challenging locations, the primary means of movement is on foot. Units become more compartmentalized and widely dispersed, and severe, sometimes unpredictable weather events can create obstacles and hazards (MCMWTC 2011). A range of small-unit training activities occur seasonally and/or year-round at the MCMWTC, such as over-snow training; avalanche initiation and rescue training; snow caves, ice breaching, and winter survival training; small arms live fire; rock climbing; rope suspension bridge training; Improvised Explosive Device (IED) and ambush training; and “Leave No Trace” training. “Leave No Trace” is a set of outdoor recreation and conservation principles that discourage the disturbance of natural resources and recreational amenities during activities such as backpacking, hiking, horseback riding, etc.

1.4 HISTORY OF THE MCMWTC

Most of the land within the MCMWTC boundaries is managed by the Forest Service. The USMC is authorized to use approximately 63,000 acres of NFS lands within the HTNF under SUPs issued by the Forest Service to the USMC. Approximately 960 acres of developed land (Base Camp facilities) within the MCMWTC boundaries are solely managed by the Department of Defense (DoD) and are not subject to the SUPs. The USMC and Forest Service have been working together to cooperatively manage the use of NFS lands within the MCMWTC boundaries for decades.

The MCMWTC was established in 1951 and comprised a total of 20 acres. Between 1951 and 2010, the training areas changed as follows:

- 1956 – MCMWTC was increased to 500 acres to encompass the base infrastructure facilities.
- 1957 – MCMWTC was increased to 113,000 acres to incorporate all of the areas the Marines were using for training.
- 1967 – MCMWTC went into a cadre (inactive) status due to the Vietnam War and training shifted to jungle locations.
- 1975 – USMC realized a continued need for mountain and winter warfare training; therefore, after an 8-year closure, a new agreement for use on 60,000 acres was reached.
- 1976 – MCMWTC was reactivated.

- 1982 – MCMWTC was further reduced to approximately 46,000 acres as a result of negotiations for proposed wilderness areas and the signing of a new memorandum of agreement (MOA) between the USMC and the USDA.
- 1988 – DoD and the USDA signed a Master Agreement (included in Appendix A) for continued use of NFS Lands for military activity.
- 1988 – PL 100-693 was enacted, Section 5 of which states:

“Unless otherwise provided by law, the lands within the HTNF, in California, which have been used for purposes of the United States Marine Corps Mountain Warfare Training Center, shall be retained as part of such National Forest. The Secretary of Agriculture shall continue to make such lands available to the USMC for purposes of such training center, subject to such restrictions as the Secretary of Agriculture finds appropriate to protect the natural, environmental, aesthetic, scientific, cultural, and other resources and values of such lands. So far as possible, consistent with use of such lands by the USMC for purposes of the Mountain Warfare Training Center, the affected lands shall be open to public recreation and other uses.”
- 1989 – An Interagency Agreement (included in Appendix A) was signed to authorize MCMWTC operations on 44,000 acres of NFS land north of Highway 108 and use of the Sweetwater Airstrip located off Highway 182 in Nevada.
- 2002 to present – MCMWTC has been temporarily authorized for winter use of approximately 5,400 acres south of Highway 108 in the Leavitt Lake area.
- 2010 – PL 111-84 was enacted, stating that “the designation of the Bridgeport Winter Recreation Area is not intended to restrict or preclude the activities conducted by the United States Armed Forces at the United States Marine Corps Mountain Warfare Training Center.”
- 2010 to present – MCMWTC was annually authorized for winter use of approximately 8,200 acres south of Highway 108 in the Pickel Meadow area and use of training corridors along Lucky Boy Pass and Masonic Road near Bridgeport, California and Hawthorne, Nevada.
- 2012 and 2013 – On 22 October 2012 and 18 March 2013, the Secretary of Navy, Energy, Installations & Environment and the Secretary of Agriculture signed a Joint Order authorizing the transfer of 346.49 acres within the MCMWTC from the USDA to the DoN, and the transfer of 240 acres from the DoN to the USDA for inclusion in the HTNF (*Federal Register Volume 78, Issue 98*). As a result of the land interchange, administrative and management responsibilities for the land on which the permanent MCMWTC Base Camp facilities (denoted “Intensive Use Area” in the 40-year SUP) have been developed and used since 1951 are now managed by the USMC. With the land transfer, the DoD owns approximately 960 acres of land within the MCMWTC training area boundaries.

1.5 SPECIAL USE AUTHORIZATIONS

As discussed in Section 1.4, the MCMWTC has conducted military training activities in the Bridgeport Ranger District of the HTNF since 1951 under special-use authorizations in the form of special-use permits, MOAs, or interagency agreements (refer to Appendix A). In 2009, the HTNF issued a 40-year term SUP (BRI [Bridgeport] 250), which replaced the previous 1989 interagency agreement. The 40-year SUP

(BRI250) delineates three areas of USMC usage previously addressed under the 1989 interagency agreement:

- 346-acre Intensive Use Area (Base Camp);
- 43,920-acre Limited Use Areas (TAs; all permitted areas other than Base Camp and Sweetwater Airstrip); and
- Sweetwater Airstrip Special Use Area.

The SUP incorporates an AOP (Forest Service 2015a) which describes activities to be conducted in these designated areas (Appendix A).

The HTNF has also issued temporary SUPs to MCMWTC for the following training activities:

- Permit BRI571 for winter training in the Leavitt Lake area (including portions of Sardine Meadows) (Forest Service 2015b);
- Permit BRI572 for use of some Landing Zones (LZs) and Drop Zones (DZs) for Relocatable Housing Units (RHU) and Combat Operations Centers (COCs) (Forest Service 2015c);
- Permit BRI573 for training in the areas surrounding Pickel Meadows (Forest Service 2015d); and
- Permit BRI574 to conduct convoy training on Masonic Mountain and Lucky Boy Pass Roads (Forest Service 2015e).

Due to the past adjustments to the 40-year SUP, the addition of temporary and annual SUPs, and the introduction of the proposed training events, equipment, vehicles, and weaponry, there is a need for the Forest Service to amend the 40-year SUP or issue a new multi-year SUP with appropriate terms and conditions that would coincide with the duration of the existing 40-year SUP.

1.6 DECISION FRAMEWORK

The USMC and the Forest Service are co-lead agencies for this EA. The USMC is the action proponent responsible for the equipment, weaponry, and training proposed for the MCMWTC, while the Forest Service is the land manager responsible for managing the NFS land where MCMWTC training events occur, and the lead agency for issuing use permits for NFS lands.

This environmental analysis, in combination with regulatory and public comments on the potential impacts of the action, will be considered in decisions to be made by both the USMC and Forest Service. The responsible officials for this analysis are the Forest Supervisor, HTNF and the Commanding Officer, MCMWTC. The responsible officials will use the analysis in this EA, other related documents (e.g., Biological Assessment), and the project record to support the following decisions.

The Forest Supervisor, HTNF, would decide whether to amend the 40-year SUP (including required design features) to incorporate TAs, training corridors, training activities, and equipment/vehicles/weaponry currently authorized for use under temporary SUPs, as well as new training corridors, training activities, and equipment/vehicles/weaponry under the Proposed Action. Specific Forest Service management direction for the area is provided in the Forest Plan (Forest Service 1986). The Forest Plan guides natural resource management activities and establishes management standards and guidelines. The Forest Plan recognizes the MCMWTC as a “significant special land use” (Forest Service 1986). However, in addition to USMC use, the Forest Plan also allows for general public use of the area; provides for coordination and cooperation with the USMC in fire suppression, search and rescue, and maintenance of forest development

roads within the Limited Use Area; and provides for public access to Silver Creek Road through and around the Base Camp (Forest Service 1986).

The Commanding Officer, MCMWTC, would be responsible for decisions affecting Marine Corps training exercises and activities, including (but not limited to) when and how to conduct military training to meet readiness requirements. The Commanding Officer, MCMWTC, would also be responsible for ensuring that all required design features and any additional mitigation measures identified as part of this analysis are fully implemented. The USMC has established a Sustainable Range Awareness program and associated training to promote long-term, sustainable use and conservation of MCMWTC natural and cultural resources.

To support the sustainable range program and Forest Service resource management, the USMC conducts natural and cultural resource surveys, inventories, and evaluations at the MCMWTC. To date, more than 385 archaeological sites and additional isolated finds and historic sites have been identified through cultural resources inventories (MCMWTC and Forest Service 2013a, b), while surveys have been conducted and existing data compiled to map the occurrence of sensitive wildlife, botanical resources, and wetlands in the training areas (Marine Corps Air Ground Combat Center [MCAGCC] 2016; MCMWTC 2013a). Cultural and biological resource data have been incorporated into a geographic information system (GIS) to assess the potential overlap of these resources by training activities. This information is used to de-conflict training and resource protection by applying appropriate design features to avoid and minimize impacts, thus promoting the long-term sustainability of the public lands on which the USMC operates.

In 2013, MCAGCC funded \$800,000 in natural resource studies at MCMWTC (MCAGCC 2016). These studies aided in the development of this EA as well as preparing a wildfire management plan and the Preliminary Draft Integrated Natural Resources Management Plan (INRMP). The Preliminary Draft INRMP provides goals and objectives for future studies. The document is currently undergoing government review prior to release for public comment.

1.7 PUBLIC INVOLVEMENT

1.7.1 Public Scoping and Public Review

The public was invited to review and comment on the Description of the Proposed Action and Alternatives (DOPAA) during a public review period from 1 June 2011 through 15 August 2011. A legal notice was published on 1 June 2011 in the *Sierra Scoop*, *The Record Courier*, and the *Reno Gazette-Journal*, and on 3 June 2011 in the *Mammoth Times*. The DOPAA was placed on the [public project website](#), and hard copies of the DOPAA were provided at the Bridgeport and Coleville libraries. The USMC and Forest Service hosted two open house informational meetings on 21 and 22 June 2011. Comments were received from two federal agencies (Bureau of Land Management [BLM] and U.S. Fish and Wildlife Service [USFWS]), three state agencies (California Regional Water Quality Control Board, California Department of Transportation, and the California Department of Fish and Game), one local agency (Mono County Community Development Department), one non-governmental organization (Pacific Crest Trail Association), and seven private citizens. Appendix B presents the issues raised by the public during the public comment period as well as the full list of comments received. Appendix C contains the agency correspondence.

The USMC and Forest Service initiated the public review of the Preliminary EA with the publication of a legal notice in the *Reno Gazette-Journal* on 13 May 2016. The EA was made available for public review on the [Forest Service website](#) and a hard copy was provided at the Bridgeport Public Library. The 30-day public review period ended on 12 June 2016. The USMC and Forest Service initiated a second follow-on

public review of the EA to ensure sufficient opportunity for public input, with the publication of another legal notice in the *Reno Gazette-Journal* on 25 June 2016 and distribution of notification emails/mailers to stakeholders. The Preliminary EA was made available for public review on the [Forest Service website](#) and a hard copy was provided at the Bridgeport Public Library. The second 30-day public review period ended on 25 July 2016 and five public comment submissions were received.

1.7.2 Public Comments

The USMC and Forest Service identified issues based on comments received during public and internal scoping. The Proposed Action, as presented in this EA, has been refined through the public scoping process to avoid or minimize impacts to biological and cultural resources. This process was also used to determine which issues should be analyzed in detail in the EA. Comments were received from individuals, organizations, state agencies, and other federal agencies as described in Section 1.7.1. Each comment received during scoping was considered a potential issue and evaluated to determine the most appropriate type of response or action. Similar issues were combined where appropriate. The manner in which the comments would be addressed or resolved included:

1. Resolved by Forest Plan land use designations;
2. Addressed through implementation of Forest Plan standards and guidelines, design features, and Best Management Practices;
3. Addressed through implementation of project-specific mitigation measures;
4. Addressed through spatial location of activities during design of project alternatives;
5. Used to drive or partially drive changes to an alternative; and
6. No response, comment is beyond the scope of the project.

The following key issues and other concerns were determined by USMC and Forest Service responsible officials to be within the scope of the project decision. Measurement indicators have been developed for each of the resources or issues analyzed in detail. Measurement indicators are used in the analysis to measure change from existing conditions that would occur under the Proposed Action.¹ Examples of indicators for different types of actions and resources include the extent and magnitude of noise increases and the percentage of a species' habitat that would be impacted.

Training activities would be adaptively managed. Consistent with the existing permits, resource conditions would be evaluated on a year-to-year basis so that trends can be detected and adjustments made if it appears that conditions are degrading as a result of MCMWTC activities. The adaptive management of MCMWTC operations and training would be incorporated into the INRMP as that document is developed.

Issues and concerns were identified during the public scoping process, as listed below. These identified concerns are evaluated within the applicable resource sections in Chapter 3, along with other resource areas, and are addressed by one or more of the methods listed in Section 1.7.2 (above).

- **Biological Resources** - Public concern was expressed that long-term permit area expansion and the use of a new suite of equipment/weaponry and activities may increase noise-related or other habitat disturbance, and directly disturb threatened and endangered and candidate species, Forest

¹ See FSH 1909.15 Chapter 10 (Environmental Analysis), 12.3.

Service sensitive species, migratory birds, and the West Walker deer herd. Indicators of the health of these resources and project effects on them are measured by the overlap of project activities and changes in population size and habitat occupancy. Concern was also voiced that the movement of equipment into and within the TAs could introduce and spread invasive plant species. Concerns are addressed through items 2-5 above.

- **Noise** – The potential noise associated with training (i.e., rotary-wing and tilt-rotor activities at an LZ) on NFS lands or overhead in the sky and changes in the noise environment may affect wildlife and recreational activities. Indicators of potential noise impacts are reflected in the magnitude and distance over which noise is increased by activities, and the overlap of sensitive receptors. Mitigation measures have been developed to reduce any potential impacts, as discussed in Section 3.8, *Noise* (items 2-4 above).
- **Water Quality** – Activities associated with training (i.e., re-fueling, trash disposal, establishment of new LZs/DZs, and removal of vegetation) may affect water quality on NFS lands. Specific indicators are pollutant concentrations in streams. Items 2-4 above are relevant to address water quality issues.
- **Recreation** – As required by PL 100-693, most NFS lands used by the USMC are also open to public access, primarily for recreation. A long-term SUP to authorize TAs 10-16 and training corridors (currently authorized under temporary SUPs), and the use of a new suite of equipment/weaponry (e.g., the MV-22 Osprey) within the MCMWTC, could reduce the quality of the recreation experience in these areas by increasing noise disturbance, impacting visual quality, and increasing user conflicts. Indicators are the overlap and conflict with the public's use of important recreation areas such as the Pacific Crest Trail. Items 2-4 above are relevant to this issue.
- **Socioeconomics** – Potential impacts to the public recreation experience could reduce local tourism and consequently impact the local economy in the vicinity of the MCMWTC. Indicators would be manifested as changes in visitation rates and expenditures. Where impacts may arise, items 3 and 4 above are relevant.
- **Transportation and Safety** – USMC training and the use of a new suite of equipment/weaponry within the MCMWTC could degrade roads and impact the safety of the traveling public. Indicators are represented by the condition of roads and public access to them, with impacts being addressed by items 2-5 above as warranted.
- **Fire Risk** – The addition of a new suite of equipment/weaponry (e.g., MV-22 Osprey) to the MCMWTC could increase the fire risk within the HTNF. Indicators are any change in the expected frequency or intensity of fires, which would need to be addressed through items 2-3 above.
- **Cultural Resources** – The addition of a new suite of equipment/weaponry could impact cultural resources in the MCMWTC. The indicators of potential impact are measured by overlap of ground-disturbing activities with cultural resources that are eligible for National Register listing or have not yet been evaluated. The efficacy of design features and/or mitigation measures (items 2-3 above) in avoiding disturbance to these resources requires evaluation.
- **Visual Resources** – Concern was raised that aircraft activities could have visual resource impacts within the TAs and training corridors. Indicators are represented by changes in the frequency, duration, or conspicuousness of aircraft activities which could negatively impact the visual characteristics of the landscape. Visual impacts would be addressed by items 3-5 above.

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CHAPTER 2

NO-ACTION ALTERNATIVE AND PROPOSED ACTION

This chapter describes the No-Action Alternative which would continue operations and training under the existing permits, the Proposed Action to enhance operations and training proficiency at MCMWTC Bridgeport, and other alternatives considered but not carried forward for detailed analysis. The project area for the alternatives includes NFS lands in the Bridgeport Ranger District of the HTNF. Appendix A contains the existing permits.

2.1 NO-ACTION ALTERNATIVE

Under the No-Action Alternative, training activities would be limited to the vehicles, weapons systems, engineer systems, aircraft, ordnance, and equipment currently utilized by the USMC and other military agencies as authorized in the 40-year SUP (Forest Service 2009a), AOP, and the four existing temporary SUPs. Design features that are part of the existing SUPs and AOP would continue to be implemented to provide protection of biological, physical, and cultural resources.

While the No-Action Alternative does not meet the purpose of and need for the Proposed Action (see Section 1.3) as it would not allow for the enhancement of operational proficiency at MCMWTC, it does provide a baseline against which to analyze the potential environmental consequences associated with implementation of the Proposed Action.

The scope, roles and responsibilities, and terms and conditions of the current SUPs/AOP are contained in Appendix A and are assumed to apply to the No-Action Alternative for the foreseeable future unless specific modifications (such as changes in activities, vehicles, weapon systems, or design features) have been agreed to by the Forest Service and USMC. Key features of the existing permits are summarized in the following sub-sections.

2.1.1 Training Areas and Ranges

Range procedures and safety regulations for the MCMWTC are contained in Training Center Order (TCO) 3550.1C (USMC 2010). This Order publishes information, instructions, and procedures governing the use of live-fire ranges, training areas, and airspace operated and controlled by the MCMWTC Commanding Officer, to ensure sustainable use and management of ranges and protect DoD personnel and the general public from associated range hazards.

2.1.1.1 Training Areas

Within the MCMWTC boundaries, there are 16 Training Areas (TAs) that contain all of the areas and activities used for the training exercises (Figure 2.1-1 and Table 2.1-1). Collectively, the TAs accommodate the following training components:

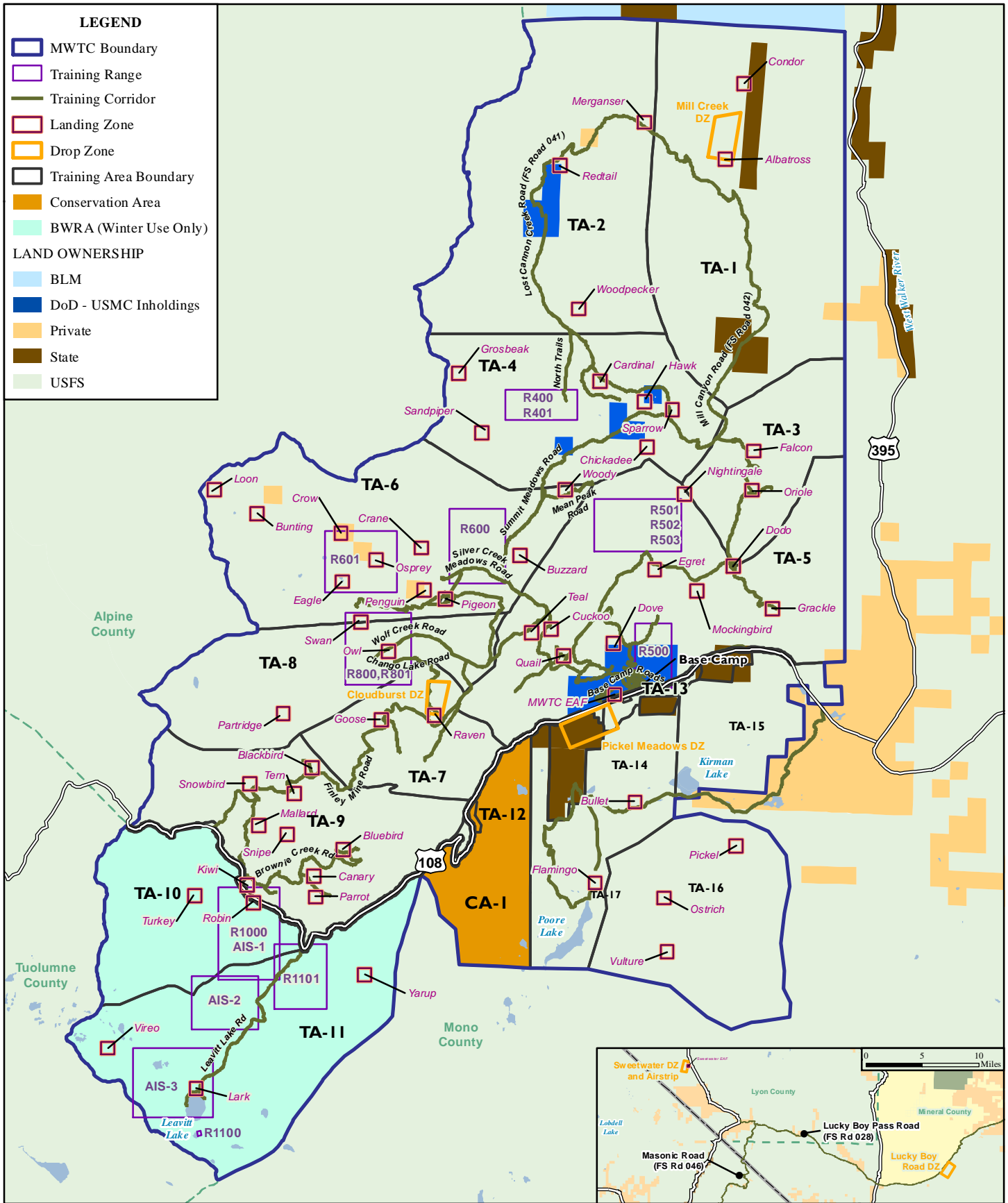
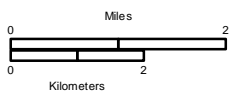


Figure 2.1-1
Range Components Under the No-Action Alternative



**Table 2.1-1. Size and Range Components of each Training Area
under the No-Action Alternative**

<i>Training Area</i>	<i>Alternate Designation</i>	<i>Acreage</i>	<i>Landing Zones and Drop Zones</i>	<i>Live-Fire Ranges</i>	<i>Representative Training Uses¹</i>
1	Mill Canyon	7,765	2 LZs (Albatross and Condor) 1 DZ (Mill Creek)	None	Expeditionary combat service support training, main supply route movement and training
2	Lost Cannon	6,584	3 LZs (Merganser, Red Tail, and Woodpecker)	None	Company-sized maneuver training and mortar non-live-fire training
3	Grouse Meadows	2,190	2 LZs (Falcon and Oriole)	None	Battalion-level ² bivouacking, winter unit operations, and skiing/environmental training
4	Summit Meadows	4,352	6 LZs (Cardinal, Sandpiper, Grosbeak, Sparrow, Hawk, and Chickadee)	Ranges 400 and 401	Company-level ² operations, survival training, and skiing/environmental training
5	Sonora Bridge, Upper Bench, People's Gate, and Aspen Bowl	7,122	9 LZs (Grackle, Dodo, Mockingbird, Nightingale, Egret, Quail, Dove, Cuckoo, and Teal) MCMWTC EAF	Ranges 500, 501, 502, and 503	Dismounted patrolling, sniper training, Simulated Close Air Support, water purification training, small unit tactics, and advanced logistics base training. Also contains Base Camp.
6	Silver Creek Meadows	5,975	11 LZs (Pigeon, Crane, Buzzard, Swan, Loon, Bunting, Crow, Eagle, Osprey, Penguin, and Woody)	Ranges 600 and 601	Small arms training and company-level ² maneuver training
7	Cloudburst	1,994	2 LZs (Raven and Goose) 1 DZ (Cloudburst)	None	Small unit tactics and maneuver training
8	Wolf Creek	3,286	2 LZs (Owl and Partridge)	Ranges 800 and 801	Downhill skiing and small arms sniper training
9	Brownie Creek	3,351	10 LZs (Blackbird, Tern, Snowbird, Mallard, Snipe, Kiwi, Bluebird, Canary, Parrot, Brownie Creek)	None	Small unit training, Battalion-level ² bivouacking
N/A	Sweetwater Airstrip	308	1 DZ (Sweetwater) Permanent dirt runway at Sweetwater EAF	None	Troop insert via parachute, expeditionary runway (aviation assets)

**Table 2.1-1. Size and Range Components of each Training Area
under the No-Action Alternative**

<i>Training Area</i>	<i>Alternate Designation</i>	<i>Acreage</i>	<i>Landing Zones and Drop Zones</i>	<i>Live-Fire Ranges</i>	<i>Representative Training Uses¹</i>
10	Sonora Pass	3,718	2 LZs (Turkey and Robin)	Range 1000 A portion of Demolition Range 1	All training limited to snow season (15 November-15 April), to remain on 2-ft snowpack, winter training only; includes small unit over the snow training, avalanche training, snow caves, and winter survival.
11	Leavitt	5,459	3 LZs (Yarup, Lark, and Vireo)	Ranges 1100 and 1101 Demolition Ranges 2 and 3 A portion of Demolition Range 1	All training limited to snow season (15 November-15 April), to remain on 2-ft snowpack, winter training only; includes small unit over the snow training, avalanche training, snow caves, ice breaching, small arms live fire and winter survival.
12	Leavitt Training Area	62	None	None	Teaching location for rock climbing skills and rope suspension bridge training
13	Pickel Meadow	Collectively 10,051	1 DZ (Pickel Meadow)	None	Small unit (platoon ² or smaller) acclimatization, conditioning hikes (off-trail groups < 15), and similar foot-mobile, non-live-fire activities (no live or blank ammunition)
14	Poore Lake	Collectively 10,051	3 LZs (Bullet, Flamingo, and Pickel)	None	Small unit (platoon ² or smaller) acclimatization, conditioning hikes (off-trail groups < 15), and similar foot-mobile, non-live-fire activities (no live or blank ammunition)
15	Kirman Lake	Collectively 10,051	None	None	Small unit (platoon ² or smaller) acclimatization, conditioning hikes (off-trail groups < 15), and similar foot-mobile, non-live-fire activities (no live or blank ammunition)
16	Emma Cross	Collectively 10,051	2 LZs (Ostrich and Vulture)	None	Small unit (platoon ² or smaller) acclimatization, conditioning hikes (off-trail groups < 15), and similar foot-mobile, non-live-fire activities (no live or blank ammunition)

**Table 2.1-1. Size and Range Components of each Training Area
under the No-Action Alternative**

<i>Training Area</i>	<i>Alternate Designation</i>	<i>Acreage</i>	<i>Landing Zones and Drop Zones</i>	<i>Live-Fire Ranges</i>	<i>Representative Training Uses¹</i>
N/A	Lucky Boy Pass Road / Masonic Road Training Corridors	N/A	2 LZs (Swallow and Finch) 1 DZ on Lucky Boy Pass Road	None	Expeditionary vehicle convoy, IED and ambush training
N/A	Kirman Lake Road Training Corridor	N/A	None	None	Expeditionary vehicle convoy, IED and ambush training
CA-1			None	None	“Leave No Trace” training

Notes: DZ = Drop Zone; EAF = Expeditionary Air Field; LZ = Landing Zone; MCMWTC = Marine Corps Mountain Warfare Training Center

¹ TAs 1-9 can be used for all of the activities outlined in the AOP, by up to battalion-sized units; activities in TAs 1-9 are not limited to “Representative Activities.”

² A Platoon is approximately 40-50 Marines, a Company is approximately 150-200 Marines, and a Battalion can range from 500 to 1,000 Marines.

- Landing Zones (LZs) and Drop Zones (DZs).** Designated LZs allow for landing and take-off of rotary-wing aircraft (helicopters) used in the training activities. The use of tilt-rotor aircraft (MV-22 Osprey) has only been approved on a case-by case basis for some LZs under specific conditions and/or within short time frames. Some LZs in the MCMWTC TAs are also used as DZs, to drop individual military personnel (via parachute) or cargo pallets into the field during and as part of specific training activities. Larger DZs are used to accommodate larger numbers of personnel and cargo pallets and for military training simulations as described in Section 2.1.3. The LZs and DZs have been authorized annually under a temporary SUP (BRI572).
- Expeditionary Airfields (EAFs).** There are two EAFs (MCMWTC and the permanent dirt runway at Sweetwater Airstrip) currently used by the MCMWTC for take-off and landing of fixed- and rotary-wing aircraft and other activities in support of training. The EAFs include LZs and DZs. The MCMWTC EAF is part of the Marine Corps-owned Base Camp whereas the Sweetwater Airstrip is a Special Use Area subject to an annual SUP.
- Ranges.** There are 13 live-fire ranges used for small arms training. Firing points and targets are temporarily set up, used, and removed within the training ranges (small rectangles) located within the TAs (large rectangles) shown in Figure 2.1-1. General notice is provided to the public in advance of range use, and the general location is posted to discourage entry when a range is in use, which is always temporary. Further description is provided in Section 2.1.1.2 below. There are also three Avalanche Initiation Sites (AISs), where avalanches are initiated with explosives to safely expose instructors to avalanches. The ranges occur within the TAs and are authorized under the existing 40-year and annual SUPs.
- Training Corridors.** Training corridors are areas where specific training activities and operations occur along the corridor, in addition to basic vehicle and equipment transit along the roads, as described in Section 2.1.4. Two training corridors, Lucky Boy Pass Road and Masonic Road comprise a Special Use Area currently authorized under an annual SUP. MCMWTC use of another road corridor, Burcham Flat Road, was previously authorized under a short-term permit.

The TAs and training components are currently authorized for use under existing SUPs. Some of the important features of the existing permits are as follows:

- TAs 1-9 and 12 are authorized for year-round use, subject to the conditions of the current 40-year SUP (BRI250) and supporting AOP. Vehicles must remain on existing roads.
- Use of live ammunition is only authorized at established live-fire ranges. Blank ammunition can be used throughout TAs 1-12, except that use is prohibited within 60 ft of unprotected persons (i.e., civilians).
- Under the Leavitt Lake SUP (BRI571), TAs 10 and 11 (i.e., Leavitt Lake SUP Area) are authorized for use during the snow season only, 15 November to 15 April, provided training activities remain on areas with 2 ft (or more) of snowpack and do not occur on marshy areas during thaw regardless of time of year. Group size is limited to one group of 60 individuals or less within TA-10 and one group of 60 individuals or less in TA-11.
- TAs 12-16 within the Pickel Meadow area are authorized for year-round use with a number of restrictions, as listed in the temporary SUP (BRI573), including but not limited to:
 - Use of live or blank ammunition is not authorized. Limited pyrotechnics are authorized only to aid in LZ/DZ operations and in accordance with fire restrictions.
 - Use of explosives for ice breaching is restricted to Mud Lake (no later than 1 March) and has been authorized as conditions allow in previous annual SUPs for the Pickel Meadow area, but is not included in the current (2016) SUP.
 - Personnel may hike on existing roads, but off-road/trail hiking is limited to groups of 15 or less. MCMWTC currently abides by this restriction by limiting the use of Pickel Meadows to the small Formal Schools that can operate under this constraint and by breaking up any larger groups into groups smaller than 15 personnel each. The smaller groups are kept out of sight range (200 meters [m] or more) to enable training realism. This limitation does not allow for a Platoon (approximately 42 personnel) to train along a road or trail at one time.
 - Use of Kirman Lake Road is restricted to no more than four vehicles.
 - One helicopter landing zone (LZ Bullet) is within the Pickel Meadow area.
 - Stream crossing consisting of rope bridges and stream fording on the West Walker River is restricted to groups of less than 150 persons.
 - Limited snowmobile use in TA-16 (Emma Crossing Area), restricted to when conditions permit.
- Under the LZ and DZ permit (BRI572), tilt-rotor aircraft (i.e., MV-22) were authorized to be used on certain dates in 2015 at 16 LZs. Landings were only permitted with 2 ft (or more) of snow cover at 11 LZs (Bluebird, Canary, Dove, Egret, Goose, Owl, Partridge, Penguin, Robin, Snowbird, and Tern). The other 5 LZs did not have snow cover restrictions (Blackbird, Dodo, Raven, Sparrow, and Woody). Currently, MV-22s are not permitted at any LZs but can be allowed at specific LZs on a case-by-case basis depending upon resource constraints and fire danger conditions.
- The Marine Corps established CA-1 west of TA-14 (see Figure 2.1-1) to teach Marines the “Leave No Trace” backcountry principles and to provide an environmental education venue for Marines training at the MCMWTC. No combat training activities occur at CA-1.

2.1.1.2 Ranges

Target locations and firing positions on each of 13 live-fire small arms ranges are designated by the MCMWTC and included in the 40-year SUP issued by the Forest Service. Additional information on the ranges is provided in Appendix D, which includes the baseline Range Environmental Vulnerability Assessment (REVA) covering munitions use on all 13 ranges through 2006 (Headquarters Marine Corps 2008), and the 5-year review covering munitions use from 2007 through 2011 (Marine Corps Installations Command [MCICOM] 2012). The MCMWTC REVA and 5-year review have found minimal impact to human and ecological receptors. Authorized weapons at the ranges include 9 mm and .45 caliber pistols, service (12-gauge) shotguns, service rifles, light and medium machine guns using 5.56 mm and 7.62 mm ammunition, and .50 caliber sniper rifles. The targets used at the MCMWTC small arms training ranges include battery operated pop-up “Larue” targets, Stationary Infantry Targets (SITs), Mobile Infantry Targets (MITs), and conventional paper targets mounted on wooden or metal supports. SITs are described below:

- Can be made of wood, paper, or steel; shaped like a three-dimensional human shape; human silhouette (the “LaRue target”); square; or cylinder.
- Stand on wood or metal supports of varying heights.
- Emplaced and removed as used per range, within designated target areas as per AOP/SUP approved ranges.
- Use lead-acid batteries and gasoline-fueled generators to recharge the batteries. These items would be removed after use and the area would be cleaned up as needed.

MITs are described below:

- Remote-controlled, three-dimensional human shapes that can slide sideways along rails.
- Emplaced and removed as used per range, within designated target areas as per AOP/SUP approved ranges.
- Use lead-acid batteries that must be changed frequently; no gasoline-fueled generator. These items would be removed after use and the area would be cleaned up as needed.

All target systems used at MCMWTC must be temporary according to the existing SUPs. Cleanup after use includes the removal of cartridge cases, machine gun links, and other debris (USMC 2010).

2.1.2 Training Events

Combat operations in mountainous, high altitude, and cold weather environments are physically and technically demanding and require specialized warfighting doctrine, training, and equipment. Training must consider fire support limitations, weapons employment, mountain patrol techniques, movement, control of fires, intelligence gathering, sustainment, communications, and force protection. Units and personnel may require specialized equipment for and training in technical climbing, rope bridging, military mountaineering, field craft (the ability to make military or scientific observations in the field while remaining undetected), water procurement and distribution, outdoor and cold weather survival techniques, casualty evacuation, navigation, use of pack animals, and high angle marksmanship sniper training. Specific winter technical training activities include ice breaching and breaking, cold water immersion, over-the-snow mobility, and other activities specific to high elevation winter climates. Medical challenges

include treatment of high altitude and cold weather illness and injuries, and casualty transport in a snow covered mountainous environment.

Temporary, larger scale support activities such as COCs and Relocatable Housing Units (RHU) occur in conjunction with ongoing training exercises. COCs are used to coordinate tactical actions in the field. They serve as the headquarters or command post for a given unit. They are scalable in size, depending on the requirements. The largest COC will not usually exceed five large tents, 10 vehicles, three generators, and 100 personnel. Sometimes these encampments will utilize barbed-wire or concertina wire to surround tent areas. The smallest COC may simply consist of a few four-man tents and man-portable radios. COCs will only be placed on existing disturbed ground such as recreational campsites, established parking areas, or LZs/DZs. COCs may be placed on snow, but only with adequate snowpack (2 ft or more) (Forest Service 2015a). RHUs are used to simulate villages/buildings in other countries. They have ground contacts consisting of a footprint of 1 ft by 1 ft. They are temporary and can be put up or taken down in a matter of hours with no impact to the area they are in. RHU sites must be accessed by vehicle (Forest Service 2015a). Within YT critical habitat, RHUs are only allowed on 2 ft of snowpack or more.

Nineteen training events are currently authorized at the MCMWTC, subject to the constraints of the existing permits (summarized in Section 2.1.1.1; detailed in Appendix A) and design features under the existing SUPs (Section 2.1.6). Realistic training on the MCMWTC must be fluid, adaptable, and naturally varies between years, seasons, exercises, and from day to day in response to the particular objectives of an exercise and conditions on the ground (e.g., fire danger). As follows, any training event can be conducted in any TA as long as it abides by permit restrictions and design features (e.g., winter training only in TAs 10-11 [i.e., Leavitt Lake SUP Area], and with 2 ft or more of snowpack required; group size limited to one group of 60 individuals or less within TA-10 and one group of 60 individuals or less in TA-11). A synopsis of each training event is provided below. Figure 2.1-2 shows a representation of where the training exercises likely occur within the individual MCMWTC TAs. Each training event contains numerous individual training activities within each event, as described within each training event description below.

1. Mountain Exercise

Mountain Exercise is the main training exercise conducted at MCMWTC. It is conducted six times per year, with approximately 600-1,200 participants total, over 22 training days. The Summer Mountain Exercise occurs four times per year, and the Winter Mountain Exercise occurs twice per year. The event takes place at and between the MCMWTC, Hawthorne Army Depot (HWAD) in Nevada, and Naval Air Station Fallon in Nevada. Mountain Exercise occurs in all 16 TAs and along Lucky Boy Pass Road, Masonic Road, and Kirman Lake Road. Within TAs 10-11, Mountain Exercise is authorized for winter use only, with 2 ft or more of snowpack required, and group size is limited to one group of 60 individuals or less within TA-10 and one group of 60 individuals or less in TA-11. The program is designed to challenge the Marine Air Ground Task Force (MAGTF) and its subordinate elements to plan and perform critical tasks across the warfighting functions, at medium to high altitudes in mountainous terrain and in all weather conditions. The exercise typically includes Joint, Coalition, and Special Operations Forces (SOF) operating across all three venues. The exercise affords training units the opportunity to train to all Operation Enduring Freedom mission profile MAGTF tasks, requires them to operate over a realistically scaled area of operations, and exposes them to multiple types of terrain sets found all over the world. Training activities include aviation operations from expeditionary sites, clearance operations, and base defense operations. During Phase I of Mountain Exercise, Marines receive training in company-size groups (approximately 200 personnel) on topics such as proper use and care for personal clothing and equipment, military mountaineering equipment, mountain health considerations, considerations for casualty evacuation, and

mountain weather. During Phase II, the Marines receive training in the same company-size groups as Phase I, but remain in the field overnight and rotate between training stations over the course of 10 to 12 training days. The Final Exercise (FEX) is the culminating event of Mountain Training Exercise, consisting of seven to eight training days (including a brief preparation period) of force-on-force operations. The training unit conducts a variety of offensive and defensive actions against a live opposition force and is required to utilize all of the skills trained during Phase I and II. It is during the FEX that all Marine Corps assets (ground, logistics, aviation) are brought together in order to create a realistic scenario for the training unit.

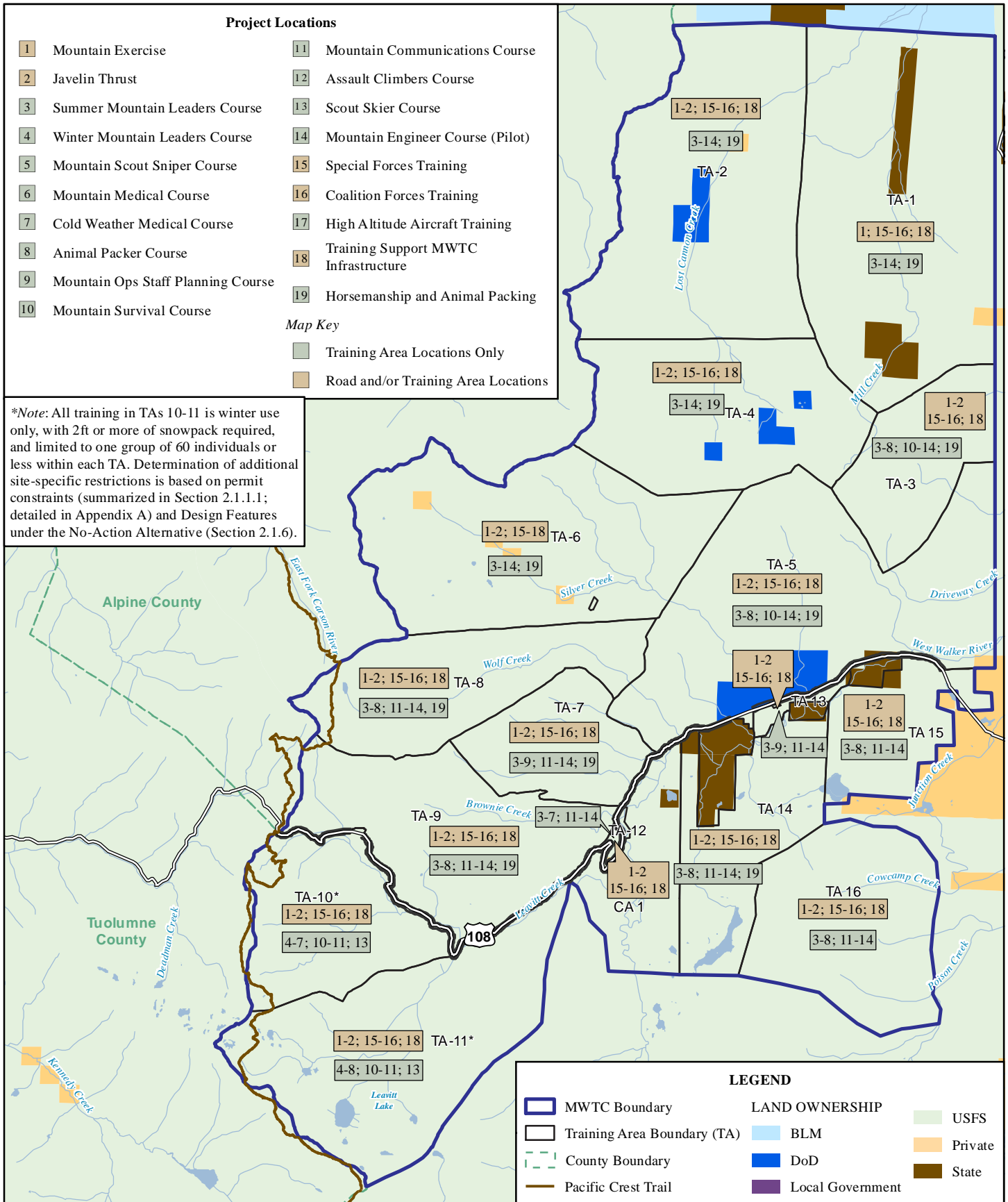


Figure 2.1-2
Existing Training Exercises within MCMWTC Training Areas

2. Large Scale Exercise (Javelin Thrust)

Large Scale Exercise (LSE), also known as Javelin Thrust, is a 14-day training package designed for reserve units, held once a year. Up to 1,200 personnel participate in this modified Mountain Exercise event. This program is designed around a Marine Forces Reserve LSE. It provides a training and selective assessment package that challenges MAGTF elements to plan and perform critical tasks across the warfighting functions, at medium to high altitudes in mountainous terrain, and in all weather conditions. The exercise affords training units the opportunity to train to all Operation Enduring Freedom mission profile MAGTF tasks, to operate over a realistically scaled area of operations, and to conduct operations in multiple types of terrain sets. LSE occurs in TAs 2 through 16 and along Lucky Boy Pass Road, Masonic Road, and Kirman Lake Road. Within TAs 10-11, Large Scale Exercise (Javelin Thrust) is authorized for winter use only, with 2 ft or more of snowpack required, and group size is limited to one group of 60 individuals or less within TA-10 and one group of 60 individuals or less in TA-11.

3. Summer Mountain Leaders Course

The Summer Mountain Leaders Course is a foot mobile course designed to train Marines to become experts in mountain and alpine operations. These advanced technical skills enable movement, control of fires, intelligence gathering, sustainment, and force protection in rocky and glaciated terrain. Each course entails a large amount of hiking but minor vehicle use is also involved; vehicles are required for logistical resupply, mock casualty evacuation, and movement of students. All vehicles are required to remain on the road, similar to all other applicable courses and exercises. Summer Mountain Leaders Course is conducted two times a year, with each event lasting 36 training days. The class size ranges from 22 to 45 students. Training activities include navigating within the mountains in a survival situation, mock casualty evacuation, and managing a water obstacle crossing site. The Summer Mountain Leaders Course occurs in TAs 1-9 and 12-16.

4. Winter Mountain Leaders Course

The Winter Mountain Leaders Course is a foot mobile course designed to train Marines to become subject matter experts in cold weather operations. These advanced technical skills enable movement, command and control, and execution of fires, intelligence gathering, sustainment, and force protection in snow and ice covered terrain. It is conducted twice a year, with 36 training days per event. Class sizes range from 22 to 45 students. Training activities include negotiating alpine ice and snow terrain, applying snow-covered concealment techniques, and bivouac in a snow covered environment. The Winter Mountain Leaders Course occurs in all 16 TAs. Within TAs 10-11, Winter Mountain Leaders Course is authorized for winter use only, with 2 ft or more of snowpack required.

5. Mountain Scout Sniper Course

The Mountain Scout Sniper Course is a 17-day training course conducted four times a year. Class sizes range from 8 to 24 students. It is a foot mobile course designed to train Scout Snipers to be tactically and technically proficient in a mountainous environment. Course subjects include: High Angle fire with the M40A3 sniper rifle, M82A3 Special Application Scoped Rifle and M16A2 service rifle; combat marksmanship with the M9 service pistol; range estimation; determining slope angle and flat line distance; effects of vertical and angular distortion; effects of elevation; and effects of extreme weather. Instruction in field craft includes stalking and concealment techniques in a mountainous environment, man tracking, counter-tracking, over-snow mobility (e.g., traversing snowy terrain using skis, snowmobiles, light-tracked vehicles), mountain communications, and mountain survival. The Mountain Scout Sniper Course occurs

in all 16 TAs. Within TAs 10-11, Mountain Scout Sniper Course is authorized for winter use only, with 2 ft or more of snowpack required.

6. Mountain Medical Course

The Mountain Medicine Course is a foot mobile course designed to give the students the knowledge to move a casualty in a summer mountainous environment without vehicle or air support; to become a proficient medical provider in a cold weather, high altitude environment; and to plan and conduct medical operations in a high altitude, summer mountain environment. Each course is 12 training days in length, and it is conducted 3 times per year. The class sizes range from 10 to 40 students. Training activities include performing cold weather preventative medicine, managing a hypothermia casualty, and applying the principles of nutrition in a mountainous environment. The Mountain Medical Course occurs in all 16 TAs. Within TAs 10-11, Mountain Medical Course is authorized for winter use only, with 2 ft or more of snowpack required.

7. Cold Weather Medical Course

The Cold Weather Medicine Course is a foot mobile course designed to give the students the knowledge needed to support their units in a cold weather, mountainous environment. This course of instruction is designed to bring the students to a high standard of technical, tactical, and medical proficiency specific to a cold weather environment. Each 12-day training session has from 10 to 50 students, and is conducted 3 times a year. Training activities include managing common cold weather injuries in a cold weather environment, managing high altitude health problems, and managing a submersion (e.g., snow or water) incident casualty. The Cold Weather Medical Course occurs in all 16 TAs. Within TAs 10-11, Cold Weather Medical Course is authorized for winter use only, with 2 ft or more of snowpack required.

8. Animal Packer Course

The Animal Packers Course is conducted 4 times a year, with 12 training days per session, and has 12 to 48 students per session. It is a foot mobile course designed to train Marines to become more effective in a mountainous environment utilizing pack animals (i.e., mules) for transporting crew-served weapons, ammunition, supplies, and wounded personnel to and from areas inaccessible to motorized/mechanized and air mobile transportation. Training activities include performing the duties of the packmaster and handler, performing first aid on an injured animal, and negotiating obstacles with pack animals. Students conduct training on animal handling, grooming and saddling, packing hitches, basic seat position and riding cues, movement on horseback, and route planning considerations. The Animal Packer Course occurs in TAs 1 through 9 and 11 through 16, typically from April to November depending on snow coverage depth. For TA-11 specifically, Animal Packer Course is authorized for winter use only, with 2 ft or more of snowpack required.

9. Mountain Operations Staff Planning Course

This course is a foot mobile course designed to aid Marines involved in staff planning to become proficient in planning mountain warfare operations across all six warfighting functions for each MAGTF element. Each course is 8 days long and is conducted once per year, with 15 to 40 students participating. Training elements include applying intelligence planning, mountain command and control, and maneuver planning considerations for mountain warfare operations. The Mountain Operations Staff Planning Course occurs in TAs 1, 2, 4, 6, 7, and 13.

10. Mountain Survival Course

The Mountain Survival Course is a foot mobile course designed to teach Marines necessary survival techniques in order to prevail in a mountainous environment. Skills taught are: expedient fires, expedient shelters, signaling devices, food and water procurement, primitive tool and weapons construction, navigation and other survival techniques. Great emphasis is placed on mental attitude as the key to survival. Students are placed in a high-stress situation and apply survival skills in groups and individually. Groups of 12 to 44 students are trained over 20 days, twice per year. The Mountain Survival Course occurs in TAs 1-6 and 10-11. Within TAs 10-11, Mountain Survival Course is authorized for winter use only, with 2 ft or more of snowpack required.

11. Mountain Command, Control, and Communications Course

The Mountain Command, Control, and Communications Course is a foot mobile course designed to train communicators in the employment of communications assets in a mountainous environment under all weather conditions. Instruction is provided in wave theory and propagation, field expedient antennas, and retransmission operations, and the advantages/disadvantages of various radio equipment. The course is 15 training days in length and conducted 6 times per year, with 28 to 50 students participating in each session. This course occurs in all 16 TAs. Within TAs 10-11, Mountain Command, Control, and Communications Course is authorized for winter use only, with 2 ft or more of snowpack required.

12. Assault Climbers Course

The Assault Climbers Course is a foot mobile course designed to train ground combat arms in mountain warfare Tactics, Techniques, and Procedures (TTPs) to serve efficiently as force multipliers to their units during combat operations in mountainous terrain. It is conducted 4 times a year, with 21 training days and class sizes ranging from 16 to 45 students. Training activities include climbing and belaying, conducting a lead climb on steep terrain, and managing a water obstacle crossing site. The Assault Climbers Course occurs in TAs 1-9 and 12-16.

13. Scout Skier Course

The Scout Skier Course is a foot mobile course created to train personnel to become subject matter experts in winter mountain picketing and skiborne patrolling. All reconnaissance and surveillance Marine units can be trained as Scout Skiers for winter operations, and up to a third of an infantry unit can be trained as mountain pickets (personnel placed on a line forward of position to warn against an enemy advance). The course is held 2 times per year and consists of 17 training days with 16 to 45 students per session. Training activities include managing an avalanche search, applying snow-covered concealment techniques, and skijoring (being pulled on skis by dogs, a snowmobile, or other animal or vehicle). The Scout Skier Course occurs in all 16 TAs. Within TAs 10-11, Scout Skier Course is authorized for winter use only, with 2 ft or more of snowpack required.

14. Mountain Engineer Course

Summer Mountain Engineer Course

The purpose of the Summer Mountain Engineer Course is to train combat engineers and infantry assault men in engineer operations using TTPs to use during combat operations in mountainous terrain. Course topics include rigging, mobility, counter-mobility, and survivability. Training activities include surveying mountainous terrain, designing drainage structures, and preparing survivability plans. The course is held 2 times a year, with 20 to 35 students and 25 training days per session.

The Summer Mountain Engineer Course occurs in TAs 1-9 and 12-16.

Winter Mountain Engineer Course

This course is designed to train combat engineers and infantry assault men in engineer operations using techniques and procedures during combat operations in snow-covered, high altitude mountainous terrain in cold weather. Topics include mobility, counter-mobility, and survivability, and training activities include initiating an avalanche (avalanche initiation only occurs in AISs 1-3, within TAs 10-11), negotiating a snow or ice-covered water obstacle, ice breaching and breaking, and conducting ice reconnaissance. Between 20 and 35 students participate in the annual course, which has 25 training days total.

The Winter Mountain Engineer Course occurs in all 16 TAs. Within TAs 10-11, Winter Mountain Engineer Course is authorized for winter use only, with 2 ft or more of snowpack required.

15. Special Forces Training

Special Operations Forces (SOF) and units under the Special Operations Command umbrella participate in a fully integrated exercise that allows general purpose force units, SOF units, and aviation units the opportunity to conduct a full spectrum of operations in mountainous, high altitude and cold weather conditions. SOF units are given the ability to conduct surveillance and reconnaissance, direct action, foreign internal defense, and other operations in conjunction with a USMC infantry battalion against a USMC infantry company as a part of the exercise in a free play, intelligence driven scenario. The Special Forces Training occurs in all 16 TAs and along Lucky Boy Pass Road, Masonic Road, and Kirman Lake Road. Within TAs 10-11, Special Forces Training is authorized for winter use only, with 2 ft or more of snowpack required, and group size is limited to one group of 60 individuals or less within TA-10 and one group of 60 individuals or less in TA-11.

16. Coalition Forces Training

Coalition Forces Training is a 10-day training package designed for Embedded Training Teams participating in Operation Enduring Freedom. This program is to provide Embedded Training Teams and Regional Corps Advisory Command teams to perform critical tasks, at medium to high altitudes in mountainous terrain and in all weather conditions. Operations are conducted over a realistically scaled area of operations and participants are exposed to multiple types of terrain sets. It is a scenario-based exercise focused on infantry TTPs in steep, mountainous terrain in all-weather events and at medium to high altitude. Up to 120 personnel participate at one time. Training activities include command and control, conducting operations in mountainous terrain, and advising foreign security forces. Coalition Forces Training is not currently conducted at the MCMWTC but has typically occurred in all 16 TAs and along Lucky Boy Pass Road, Masonic Road, and Kirman Lake Road. However, if Coalition Forces Training is reactivated, it will be in accordance with all design features and restrictions found in the active SUPs and AOP. Within TAs 10-11 specifically, Coalition Forces Training would be permitted for winter use only, with 2 ft or more of snowpack required, and group size would be limited to one group of 60 individuals or less within TA-10 and one group of 60 individuals or less in TA-11.

17. High Altitude Aircraft Training

High Altitude Aircraft Training is conducted at the MCMWTC in order to train aircrew on aircraft performance, limitations, operations, and support to ground personnel in high altitude, cold, steep terrain. All aircrew will be able to perform all mission essential task lists, including simulated close air support, intelligence, surveillance and reconnaissance, assault support, and aerial delivery ensuring that MAGTF aircraft are capable of performing missions in any climate and place.

High Altitude Aircraft Training includes a convoy escort above 3,000 ft Above Ground Level (AGL). The training aircraft land on LZs but not on roads. The roads are used for visual sighting purposes only. High Altitude Aircraft Training occurs in TA-6 and the Sweetwater Airstrip.

18. Training Support – MCMWTC Infrastructure

The MCMWTC Infrastructure supports USMC training in a variety of ways. The primary support mechanism is vehicular logistical support. This includes the transport of food, materials, and personnel from the MCMWTC Base Camp to TAs 1 through 16 and the training corridors. This vehicular support includes garrison mobile equipment up to 3 tons, such as tractor-trailers, heavy equipment, dump-trucks, and over-the-snow support vehicles. The MCMWTC Infrastructure training also supports the USFS with the maintenance of many of the roads within the TAs per current USFS standard operating procedures, protocols, and appropriate SUPs. Road maintenance training is provided to MCMWTC personnel by a Forest Service Engineer on a periodic basis to ensure the implementation of BMPs. Road crews also help place signs and snow stakes to ensure proper navigation of roadways during both the summer and winter months when there can be a base of up to 20 ft of snow. MCMWTC Infrastructure training in the TAs also includes the transport, set-up, and take down of RHUs and walls. Other support services include the transport, set-up, cleaning, and take-down of temporary restroom facilities. Various surveys, inspections, vegetation remediation, wildlife observations, range clean-ups, fire response, and regulation enforcement, etc. also occur on a regular basis from other personnel stationed at MCMWTC. On a case-by-case basis, some refueling, incident response, and towing services are provided in out of the ordinary circumstances. The MCMWTC Infrastructure support occurs in all 16 TAs and along Lucky Boy Pass Road, Masonic Road, and Kirman Lake Road. Within TAs 10-11, MCMWTC Infrastructure Support Training is authorized for winter use only, with 2 ft or more of snowpack required, and group size is limited to one group of 60 individuals or less within TA-10 and one group of 60 individuals or less in TA-11.

19. Horsemanship and Animal Packing

Horsemanship and Animal Packing is designed to teach military personnel in utilizing horses (and mules) and pack stock in a mountainous environment. It allows teams to extend dismounted operations and provide an alternative means of travel in mountainous terrain. The individual subjects taught within the Horsemanship and Animal Packing course include pack animal anatomy, handling, grooming, safety, and animal first aid. Students also learn basic movement on horseback, how to negotiate obstacles, plan routes, and bivouac with livestock in a field environment. The training consists of four 16-day courses per year (plus 7 days of integration into the Mountain Exercise training event, see Section 2.1.2 for a description of Mountain Exercise). There are 8 to 14 students per class with two instructors. The tempo does not exceed four courses per year (MCMWTC 2015a). MCMWTC is the only Department of Defense installation that provides such a training event. Horsemanship and Animal Packing occurs in TAs 1-9 and TAs 12-16.

2.1.3 Landing Zones and Drop Zones

There are 56 LZs, 4 DZs, and 2 EAFs currently designated in the MCMWTC (refer to Figure 2.1-1), one of the EAFs is a permanent dirt runway at Sweetwater Airstrip. Use of LZs, DZs, and the EAFs is authorized under an annual SUP as noted previously; the current SUP is provided in Appendix A. Under the No-Action Alternative, the most current LZ/DZ matrix describes what can be done within each LZ (see Appendix A, BRI572). The use of each LZ is subject to protective buffers as specified in the design features (within the exiting AOP and SUPs) for sensitive resources, including cultural resources, wetlands, Critical Aquatic Refuges (CARs), rare plants, goshawks, etc.

At present, the Forest Service authorizes specific LZs for MV-22 use on a case-by-case basis. LZs in TAs 10 and 11 can only be used between 15 November and 15 April and with 2 ft or more of snowpack. Other LZs are approved only for helicopter use, limited in many cases to conditions of 2 ft or more of snowpack and/or specific locations within the LZs (Appendix A). The LZs and designated DZs are sized to land up to four rotary-wing aircraft at once, unless otherwise specified.

Some of the LZs in the MCMWTC are also used as DZs for dropping individual military personnel or pallet cargo up to 300 pounds and up to 20 personnel. Larger DZs (i.e., Pickel Meadow DZ, Cloudburst DZ, Mill Creek DZ) and the permanent dirt runway at Sweetwater EAF/DZ are used to accommodate larger numbers of personnel and pallets; however, the weight restrictions are the same as for the smaller DZs (i.e., up to 300 pounds). There are no large Cargo Delivery Site drops such as for vehicles.

It should be noted that although the LZs and designated DZs are sized to land up to four rotary-wing aircraft at once, they are not necessarily de-conflicted with terrain and resources. The application of design features (conditions of the SUP) in many cases restricts use to certain types of activities, portions of the site, specific time periods, or allows use only under specified conditions such as minimum snow cover. Some of the LZs have limited use (during the winter only), and as a result are relatively undisturbed.

2.1.4 Training Corridors

The existing SUPs provide for the use of three training corridors and use is as follows:

- Kirman Lake Road is authorized under BRI573 with restrictions as noted above for TAs 12-16.
- Lucky Boy Pass Road and Masonic Road are authorized under BRI574 for various types of convoy training. The training includes tactical convoy operations for hostile roads, crossings, and terrain. The training provides Marines with experience in ambushes, medical evacuation procedures, equipment staging, and movement along the roads. Lucky Boy Pass is also approved for simulated improvised explosive device training from Rosaschi Ranch to HWAD.

Other existing unpaved roads throughout the MCMWTC Limited Use Areas are used during training exercises. Other than over-the-snow use of snowmobiles during winter, no off-road vehicle use is permitted.

2.1.4.1 Kirman Lake Road

Kirman Lake Road is also outside the MCMWTC, near the eastern boundaries of TAs 14-16, and provides access from the MCMWTC to California SR 108. MCMWTC currently uses Kirman Lake Road for small unit movements and safety vehicle convoys of four vehicles or less to support small unit logistics and camp activities at LZ Bullet.

2.1.4.2 Masonic Road

Masonic Road (FSR 046) is an improved dirt road approximately 15 miles east of the MCMWTC. Masonic Road originates at the intersection of California SR 182 east of the Bridgeport Reservoir and continues over Masonic Mountain to intersect with the Lucky Boy Pass Road (FSR 028). Masonic Road is used for convoy driver training only with no off-road vehicle travel authorized.

2.1.4.3 Lucky Boy Pass Road

Lucky Boy Pass Road (FSR 028/199) is an improved dirt road approximately 20 miles east of the MCMWTC. Lucky Boy Pass Road extends from the vicinity of the intersection of U.S. Highway 395 and Nevada SR 338 and terminates at Nevada SR 359 south of the HWAD. Lucky Boy Pass Road provides an

important linkage between the HWAD and the MCMWTC. Lucky Boy Pass Road is used for convoy and simulated IED training, which entails tactical convoy operations for hostile roads, crossings, and terrain as expected in foreign countries. No off-road vehicle travel is authorized.

2.1.5 Equipment and Weaponry

Table 2.1-2 provides a detailed comparison of the current versus proposed use of equipment and weaponry.

**Table 2.1-2. Current and Proposed Equipment and Weaponry
for Proficiency Training under the Proposed Action**

<i>Number</i>	<i>Equipment</i>	<i>Existing, New, Replacement, or Supplement</i>	<i>Proposed Action⁽¹⁾ Locations</i>	<i>Proposed Action⁽¹⁾ Quantity (approximate number)</i>
Motor Transport Vehicles				
1	Expanded Capacity Vehicle	Existing	TAs 1-9 and 12-16, LBP, Mas, Bur, Kir, Lob, SWtr	Same as No-Action Alternative (NAA) (2)
2	Small Combat Tactical Vehicle	Existing	TAs 1-9 and 12-16, LBP, Mas, Bur, Kir, Lob, SWtr	Same as NAA (25)
3	Logistics Vehicle System Replacement	Existing	TAs 1-9 and 12-16, LBP, Mas, Bur, Kir, Lob, SWtr	Same as NAA (4)
4	Medium Tactical Vehicle Replacement	Existing	TAs 1-9 and 12-16, LBP, Mas, Bur, Kir, Lob, SWtr	4 additional (24 total)
5	Light Armored Vehicle (LAV)	Existing	TAs 1-9 and 12-16, LBP, Mas, Bur, Kir, Lob, SWtr	Same as NAA (8)
6	Marine Corps Motorcycle	Existing	TAs 1-9 and 12-16, LBP, Mas, Bur, Kir, Lob, SWtr	4 additional (6 total)
7	Small Unit Support Vehicle	Existing	TAs 1-9 and 12-16, LBP, Mas, Bur, Kir, Lob, SWtr	28 additional (40 total)
8	Ranger	Existing	TAs 1-9 and 12-16, LBP, Mas, Bur, Kir, Lob, SWtr	Same as NAA (45)
9	Snowmobile	Existing	TAs 1-16, LBP, Mas, Bur, Kir, Lob, SWtr	Same as NAA (30)
10	Marine Personnel Carrier (MPC)	Supplement M-4	TAs 1-9 and 12-16, LBP, Mas, Bur, Kir, Lob, SWtr	6 additional (6 total)
11	Internally Transportable Vehicle (ITV)	Replace M-1/M-2	TAs 1-9 and 12-16, LBP, Mas, Bur, Kir, Lob, SWtr	4
12	Joint Light Tactical Vehicle (JLTV)	Replace M-5	TAs 1-9 and 12-16, LBP, Mas, Bur, Kir, Lob, SWtr	20
13	MRAP Vehicle	New	TAs 1-9 and 12-16, LBP, Mas, Bur, Kir, Lob, SWtr	16
14	M-ATV	New	TAs 1-9 and 12-16, LBP, Mas, Bur, Kir, Lob, SWtr	12
15	AAV / Heavy Tracked Vehicle	New	TAs 3-4, 8 LZs (Falcon, Oriole, Cardinal, Sandpiper, Grosbeak, Sparrow, Hawk, and Chickadee), Summit Meadows Road to LZ Woody, Finley Mine Road, Bur	4
16	Unmanned Ground Vehicle	Replace/ Experimental - Varies (Manned Equipment)	TAs 1-9 and 12-16, LBP, Bur	2
17	MRAP Mine Roller Attachment for Minesweeping	New	TAs 1-9 and 12-16, LBP, Mas, Bur, Kir, SWtr	6

**Table 2.1-2. Current and Proposed Equipment and Weaponry
for Proficiency Training under the Proposed Action**

<i>Number</i>	<i>Equipment</i>	<i>Existing, New, Replacement, or Supplement</i>	<i>Proposed Action⁽¹⁾ Locations</i>	<i>Proposed Action⁽¹⁾ Quantity (approximate number)</i>
18	Tracked Snow Vehicle (Light)	New	TAs 1-16, LBP, Mas, Bur, Kir, SWtr	20
19	Tracked Snow Vehicle (Heavy)	Existing	TAs 1-16, LBP, Mas, Bur, Kir, SWtr	17 additional (23 total)
20	HMMWV	Existing	TAs 1-9 and 12-16, LBP, Mas, Bur, Kir, SWtr, Lob	Same as NAA (20)
Heavy Equipment				
1	277C Multi-Terrain Loader	Existing	TAs 1-9, LBP, Mas, Bur, Kir, SWtr	Same as NAA (6)
2	Backhoe Loader	Existing	TAs 1-9, LBP, Mas, Bur, Kir, SWtr	Same as NAA (4)
3	Medium, Full-Tracked Tractor	Existing	TAs 1-9, LBP, Mas, Bur, Kir, SWtr	Same as NAA (2)
4	Tractor, Rubber-Tired, Articulated Steering, Multi-Purpose	Existing	TAs 1-9, LBP, Mas, Bur, Kir, SWtr	Same as NAA (2)
5	Forklift Attachment	Existing	TAs 1-9, LBP, Mas, Bur, Kir, SWtr	Same as NAA (6)
6	Multi-Purpose Bucket	Existing	TAs 1-9, LBP, Mas, Bur, Kir, SWtr	Same as NAA (6)
7	120M Motorized Road Grader	Existing	TAs 1-9, LBP, Mas, Bur, Kir, SWtr	1 additional (3 total)
8	Rough Terrain Container Handler	Existing	TAs 1-9, LBP, Mas, Bur, Kir, SWtr	Same as NAA (1)
9	Rough Terrain Container Handler, Kalmar	Existing	TAs 1-9, LBP, Mas, Bur, Kir, SWtr	Same as NAA (1)
10	Roller, Compactor, Vibratory, Self-Propelled	Existing	TAs 1-9, LBP, Mas, Bur, Kir, SWtr	1 additional (2 total)
11	621B Wheeled Tractor-Scraper	Existing	TAs 1-9, LBP, Mas, Bur, Kir, SWtr	1 additional (3 total)
12	High Speed, High Mobility Crane	Supplement H-8, H-9	TAs 1-9, LBP, Mas, Bur, Kir, SWtr	2
13	Joint Assault Bridge (JAB)	New	West Walker River, Mill Creek, Silver Creek, Wolf Creek, and Lost Cannon Creek	1
Engineer Equipment				
1	General Set, Diesel Engine, Model MEP-802A	Existing	TAs 1-9, LBP, Mas, SWtr, Kir, Bur	2 additional (6 total)
2	600 GPM Pump Tactical Water Distribution System	Existing	TAs 1-9, LBP, Mas, SWtr, Kir, Bur	Same as NAA (2)
3	3,000 Gallon Collapsible, Coated-Fabric, Fuel Tank Assembly ⁽²⁾	Existing	TAs 1-9, LBP, Mas, SWtr, Kir, Bur	Same as NAA (4)

**Table 2.1-2. Current and Proposed Equipment and Weaponry
for Proficiency Training under the Proposed Action**

<i>Number</i>	<i>Equipment</i>	<i>Existing, New, Replacement, or Supplement</i>	<i>Proposed Action⁽¹⁾ Locations</i>	<i>Proposed Action⁽¹⁾ Quantity (approximate number)</i>
4	Collapsible, Potable Water, 2,000 Gallon ⁽²⁾	Existing	TAs 1-9, LBP, Mas, SWtr, Kir, Bur	Same as NAA (4)
5	Large Field Refrigeration System ⁽²⁾	Existing	TAs 1-9, LBP, Mas, SWtr, Kir, Bur	Same as NAA (1)
6	Bath Shower Unit ⁽²⁾	Existing	TAs 1-9, LBP, Mas, SWtr, Kir, Bur	Same as NAA (2)
7	Relocatable Housing Unit (RHU)	Existing	TAs 1-9, LBP, Mas, SWtr, Kir, Bur	Same as NAA (30)
8	RHU with Wall	Existing	TAs 1-9, LBP, Mas, SWtr, Kir, Bur	Same as NAA (3)
9	M1040 Generators, M831 Generators, LWPS, TWPS, SFRS (small refer) – COCs	Existing	TAs 1-16, LBP, Mas, SWtr, Kir, Bur	Same as NAA ⁽³⁾
10	Medium Girder Bridge (MGB)	New	West Walker River, Mill Creek, Silver Creek, Wolf Creek, and Lost Cannon Creek	2
<i>Aircraft⁽⁴⁾</i>				
1	Sikorsky CH-53 Super Stallion	Existing	LZs 1-60, EAF, SWtr	Same as NAA (2)
2	Sikorsky UH-60 Blackhawk	Existing	LZs 1-60, EAF, SWtr	Same as NAA (4)
3	Boeing CH-47 Chinook	Existing	LZs 1-60, EAF, SWtr	Same as NAA (4)
4	Bell UH-1 Huey	Existing	LZs 1-60, EAF, SWtr	Same as NAA (4)
5	Bell AH-1 Cobra	Existing	LZs 1-60, EAF, SWtr	Same as NAA (4)
6	Lockheed Martin C-130 Hercules	Existing	SWtr	Same as NAA (1)
7	Boeing CH-46 Sea Knight	Existing	LZs 1-60, EAF, SWtr	Same as NAA (6)
8	Boeing MV-22 Osprey ⁽⁷⁾	Supplement A-1 through A-4 and Replace A-7	LZs (55), EAF, Sweetwater EAF	6
9	Group 3 through Group 5 Unmanned Aircraft Vehicles	New	DZs (3), LZs (Blackbird, Raven, Owl, Woody, Hawk, Dove, Robin, Canary, Albatross, and Lark), EAF, Sweetwater EAF	8
10	Cessna Surrogate Unmanned Aerial System (UAS)	New	EAF, Sweetwater EAF	1
11	Group 1 and/or Group 2 UAS	New	TAs 1-16, EAF, Sweetwater EAF, LBP, Mas, SWtr, Kir, Bur	144 days
<i>Explosives</i>				
1	C4	Existing	TAs 1-9 (abatis), TAs 10-11 (avalanche initiation/ice breaching), TA-14	Same as NAA (up to 20 pounds new)

**Table 2.1-2. Current and Proposed Equipment and Weaponry
for Proficiency Training under the Proposed Action**

<i>Number</i>	<i>Equipment</i>	<i>Existing, New, Replacement, or Supplement</i>	<i>Proposed Action⁽¹⁾ Locations</i>	<i>Proposed Action⁽¹⁾ Quantity (approximate number)</i>
2	TNT	Existing	TAs 1-9 (abatis), TAs 10-11 (avalanche initiation/ice breaching), TA-14	Same as NAA (up to 20 pounds new)
3	Detonation Chord, Military Dynamite	Existing	TAs 1-9 (abatis), TAs 10-11 (avalanche initiation/ice breaching), TA-14	Same as NAA (up to 20 pounds new)
<i>Small Arms (defined as .50 caliber or smaller)⁽⁵⁾</i>				
Not applicable ⁽⁶⁾	Handguns Rifles Shotguns	Existing	Ranges 400-1101	Same as NAA ^(3, 6)

Notes: (1) Additional design features in place to reduce potential resource impacts (e.g., seasonal restrictions of training areas, reduction in size of a training corridor, specific training event restrictions, etc.) are presented in Section 2.2.5.

(2) Limited to specific areas within the Combat Operation Center.

(3) No data on quantities.

(4) Other aircraft could potentially be used, insofar as they are functionally similar to those aircraft in the table (i.e., do not rise to a level of significant environmental impact), as programmatically approved by the Forest Service on a case-by-case basis for specific locations, and in accordance with all applicable permit restrictions and design features.

(5) No dud-producing (explosive) ammunition is used or proposed for use.

(6) Includes all small arms and ammunition types currently authorized and as authorized in the future by the USMC in accordance with range procedures and safety regulations for the MCMWTC (TCO 3550.1C [USMC 2010]).

(7) LZ use contingent upon design features and USFS fire restrictions.

Legend: AAV = Assault Amphibious Vehicle; Bur = Burcham Flat Road; EAF = Expeditionary Air Field; GPM = gallon per minute; HMMWV = High Mobility Multipurpose Wheeled Vehicle; HWAD = Hawthorne Army Depot; ITV = Internally Transportable Vehicle; JAB = Joint Assault Bridge; JLTV = Joint Light Tactical Vehicle; Kir = Kirman Lake Road; LAV = Light Armored Vehicle; LBP = Lucky Boy Pass; Lob = Lobdell Lake Road; LZ = landing zone; Mas = Masonic Road; M-ATV = MRAP-All Terrain Vehicle; MGB = Medium Girder Bridge; MPC = Marine Personnel Carrier; MRAP = Mine Resistant Ambush Protected; N/A = not applicable; NAA = No-Action Alternative; RHU = Relocatable Housing Unit; SWtr = Sweetwater Airstrip; TA = training area; TBD = To Be Determined; UAS = Unmanned Aircraft System; UAV = Unmanned Aircraft Vehicle.

2.1.6 Design Features under the Existing SUPs

“Design features” are resource protection, avoidance, impact minimization, and conservation measures intended to ensure that National Forest resources are not significantly impacted by the MCMWTC activities. The design features that are currently in effect are written into the existing AOP and SUPs (see Appendix A for the current AOP and SUPs). The design features for the existing permits were developed by the USFS to ensure consistency with the resource protection standards and guidelines of the Sierra Nevada Forest Plan Amendment (SNFPA) (Forest Service 2004a). Appendix A also includes a “crosswalk” relating the existing and proposed design features to the comparable SNFPA standard or guideline to avoid and minimize a similar type of impact to the resource. Since the SNFPA measures limit the impacts of vegetation management activities (i.e., fuel reduction) on sensitive resources, they afford similar or greater protection when applied to the activities conducted by the MCMWTC. The design features from the 2016 AOP are directly excerpted below and in order to preserve exact permit language, may not include acronyms or abbreviations that are used elsewhere in the document. With guidance from USFWS and USFS, some minor revisions have been made to these design features to reflect upcoming changes in the new draft SUPs:

OPERATIONS AND TRAINING DESIGN FEATURES

A. MILITARY TRAINING AND LIMITATIONS

1. Off-Limits Areas. The USFS may designate permanent or temporary off-limit areas including, but not limited to sensitive areas, special interest areas, recreation areas, wildlife food plots, pipeline/utility corridors, and critical or unique ecosystems, with the potential to be impacted or damaged by military training, as allowed by Federal Law.

a. Sensitive Areas. Environmentally sensitive areas including cultural resource sites, sensitive plant sites, wildlife food plots and designated regeneration areas will be determined by the USFS and jointly marked with the MCMWTC using a system identifiable to trainees in the field during day light and low-light conditions.

b. Recreation Complexes. No formal training will be conducted within the Leavitt Meadows Campground, Leavitt Meadows Pack Station, Sonora Bridge Campground and Picnic Area, Obsidian campground, Chris Flat Campground, Bootleg Campground, Shingle Mill Campground, Levitt Lake Vista, Emma Lake Trailhead, Hoover Wilderness Trailhead or the Pacific Crest Trail (PCT), unless by case specific permit or authorization; or accompanied by a USFS representative as part of an interpretive education series or other mutually agreed activity directed at a civilian audience.

c. Recreation Trails. No driving of vehicles will be conducted on the USFS's designated non-motorized trails. No military training will occur on the PCT.

d. Lakes, Streams and Rivers. The MCMWTC will coordinate with the California Department of Fish and Wildlife (CDFW) for any activities that would affect waters of the State.

e. Wetlands and Meadows. No driving will be conducted in wetlands and meadows, except on designated roads and designated crossing points. Wetlands and meadows will be inspected for maneuver damage following training exercises and during annual inspection events. Corrective action to protect wetlands and rare/sensitive plant species will be implemented as appropriate following the guidelines of the USFS.

f. Stream Crossings. The MCMWTC will cross streams at approved locations.

2. Other Military Sponsored Training. The MCMWTC may sponsor other military units to train within the authorized area, provided these units abide by the same regulations and environmental restrictions as the MCMWTC.

3. Radio Electronic Equipment Interface. The MCMWTC will operate its radio-electronic type equipment so that interference is not caused to the USFS radio-electronic type operations or to other United States government radio communications presently operating on the National Forest *or* adjacent to the area covered by permit as allowed by the Federal Communications Commission (FCC).

4. Ranges/Live Fire Areas. The MCMWTC will restrict live fire and explosive training to established, authorized ranges as noted in Appendix A or separate authorization. The MCMWTC will provide the USFS with an appropriate level of environmental analysis before constructing or relocating any range, surface danger zone, impact area or training area on National Forest land. Upon abandonment of range impact areas or when considered necessary by the USFS to protect other National Forest users, the MCMWTC shall provide clearance of said areas to the maximum extent practical for the safe conduct of normal USFS activities.

5. Training Land Resource Allocation and Scheduling. The MCMWTC will institute a program to identify both training and sustainment requirements for the MCMWTC's training areas.

a. Training and Sustainment Land Allocation. The long-range training plan will project training and sustainment requirements. The long-range training plan will be used as the base document for conducting semi-annual meetings.

b. Scheduling. Training and non-training activities that are mutually incompatible will be de-conflicted by the MCMWTC and the USFS Military Liaison Officer at quarterly meetings. Jointly scheduled activities will include, but not be limited to: training exercises, prescribed burning, threatened and endangered species management activities, timber harvesting, grazing leases, and special events.

(1) Training Schedule. The MCMWTC will attempt to confirm schedules of its planned training areas use at least 30 days in advance to reduce potential schedule conflicts between training and non-training activities to maximize the areas and time periods available for non-training activities.

(2) Emergency Flights. In emergency situations, the MCMWTC will cease flying *or* training activities within the air space above authorized National Forest lands when requested by the USFS or Incident Commander. (Federal Aviation Regulation FAR, 74 CFR 91.91).

6. Orders and Directives. All training activities will be conducted in accordance with USFS requirements and Marine Corps Orders and directives.

7. Restrictions. The following actions are prohibited during training activities on USFS lands unless specifically approved previously:

- a. No bivouacking within 100 feet of lake shore and streams.
- b. No cutting or damaging standing trees, live or dead.
- c. No leaving of refuse, debris, gear, or equipment.
- f. No use of incendiaries or pyrotechnics during fire restriction except in approved areas.
- h. No fishing unless in compliance with CDFW regulations.

- i. No feeding, harassing, capturing, or petting of wildlife unless you are participating in authorized survival training with a copy of permit on your person *or* with an Instructor.
- j. No digging or disturbing soil or vegetation without prior approval from the MCMWTC Environmental Section in coordination with the USFS.
- k. No damaging or removing or archaeological artifacts (e.g., arrowheads, stone, pottery, rocks or bones).
- m. No campfire without a permit or during fire restrictions.
- n. No blocking of public roads.

8. Public Complaints. The MCMWTC operates a manned Duty Desk with a toll-free phone line (760-932-1401) 24 hours a day, which can be used for reporting public complaints, noise disturbances, damages to roads, or other property damages caused by training exercises. Noise complaints will be addressed by the MCMWTC Commanding Officer via the MCMWTC Community Plans Liaison Officer and/or the Marine Air Ground Task Force Training Command Public Affairs Officer located at 29 Palms.

9. Public Notification of Military Training.

a. Bulletin Boards. Per Force Protection and National Security policy, the MCMWTC will not publish training activities in advance to the general public. However, MCMWTC may inform the public on the day of certain training or regarding non-sensitive types of training using existing bulletin boards located around MCMWTC.

b. Public Information. MCMWTC will provide appropriate personnel or signage to prevent reasonable conflict from occurring between the public and the military during live-fire or normal training activities where the reasonable potential for conflict exists. However, Force Protection, National Security Policy, and National Emergencies will take precedence in the type and amount of information provided to the public regarding activities associated with MCMWTC.

B. WILDLIFE

1. General Wildlife:

- Notify the Bridgeport Ranger District wildlife biologist of all new detections of special status species in the training area.
- Avoid overflights and concentrated activities (group sizes larger than 25) within designated Protected Activity Centers (PACs) during established limited operating periods (LOPs) by species.
- All food, including trash (i.e., food packaging, food scraps, etc.), should be stored in a manner that wildlife cannot access it and completely removed from the site at the conclusion of training activities.

2. Greater Sage Grouse, Bi-State Population:

- No disturbance will be allowed within 1/4 miles of active leks from March 1-May 15.
- Activities associated with the Sweetwater Airstrip including runway maintenance, landing of aircraft, or other concentrated activities (groups larger than 25 individuals) will not occur from March 1 – June 30 during the sage grouse breeding /early brood-rearing season.

3. California Spotted Owl:

- If California spotted owls exhibiting breeding behavior are detected in the project area, a localized nest search will be conducted by a qualified biologist.
- Maintain a limited operating period (LOP) around occupied spotted owl nest sites from March 1 -August 15 or until young have fledged.
- No disturbance will be allowed within 100 meters of the nest during the LOP.

4. Pacific Fisher Den Sites:

- If a fisher den site is located, maintain a LOP from March 1 - June 30.
- No disturbance will be allowed within 100 meters of the den site during the LOP.

5. Flammulated Owl:

- If flammulated owls exhibiting breeding behavior are detected in the project area, a localized nest search will be conducted by a qualified biologist.
- Maintain a LOP around occupied flammulated owl nest sites from May 15 - July 31 or until young have fledged.
- No disturbance will be allowed within 100 meters of the nest during the LOP.

6. Great Gray Owl:

- If great gray owls exhibiting breeding behavior are detected in the project area, a localized nest search will be conducted by a qualified biologist.
- Maintain a LOP around occupied great gray owl nest sites from March 1 - August 15 or until young have fledged.
- No disturbance will be allowed within 100 meters of the nest during the LOP.

7. American Marten Den Sites:

- If a marten den site is located, maintain a LOP from May 1 – July 31.
- No disturbance will be allowed within 100 meters of the den site during the LOP.

8. Migratory Birds:

- If ground disturbing activities (including tree/vegetation removal) are planned between May 15 and August 31, then the area should be surveyed for nests or evidence of nesting prior to implementation.
- If nests are observed, a minimum 100-foot buffer should be delineated to prevent disturbance to nests until they are no longer active.

9. Mule Deer:

- Avoid disturbance in known fawning areas from June 1 - August 31.

10. Northern Goshawk:

- If northern goshawks exhibiting breeding behavior are detected in the project area, a localized nest search will be conducted by a qualified biologist.

- Maintain a LOP around occupied northern goshawk nest sites from February 15 - September 30 or until young have fledged.
- No disturbance will be allowed within 100 meters of the nest during the LOP.

11. Peregrine Falcon:

- If peregrine falcons exhibiting breeding behavior are detected in the project area, a localized nest search will be conducted by a qualified biologist.
- If an occupied peregrine falcon nest is located, no disturbance will be allowed within 100 m of the nest while it is active.

12. Sierra Nevada Red Fox:

- If a Sierra Nevada red fox den site is located, maintain a LOP from March 1 - June 30.
- No disturbance will be allowed within 100 meters of the den site during the LOP.
- To prevent red fox habituation to human food, all food, including trash (i.e., food packaging, food scraps, etc.), should be stored in a manner that wildlife cannot access it and completely removed from the site at the conclusion of training activities.
- If monitoring indicates impacts to the Sierra Nevada red fox from training activities, additional mitigation measures may be applied.

13. Spotted Bat and Townsend's Big-Eared Bat:

- No personnel shall enter a cave or adit where bat roosting or hibernation may occur without a prior survey from a qualified bat biologist.
- If a site is identified as a maternity colony, no disturbance will be allowed within 100 meters from April 15 - September 1.
- If a site is identified as hibernacula, no disturbance will be allowed within 100 meters from November 1 - April 1.

14. Bald Eagle:

- If bald eagles exhibiting breeding behavior are detected in the project area, a localized nest search will be conducted by a qualified biologist.
- Maintain a LOP around occupied bald eagle nest sites from February 1 - June 30 or until young have fledged.
- No disturbance will be allowed within 100 meters of the nest during the LOP.

C. RARE PLANTS**1. Alpine dusty maidens (*Chaenactis douglasii* var. *alpinum*):**

- Apply 100-foot buffer to all occupied habitat during flowering season.
- No landing of aircraft, no concentrated activities on identified species occupied habitat.
- No concentrated live fire where the impact zone is in identified species occupied habitat.
- Occurrences in mitigated or extended Surface Danger Zone (SDZ) is authorized.

- Occurrences in mitigated or extended SDZ is authorized.

2. Bodie Hills draba (*Cusickiella quadricostata*):

- Apply 100-foot buffer to all occupied habitat during flowering season
- No landing of aircraft, no concentrated activities on identified species occupied habitat.
- No concentrated live fire where the impact zone is in identified species occupied habitat.
- Occurrences in mitigated or extended SDZ is authorized.

3. Botrychium fern habitats (Upswept, Dainty, Slender Moonwort ferns, and Moosewort ferns):

- Apply 100-foot buffer to all occupied habitat during flowering season
- Due to the survey effort required to detect moonwort ferns, an emphasis will be placed to maintain riparian habitats including fens, wet meadows, lakeshore vegetation, in good condition. Concentrated activities will not occur in these areas. Evidence of impacts to riparian habitats attributed to Marine Base activities will be restored and the site will be avoided.

4. Cup Lake Draba (*Draba asterophora* var. *macrocarpa*):

- Apply 100-foot buffer to all occupied habitat during flowering season.
- No landing of aircraft, no concentrated activities on identified species occupied habitat.
- No concentrated live fire where the impact zone is in identified species occupied habitat.
- Occurrences in mitigated or extended SDZ is authorized.

5. Masonic Mountain Jewel Flower Habitat:

- Apply 100-foot buffer to all occupied habitat during flowering season.
- Avoid flowering areas when setting up climbing lanes in the north of Grouse Meadows on rocky cliff side, the north of the Grouse Meadows area during the May 1 - July 31 flowering season.
- Other restrictions apply within rare plant occupied habitat in the eastern portion of the district during planned maneuvers. This includes buffering Masonic Mountain jewel flower occurrences as described above and conducting activities outside of the occupied habitat.

6. Skypilot (*Polemonium eximium*):

- Apply 100-foot buffer to all occupied habitat during flowering season.
- No landing of aircraft, no concentrated activities on identified species occupied habitat.
- No concentrated live fire where the impact zone is in identified species occupied habitat.
- Occurrences in mitigated or extended SDZ is authorized.

7. Transit Corridor Sensitive Species (Lucky Boy Pass and Masonic Road):

- No concentrated or disturbance activities on known sensitive species locations. These areas will be flagged prior to activities.

D. AQUATIC SPECIES AND HABITATS

1. Fishing restrictions:

- Mill Creek and Silver Creek, which are occupied by Lahontan cutthroat trout, are closed to all fishing. Wolf Creek Lake is closed to fishing. Wolf Creek is only open to catch and release fishing with artificial flies and barbless hooks from 1 August – 15 November. All anglers, including military personnel, within the training center must have a valid state of California fishing license and be compliant with CDFW regulations when fishing open waters.

2. Critical Aquatic Refuges:

- Critical Aquatic Refuges (CARs) occur throughout the MCMWTC training areas as protected habitat in an effort to identify and protect populations of Yosemite toad (YT) (*Anaxyrus canorus*), Sierra Nevada yellow-legged frog (SNYLF) (*Rana sierrae*), and Lahontan cutthroat trout (LCT) (*Oncorhynchus clarkii henshawi*). CARs provide recognition to areas with at risk populations of aquatic or semi-aquatic species.
- Concentrated or ground disturbing activities within CARs should be avoided especially within 100 ft of a wetland area and 100 meters from known LCT, YT, and SNYLF habitat.

a. Identified CARs include:

- Summit Meadows (5,100 acres) for SNYLF.
- Silver Creek (6,000 acres) area for SNYLF and LCT.
- Wolf Creek (3,200 acres) supports populations of YT, SNYLF and LCT.
- Mill Canyon (6,404 acres) supports LCT.
- Koenig Lake (1,990 acres) supports YT.

3. Lahontan cutthroat trout:

- Fishing is not allowed in Silver Creek or Mill Creek in compliance with CDFW regulations.
- No concentrated or ground disturbing activities within 100 meters of occupied LCT streams.
- No stream crossing by motorized vehicles of occupied streams.
- No wading or walking up and downstream within the stream channel in LCT occupied streams. Stream crossings are allowed for small groups (< 25 people); larger groups should cross at hardened areas that contain naturally occurring boulders or downed logs.
- No creation of rock/log dams that could impede in fish passage.

4. Yosemite toad habitat:

- No disturbance during breeding which occurs 1 May to 30 July.

- Avoid concentrated activities in marshy areas or wetlands located in critical aquatic refuges - minimum 100 meters from known YT habitat.
- No activities involving groups larger than 25 individuals or ground disturbing activities within 100 meters of streams, lakes, or meadows occupied by YT or within proposed or designated critical habitat.
- Areas proposed as designated Critical Habitat should be treated with the same prescription as CARs.
- At no time should any life stage of any amphibian species be consumed during survival exercises.

5. Sierra Nevada yellow-legged frog habitat:

- No disturbance during breeding which occurs 1 May to 30 July.
- Avoid concentrated activities in marshy areas or wetlands located in CARs - minimum 100 meters from known SNYLF habitat.
- No concentrated or ground disturbing activities within 100 meters of occupied streams, lakes, or meadows occupied by SNYLF or within proposed or designated critical habitat.
- At no time should any life stage of any amphibian species be consumed during survival exercises.

E. STOCK USE, LIVESTOCK CONTROL, AND RANGE RESOURCES

1. Stock Use:

a. Weed Free Forage Requirements. The MCMWTC will comply with the USFS Weed Free Forage Requirements, purchase only feed that is certified weed free and ensure that all pack animals are fed only feed that is certified weed free.

b. Livestock Control. The MCMWTC is responsible for the removal of cattle or horses occupying the National Forest System lands as a result of damage to fences by military training. The MCMWTC will repair to the USFS standards or pay for repair of fences damaged by military training.

c. Range Resources:

(1) Grazing Allotments. The MCMWTC will avoid concentrating activities and noise-making activities (helicopter operations and pyrotechnics) near grazing animals.

(2) Pasture Fences. Fences will not be cut or removed by troops. Fences will be avoided by military vehicles. Pasture gates will be left as they were found, either closed or open.

F. HERITAGE RESOURCES

1. Site Discovery. Historical or archaeological sites discovered during operations in the training areas shall be reported to the MCMWTC Environmental Office and the USFS and evaluated for significance for potential inclusion on the National Register of Historic Places (NRHP).

2. Site Protection. All sites plus 100-foot buffer on, or potentially eligible for inclusion on, the NRHP are off limits to military training activities and will be plainly described or physically protected on the ground as agreed to by both the MCMWTC and USFS.

G. WATER AND SOIL

- No waste or by-product will be discharged into water.
- Training units will stay 100 feet away from water sources for bivouac or human waste disposal. Protect and preserve soil and vegetative cover to the maximum extent possible.
- No driving will be conducted in wetlands and meadows, except on designated roads and designated crossing points.
- The MCMWTC will cross streams and wetlands and wet meadows in motorized vehicles only at approved locations. Institute erosion control in such disturbed areas mutually agreed upon by the USFS and the MCMWTC.
- Comply with all applicable Federal, state, and local water and air quality regulations.
- Utilize water subject to all existing water rights.
- Do not discharge waste or by-products on the ground or into water sources.
- All camp facilities will be at least 100 feet from trails, streams, and lakes.

H. TREES AND FUEL WOOD

- The MCMWTC will prevent unnecessary damage to forest tree seedlings, saplings, pole timber, and saw timber to the extent possible within authority of Federal laws.
- The MCMWTC will contact the USFS whenever timber is planned for removal from National Forest lands and the USFS, in coordination with the MCMWTC, will then determine the method of disposal.
- No cutting or clearing of any National Forest vegetation without prior specific approval of the USFS.

I. PESTICIDES AND HERBICIDES

- The MCMWTC will not use pesticides/herbicides without the prior written approval of the USFS.
- Vehicles will be cleaned of vegetation matter prior to entering the training area to prevent the accidental introduction of Noxious and Invasive weed species and the spread of annual invasive grasses.
- Requests for approval of planned uses of pesticides/herbicides will be submitted as needed by the MCMWTC prior to pesticide purchase or use.
- No pesticides or herbicides will be disposed of on National Forest lands.

J. LANDS AND VISUALS

1. Lands. The MCMWTC will preserve the continued existence of all public land monuments and boundary lines within the use area; reestablish or restore within their authority all public land monuments or boundary lines disturbed or destroyed by military use; and aid the USFS in determining, constructing and maintaining property corner and lines common to lands administered by each agency.

2. Visuals. The MCMWTC will use the National Forest in ways consistent with protecting its scenic and aesthetic values.

K. FIRE AND FUELS

The MCMWTC will limit and monitor the use of incendiary devices, ordnance, explosives, live ammunition, pyrotechnics and campfires during fire restriction.

L. RECREATION

- No military training will occur on the PCT.
- No motorized vehicles are allowed to drive on or cross the PCT.
- Vehicles are permitted only on designated motorized trails per Forest Service Motor Vehicle Use Map (MVUM).
- No motorized vehicles on non-motorized trails or off motorized trails (Use of motorized vehicle off designated roads or motorized trails is prohibited).
- Training activities, including landing of aircraft, are prohibited on the lands and waters within the boundaries of designated wilderness areas.

2.2 PROPOSED ACTION

The Proposed Action would (1) authorize a long-term SUP in accordance with Congress' direction in PL 100-693 to make NFS lands within the HTNF available for use by the USMC under appropriate restrictions - referred to herein as design features; and (2) authorize the use of a new suite of USMC vehicles and equipment (e.g., new models of wheeled MRAP vehicles, tilt-rotor aircraft) to replace or supplement existing vehicles and equipment throughout the MCMWTC TAs.

The USMC proposes to incorporate TAs 10-16 and the associated activities currently authorized under individual SUPs into a single multi-year SUP to continue using all permitted areas and performing all permitted activities, as discussed within the No-Action Alternative (Section 2.1). In addition, the following would occur within MCMWTC training area boundaries under the Proposed Action:

- Continue using permitted aircraft LZs, DZs, and EAFs in all TAs (1-16) during authorized operating periods, as described in Section 2.1.3. The LZs also contain landing points, which are primarily designated areas for landing MV-22 Osprey tilt-rotor aircraft (Figure 2.2-1);
- Use COCs and RHUs in previously disturbed areas (not only within the LZs) that have been cleared by resource specialists for such use within the training areas;
- Conduct vehicle convoy training on four existing training corridors and one new corridor;
- Conduct two new stream-crossing training events;
- Update associated training using the latest generation of USMC vehicles and equipment throughout the MCMWTC; and
- Use TAs 10 and 11 (Leavitt Lake SUP Area) from 15 November to 15 April, provided training activities remain on areas with 2 ft (or more) of snowpack and subject to the applicable resource restrictions and design features in Section 2.2.5. Group size would continue to be limited to one group of 60 individuals or less within TA-10 and one group of 60 individuals or less in TA-11.

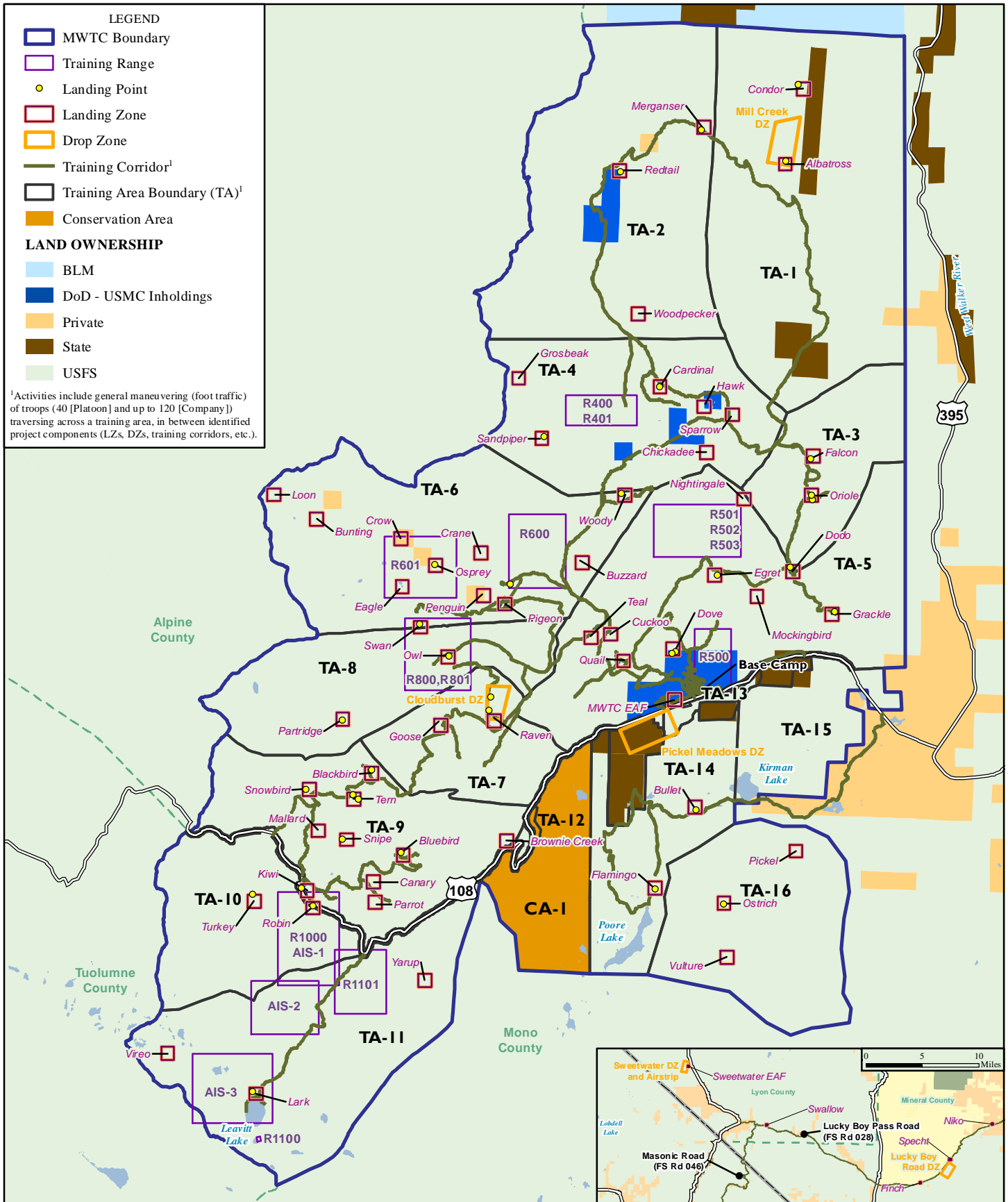
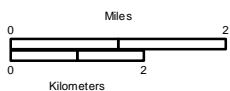


Figure 2.2-1
Range Components under the Proposed Action



The Proposed Action would use current or previously authorized MCMWTC facilities, TAs, EAFs, DZs, and LZs, ranges, training routes, and training corridors, as well as new or currently unused LZs, landing points, and training corridors. No new facility or road construction is required and there would be no increase in the approximately 15,000 military personnel trained annually at the MCMWTC. The components of the Proposed Action are all discussed in detail in the following sections.

Due to the past adjustments to the 40-year SUP, the addition of temporary and annual SUPs, and the introduction of the proposed training events, equipment, vehicles, and weaponry, there is a need for the Forest Service to amend the 40-year SUP or issue a new multi-year SUP with appropriate terms and conditions that would coincide with the duration of the existing 40-year SUP.

2.2.1 Training Areas

The Proposed Action would continue USMC mountain warfare training in TAs 1-16 and conservation training in CA-1 (see Figure 2.1-1), with no major changes in the use of these areas except as noted below (see Figure 2.2-1). The ranges and training areas within TAs 10 and 11 (including Leavitt Lake and Sardine Meadows) would be available from 15 November to 15 April (winter use), provided training activities remain on areas with 2 ft (or more) of snowpack, with group size limits of one group of 60 individuals or less within TA-10 and one group of 60 individuals or less in TA-11, and subject to the applicable resource restrictions and design features in Section 2.2.5. This would allow the MCMWTC additional flexibility to prepare instructors for sustainment training in these areas and allow for greater training flexibility throughout the year.

Training components within the TAs include training ranges, LZs, DZs, live-fire small arms ranges, and roads. There would be no change in use or modification to DZs, live-fire small arms ranges, or roads in any TA.

2.2.1.1 Landing Zones and Drop Zones

The Proposed Action would allow for continued use of the LZs in TAs 1-9 and TAs 10-16 (currently authorized under temporary SUPs); would authorize use of the MV-22 at specific locations in all 58 LZs, the DZs, and EAFs, (1) year-round on relatively open or previously disturbed upland habitats, subject to buffers and existing and proposed design features, and (2) with a minimum 2 ft of snowpack (i.e., winter use only) within stands of relatively undisturbed, dense sagebrush and applicable buffers of sensitive resources (see Figure 2.2-2); and would authorize use of Unmanned Aircraft Vehicles (UAVs) at 10 LZs and the 2 EAFs (see Table 2.1-2). Regardless of the existing level of disturbance at each LZ, there would be no vegetation removal from any LZ or DZ as part of this Proposed Action.

Under the Proposed Action, use of the LZs by rotary-winged aircraft would be the same as under the No-Action Alternative. Contingent upon the completion of natural and cultural resource surveys at any proposed landing point for tilt-rotor aircraft (i.e., MV-22s), the MCMWTC would be able to use identified landing points within the LZs, subject to the following design features:

- a) Landings can occur year-round in relatively open or previously disturbed upland habitats as long as the landing points are consistent with applicable design features and buffers.
- b) Landing points in stands of relatively undisturbed, dense sagebrush are not to be used year-round but may be used with a minimum 2 ft of snowpack and/or where vegetation is not visible above the level of snowpack.

- c) Landings can occur within applicable buffers of sensitive resources provided there is a minimum 2 ft of snowpack.

As no overall increase in the number of take-offs and landings is anticipated, having more landing sites available reduces the frequency of landings and potential for disturbance to accumulate at any one site.

Figure 2.2-2 shows the proposed use of LZs and DZs by rotary-wing and tilt-rotor aircraft and identifies the applicable constraints, permit restrictions, and design features that apply at each location. Landing points are to be evaluated on an annual basis to assess whether landings, foot traffic from troop insertions, and/or cargo drops are causing soil compaction, erosion, sedimentation, alteration of drainage patterns, or the removal of vegetation. If any of these impacts are observed, the terms of use would be modified to reduce impacts. The effectiveness of 2 ft of snowpack in protecting resources would be evaluated and may be adjusted upward or downward depending on what is observed. Any downward adjustment of snow depth within designated critical habitat will require consultation with the USFWS. Landing points with sparse vegetation and loose soil subject to erosion by rotor wash may be treated with a non-toxic dust binder after consultation with the Forest Service on the type of dust binder to be applied.

To reduce the possibility of fires at landing points used by MV-22s outside of winter use periods: 1) exhaust deflectors would be employed during landings and take-offs; and 2) operators would minimize the time on the ground with engines running.

2.2.2 New Training Events

The 19 existing training events as described in Section 2.1.2 would continue to occur under the Proposed Action. All of the existing training events would be authorized within all 16 TAs but restricted by the design features, permit conditions, and SOPs as applicable to protect local resources and public recreational users.

In addition, four new training events would be added to the existing curriculum, to total 23 training events. Two of the new events would use the Joint Assault Bridge (JAB) and Medium Girder Bridge (MGB) on specific river or stream crossings. A third new event is the Expeditionary Vehicle Convoy Training using Mine Resistant Ambush Protected (MRAP)-All Terrain Vehicles (M-ATVs) that would take place along the training corridors. The fourth new event would require the installation of six permanent wood utility poles above the banks of the West Walker River, just north of Highway 108 at the Sonora Bridge. The poles would enable MCMWTC to install and use three temporary rope bridges across the West Walker River. A synopsis of each new training event is provided below (MCMWTC 2014a, 2015).

2.2.2.1 Joint Assault Bridge

The Proposed Action would authorize use of specific areas along West Walker River, Silver Creek, Mill Creek, Wolf Creek, and Lost Cannon Creek for temporary river or stream crossing training using the JAB (MCMWTC 2014a). The temporary creek crossings are shown on Figure 2.2-3. One JAB training exercise would occur annually, and involve approximately 40 personnel per event. A full JAB training exercise lasts a single day and includes one full setup and disassembly.

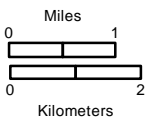
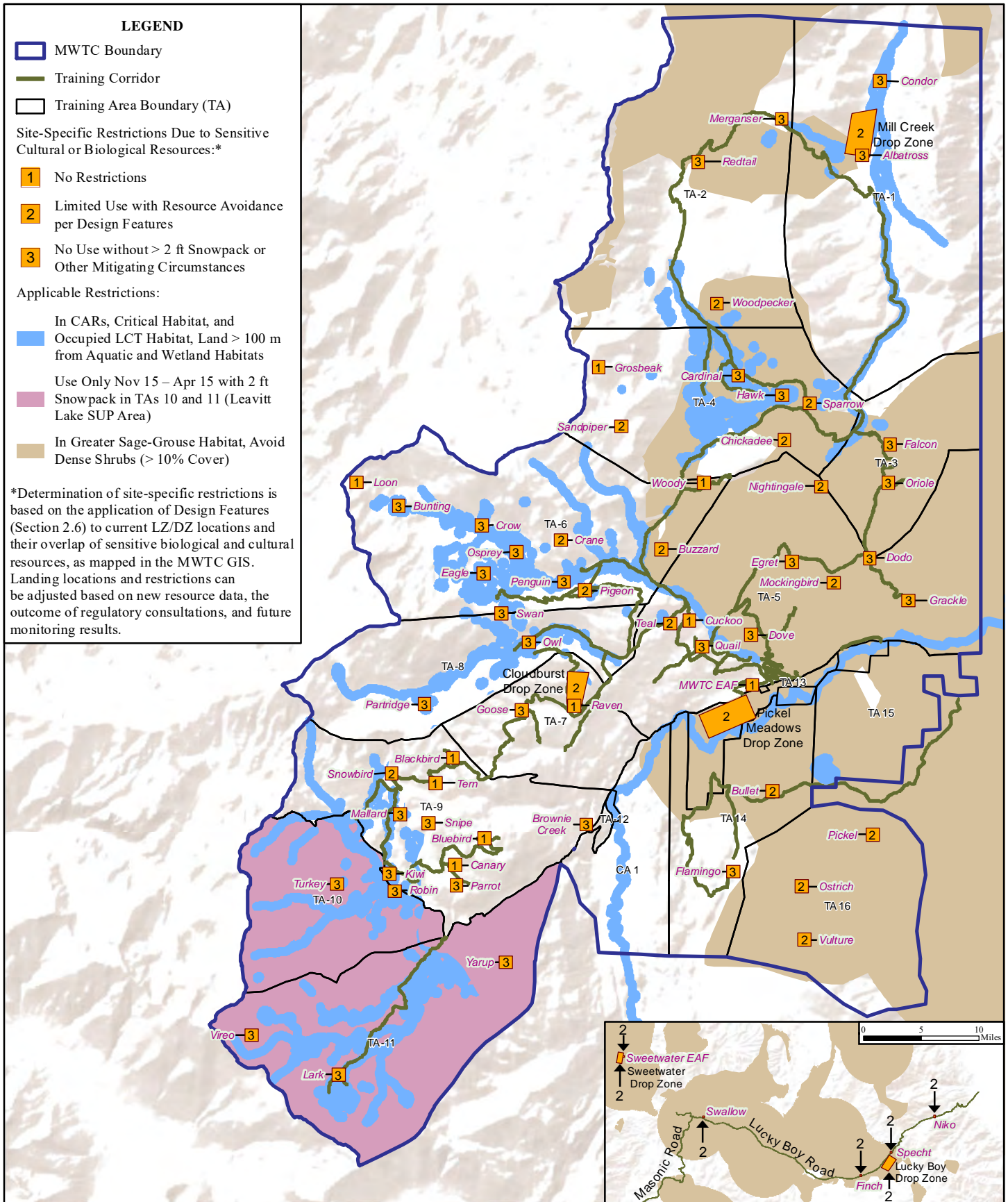


Figure 2.2-2
Proposed Use of MCMWTC LZs and DZs by Rotary-Wing and Tilt-Rotor Aircraft



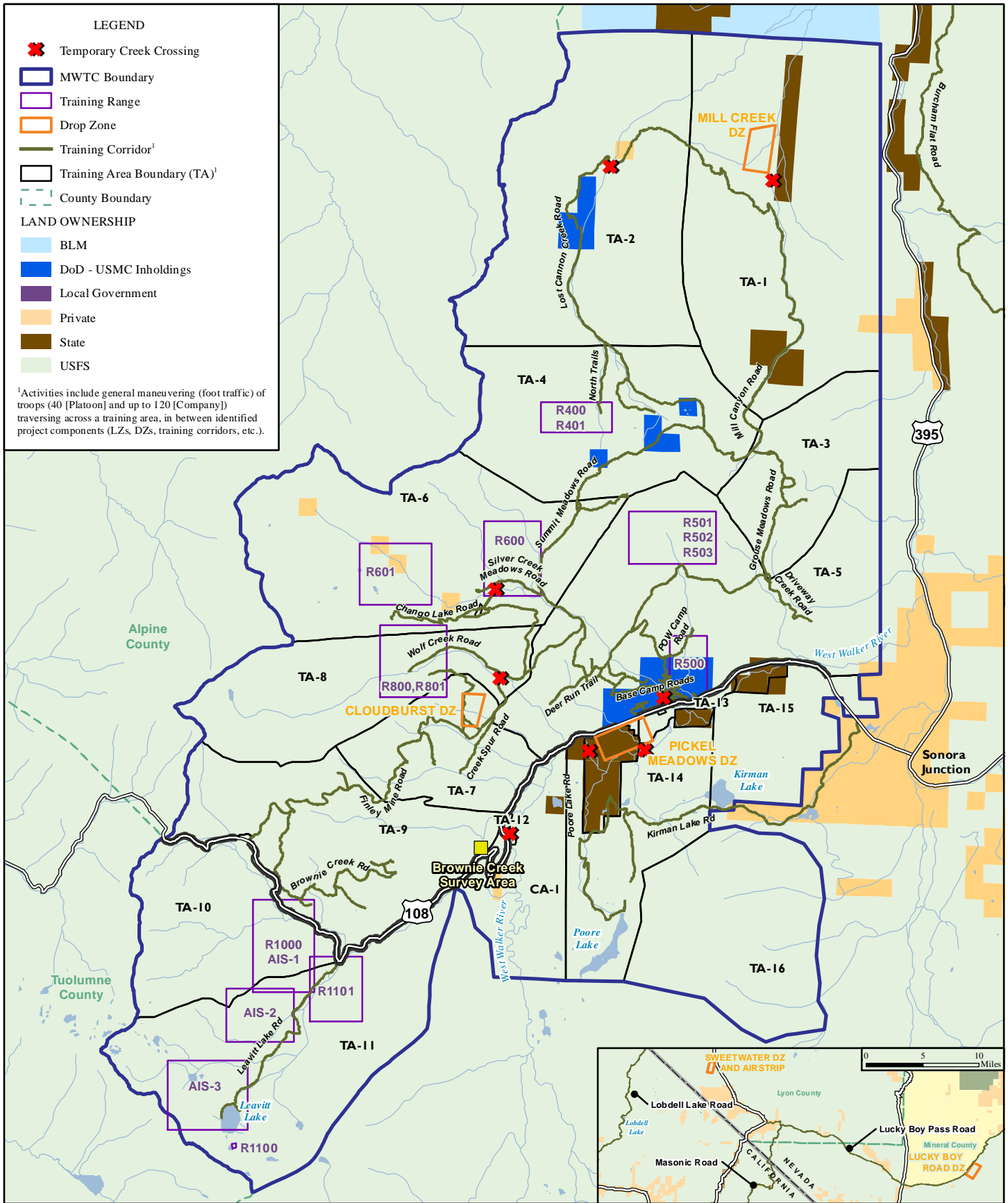


Figure 2.2-3
Temporary Creek Crossings using the MGB and JAB





Joint Assault Bridge (JAB)

The use and practice with the mobile JAB is essential for the Marine Combat Engineers and Navy Seabees to be able to prepare for stream and river crossing in difficult and austere environments. The JAB is expeditionary equipment and does not require much logistics for placement. It can span a 60-foot wet or dry gap and is placed on a tracked M1A1 Abrams tank chassis, for maneuverability and tactical placement. The bridge can sustain loads up to 80 tons allowing vehicles up to a M1A1 Abrams tank to be able to cross rivers, streams, and ravines. The JAB is designed to be only used as a temporarily placed bridge.

The JAB would only be employed on existing roads, and would be deployed across wet and dry gaps on the road. Training events would only occur on current road networks and previously disturbed ground. The vehicle that the bridge is located on would be staged at designated, previously disturbed locations. Vehicles and personnel would not be moving into or out of the water to place or use the bridge. In addition, vegetation would not be removed during placement or use of the JAB.

2.2.2.2 Medium Girder Bridge

The Proposed Action would authorize use of specific areas along West Walker River, Silver Creek, Mill Creek, Wolf Creek, and Lost Cannon Creek for temporary river or stream crossing training using the MGB. The temporary creek crossings are shown on Figure 2.2-3. Two MGB training exercises would occur annually, and involve approximately 40 personnel per event (location and timing contingent upon design features, refer to Section 2.2.5.3). A full MGB training exercise usually lasts a single day and includes one full setup and disassembly.



Assembly of a Medium Girder Bridge (MGB)

The MGB is a lightweight, hand-built bridge that can be built in various configurations to provide a full range of bridging capability to support mission requirements. Speed of assembly by a few Marines (typically Combat Engineers) is one of its best characteristics. The MGB parts are fabricated from a specially developed alloy producing a lightweight, high strength bridge. All except three parts weigh less than 440 pounds. One single-span bridge requires seven of the seven-ton trucks to carry the pieces, and nine personnel members are needed to assemble the bridge. Temporary assembly of the MGB would require a small number of personnel to move through the stream channel along the outer perimeter of the bridge for setup and disassembly of the bridge pieces (MCMWTC 2016b). Vehicles would not move into

or out of the water during MGB assembly or use. In addition, vegetation would not be removed during placement or use of the MGB. Training events would occur on previously disturbed soils and old creek crossing locations, as shown on Figure 2.2-3.

The MGB is a two-girder deck bridge. The two longitudinal girders, with deck units between, provide a 13-ft wide roadway. The logistical footprint of the MGB is 16.5 ft. The girders of top panels can form a shallow, single-story configuration. This type of bridge is used for short spans that would carry light loads. A heavier double-story configuration using top panels and triangular bottom panels is used for heavy loads. The MGB can span up to 150 ft and carry a load of up to 60 tons. This bridge allows for a longer operational use than the JAB but is still temporary.

2.2.2.3 Expeditionary Vehicle Convoy Training

Expeditionary vehicle convoy training would utilize wheeled all-terrain, ambush-protected vehicles similar to the M-ATV and expose drivers to various types of driving terrain and vehicle handling and performance characteristics. Drivers, assistant drivers, fire teams, squads, and companies would also be trained on how to respond to various types of combat environments that may occur during convoy operations such as the simulated explosion of an IED (initiated in various ways such as with a pressure plate or remotely detonated) or being exposed to a simulated ambush in which the vehicle or convoy is attacked by personnel near the roadside with blank ammunition. Convoys encounter IED simulations that involve a simulated explosion (using talcum or cornstarch [baby] powder within the IED simulators) triggered by the vehicle rolling over a device in the road or passing by a device alongside the road. For some simulations, a small hole (approximately 6-12 inches deep and 12-24 inches wide) would be dug in previously disturbed ground to simulate an IED. The training may include a simulated ambush by personnel on foot adjacent to the road shooting blanks (no projectiles, sound only) to simulate combat conditions. Convoy training also includes Counter Improvised Explosive Device (CIED) operations, logistic base set-up (at designated locations), air operations, and mine-rolling activities. High Altitude Aircraft Training above 3,000 ft Above Ground Level (AGL) would occur in conjunction with expeditionary vehicle convoy training.



M-ATV MRAP Vehicle

Mine-rolling training also occurs along the road, where the mine-rolling devices are attached to the front of military vehicles and drive ahead of convoys to set off potential simulated explosives in the road. Logistic base set-up occurs at designated locations, currently on private property by permit. Set-up consists of group and individual tents, with usually 5 to 10 large tents and between 40 and 50 small tents. Vehicles are also parked in designated areas near these tents. Air operations, normally with helicopters, occur along the routes of convoys, and may insert personnel or cargo at designated and approved LZs or DZs. There is no off-road vehicle travel or cross-country traversing during these training activities. Simulated and ambush activities along this route involve simulation substances (i.e., talcum or cornstarch powder) and/or devices

that are cleaned or removed from the area immediately following the training activity. The majority of these substances and devices are man-portable. The simulation substances are relatively non-toxic, and the manner of use in which these substances are dispersed into the air and then fall to the ground poses no risk to people or wildlife.

Military vehicle convoy training or IED operations may impact the civilian populace also using the roads for only a few minutes while areas are cleaned of any potential residue or devices. However, when a military convoy stops on the road, civilian traffic is still allowed to traverse through the area or travel along the road. As specified under VII.C.4 of the Annual Operating Plan, "If convoy vehicles stop or park, they are to do so at the extreme right side of the road in an area wide enough to allow public traffic to pass safely, with visual clearance sufficient to see oncoming vehicles. If visual clearance is insufficient, a person would be appointed to direct traffic safely." The area is considered joint use. The military provides road guards in the front and back of military convoy training activities to ensure the safety of both civilians and military personnel. There would be no change in frequency or duration of the logistical support training activities that occur annually, although some of the activities may shift to newly-approved training corridors.

For those roads that pass through lands other than Forest Service and DoD lands (e.g., BLM land or private land), vehicles and personnel (foot traffic) are only allowed to leave the disturbed road surface as set by agreement with the land owner/manager.

2.2.2.4 Sonora Bridge River Crossing

The Proposed Action would authorize installation of six permanent wood utility poles above the banks of the West Walker River, just north of Highway 108 at the Sonora Bridge. The poles would enable MCMWTC to install three temporary rope bridges across the West Walker River. Currently, MCMWTC is authorized to install one rope bridge at this location by banding the rope bridges to trees along the banks of the river. By installing permanent wood poles, there would no longer be a need to use trees to construct the temporary rope bridges.

The Proposed Action would authorize a total of 28 rope bridge crossing training events at this location per year (two per training company during each Summer Mountain Exercise). During Phase I of the Summer Mountain Exercise, units would break into groups of 4-12 personnel and utilize various formations to walk across the rope bridges over the river. Four total crossings would be conducted during Phase I. During Phase II, each 200-man training company would break into groups of 4-12 personnel, and each group would cross the West Walker River once at the Sonora Bridge crossing site. During all crossing events, safety swimmers would be in the water to get the ropes across the river and for safety purposes.

Construction of the Sonora Bridge crossing location would involve the installation of six wood utility poles placed above the banks of the West Walker River. Three poles would be placed on each side of the river, just north of Highway 108 in upland areas, as shown on Figure 2.2-4. The poles would be buried 4 ft deep in holes that would be dug by hand or by a man auger. The poles would be stabilized by encasing them in concrete. Approximately 6-8 feet of the poles would remain aboveground.

2.2.3 Training Corridors

The Proposed Action would allow for the continued use of three existing training corridors (Kirman Lake Road, Lucky Boy Pass Road, and Masonic Road), one corridor that was authorized for use in the past (Burcham Flat Road), and one new training corridor (Lobdell Lake Road) for expeditionary vehicle convoy training, ambush training, and CIED training (Figure 2.2-5 and Table 2.2-1).

Table 2.2-1. Proposed Training Corridors under the Proposed Action

<i>Route</i>	<i>Miles</i>
Kirman Lake Road (Kir)*	11
Masonic Road (Mas)*	31
Lucky Boy Pass Road (LBP)*	67
Burcham Flat Road (Bur)	27
Lobdell Lake Road (Lob)	38
Total Miles of Training Corridors	174

Note: *Currently authorized under temporary permits.

Convoy training would occur in the same manner and frequency as previously authorized by temporary/annual permits. Up to 12 convoy training events would occur annually during summer months, each lasting approximately 14 days, and involving approximately 200 personnel.

2.2.3.1 Kirman Lake Road


Under the Proposed Action, training activities with the new vehicles and equipment would occur only at specified segments of Kirman Lake Road to avoid or reduce impacts to environmental resources. The segment that MCMWTC would utilize consists of the entrance at the Bently property, crosses through the Bently property, and extends on the unimproved road to the end of the road at Mud Lake. High-altitude aircraft training would occur in conjunction with use of this road.

Foot traffic consisting of up to 200 individuals associated with small unit movements would traverse Kirman Lake Road to access TAs 12-16. As has been the case when this corridor was authorized under annual permits, private lands on or adjacent to Kirman Lake Road would also be used to access approved training areas as authorized under separate agreement between the land owner and the MCMWTC to provide logistical support and for additional operational base camps. Under the existing Entry Permit between the owners of the Bently property and the DoN, the MCMWTC can enter upon, over, and through the property for ingress and egress. Access is allowed for conditioning hikes of 250-500 personnel and 2 vehicles up to 9 times per year, and for ice breaking drills with approximately 40 personnel and 5 over-the-snow vehicles up to 3 times per year (see Appendix A for the complete Bently Property Entry Permit). No off-road vehicle travel would be authorized.



Figure 2.2-4
Sonora Rope Bridge Crossing

0 150
0 50
Feet
Meters



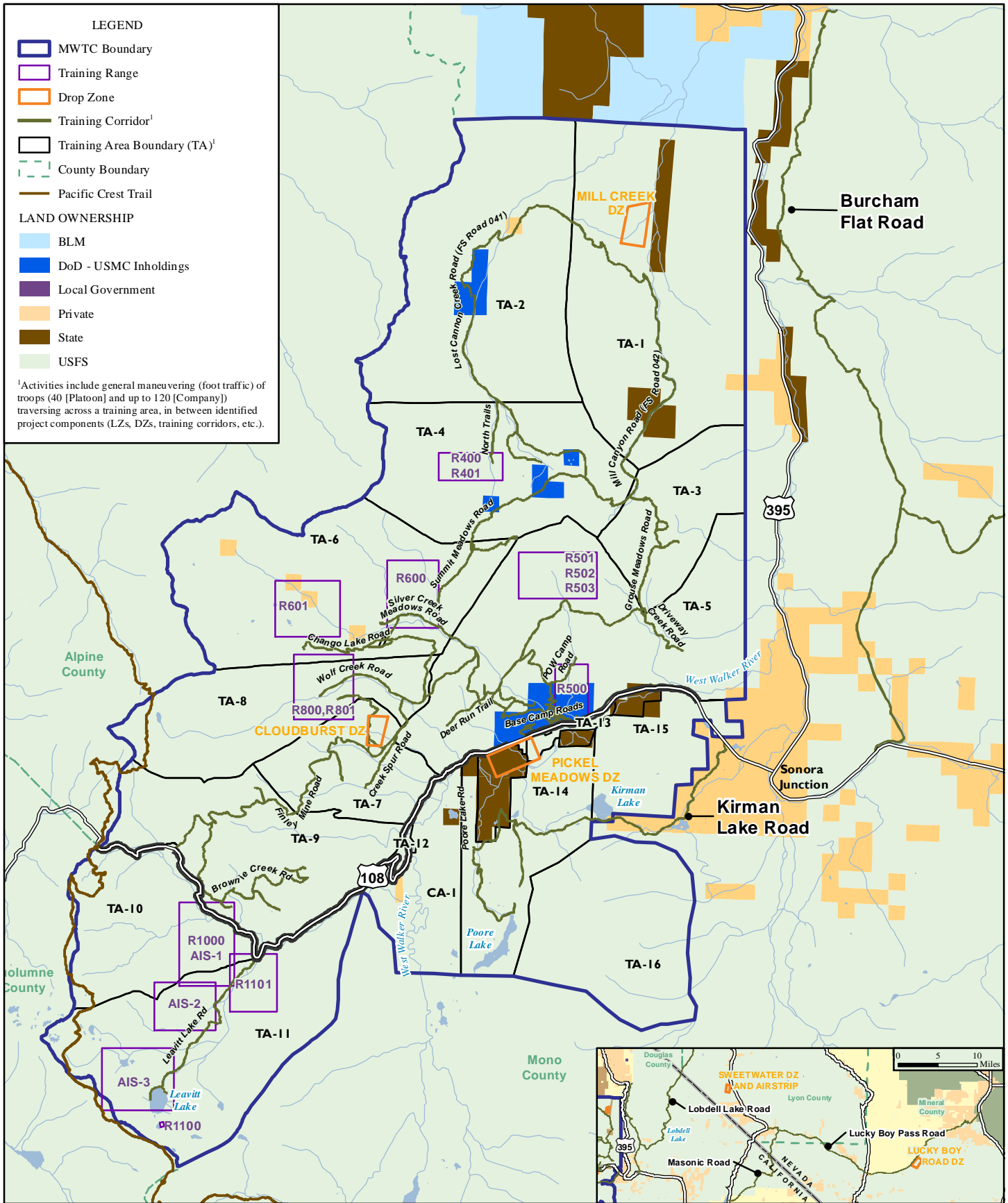
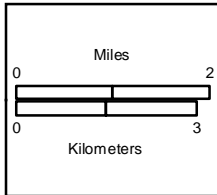


Figure 2.2-5
Proposed Training Corridors at MWTC under the Proposed Action



2.2.3.2 Masonic Road

Under the Proposed Action, Masonic Road (FSR 046) would continue to be used for convoy driver training only with no off-road vehicle travel authorized. Aircraft would be utilized in conjunction with use of this road to support convoy training.

2.2.3.3 Lucky Boy Pass Road

Lucky Boy Pass Road (FSR 028/199) would continue to be used for convoy training and related logistics and movement in realistic terrain. Aircraft would be utilized in conjunction with use of this road. As has been the case when this corridor was authorized under annual permits, private lands on or adjacent to Lucky Boy Pass Road would also be used to access approved training areas, to provide logistical support, and for additional operational base camps. No off-road vehicle travel would be authorized.

2.2.3.4 Burcham Flat Road

Burcham Flat Road (FSR 031) is located outside the eastern boundary of MCMWTC, and would support test and evaluation of tactical vehicles before acquisition on an as-needed basis, such as the Joint Light Tactical Vehicle (JLTV). Burcham Flat Road has been authorized by the Forest Service in the past on a case-by-case basis for experimental vehicle testing and simulated ambush operations (with foot traffic alongside the road).

Under the Proposed Action, MCMWTC training along Burcham Flat Road would allow for convoy operations with optional air escort, IED simulation and CIED operations, ambush operations, logistic base set-up (on previously disturbed ground at designated locations, subject to review and approval by USFS), air operations, and mine-rolling activities. There would be no off-road vehicle travel.

2.2.3.5 Lobdell Lake Road

MCMWTC proposes to use Lobdell Lake Road (FSR 32067/Trail 22482) primarily for convoy driver training with no off-road vehicle travel and limited IED and ambush training, subject to safety considerations and design features. The IED and ambush operations would typically involve foot traffic alongside the road. Simulated and ambush activities along this route would involve simulation substances (i.e., talcum or cornstarch powder) and/or devices that are cleaned or removed from the area immediately following the training activity. The majority of these substances and devices are man-portable. Lobdell Lake Road connects to Burcham Flat Road on its southern terminus, and to several roads and trails at its northern terminus that are less developed and appropriate for high clearance vehicles only. The convoy training would turn around at the northern terminus of the road, where it connects to Jackass Flat Road (FS Route 22263), to return via the same way (MCMWTC 2016a). Military personnel will ensure that turn-around occurs within the boundaries of the trail or on previously disturbed land directly adjacent to the trail.

Civilian support vehicles, High Mobility Multipurpose Wheeled Vehicles (HMMWVs), and snowmobiles would be used by the USMC on the road. Vehicles used in training would be turned around on disturbed land only, and would be pulled to the side of the road on disturbed areas to allow civilian vehicles to pass, when necessary. The road width would be able to accommodate civilian vehicles passing MCMWTC support vehicles, HMMWVs, and snowmobiles, even at 10-ft-wide road segments. The road is an average of 15-ft-wide, with some sections 10-ft-wide or less (Forest Service 2014f) and other sections up to approximately 20-ft-wide. Lobdell Lake Road would be used during the Mountain Exercise training event, six times per year (four in the summer and two in the winter) for up to five days per exercise (MCMWTC 2016a).

2.2.4 Equipment/Weaponry

The Proposed Action would authorize the use of new vehicles, weapons systems, ordnance, engineer systems, aircraft, and equipment to support USMC training. These new classes of equipment and weaponry would supplement or replace the equipment currently used in MCMWTC training activities (see Table 2.1-2) in the TAs and training corridors currently authorized under existing annual SUPs and other temporary authorizations. The existing and additional equipment and weaponry fall within the following categories in Table 2.1-2: Motor Transport Vehicles, Heavy Equipment, Engineer Equipment, Aircraft, Small Arms, and Explosives. Design features would also be applied to limit equipment use to avoid potential adverse impacts (e.g., by preventing use during nesting or breeding seasons or allowing seasonal use only). In addition, the equipment are only used on established roads and previously disturbed areas.

If and when the use of newer technologies and equipment is proposed for use on the MCMWTC in the future, supplemental environmental analysis would be conducted and consultations reinitiated as warranted by changes in potential impact footprints, before such use is authorized.

As listed in Table 2.1-2, the additional equipment and weaponry under the Proposed Action would include the following:

- Ten types of Motor Transport Vehicles:
 - Marine Personnel Carrier (MPC), for protected tactical mobility.
 - Internally Transportable Vehicle (ITV), for helicopter borne operations.
 - Joint Light Tactical Vehicle (JLTV), a general purpose protected tactical vehicle.
 - Mine Resistant Ambush Protected (MRAP) vehicle, an armored tactical vehicle providing explosion and ambush protection.
 - MRAP-All Terrain Vehicle (M-ATV), an armored tactical vehicle providing increased mobility over rough terrain.
 - Assault Amphibious Vehicle, only authorized for use on existing roads and would not enter streams or other amphibious (water) environments.
 - Unmanned Ground Vehicle, a remotely-operated or autonomous ground vehicle.
 - MRAP with Mine Roller attachment for minesweeping.
 - Tracked Snow Vehicles (two types, Light and Heavy), for operating in snowy conditions.
- Two types of Heavy Equipment:
 - High Speed Mobility Crane, for crane operations (up to 50,000 pounds) over rough terrain.
 - JAB, for rapid assault bridging of wet and dry obstacles up to 60 ft in length.
- One type of Engineer Equipment:
 - MGB, a bridge system providing a roadway over wet or dry gaps.
- Four types of Aircraft:
 - Boeing MV-22 Osprey, a multi-role assault and logistic tilt-rotor transport helicopter.



MV-22 Osprey

- UAVs (Group 3 through Group 5), remotely-operated or autonomous aircraft (drones). The winged version (airplane) is proposed to be launched from the MCMWTC and Sweetwater EAFs. Since there is no designated Restricted Airspace at the MCMWTC, a Certificate of Waiver or Authorization with the Federal Aviation Administration must be obtained before UAVs can be flown. Once a Certificate is obtained, the UAVs would likely take off and land at the MCMWTC and Sweetwater EAFs, and would fly over the training area between 1,000 and 5,000 ft AGL (MCMWTC 2015b).
- Surrogate Unmanned Aerial System (SUAS), a manned aircraft equipped with intelligence, surveillance and reconnaissance sensors that provide the capability to mimic a UAV. Under the Proposed Action, the SUAS would typically be a Cessna aircraft. It would take off from and land at the two EAFs and typically fly above 3,000 ft AGL over the training area (MCMWTC 2015b).
- Unmanned Aerial System (UAS) Group 1 and/or Group 2, typically hand-launched battery operated portable systems employed at the small unit level or for base security. These systems are capable of providing “over the hill” or “around the corner” type reconnaissance, surveillance, and target acquisition. Group 1/Group 2 UAS have small logistics footprints (330-ft radius, with no vegetation removal required).

2.2.5 Design Features

Design features that apply to the baseline conditions at MCMWTC, developed by the USMC and the Forest Service to avoid or minimize potential effects associated with MCMWTC operations, are described in Section 2.1.6 and documented in the AOP, 40-year SUP, and four existing temporary SUPs (refer to Appendix A) and would continue to apply to the Proposed Action. In addition, the following general and resource-specific (e.g., biological resources and cultural resources) design features applicable to the Proposed Action would be adopted to avoid or minimize potential adverse effects. The resource-specific design features, developed by the USMC and the Forest Service and presented below, are based upon consideration of potential effects and the incorporation of applicable terms and conditions and avoidance and minimization measures from previous consultations with the State Historic Preservation Office (SHPO) and communications with the USFWS specific to the Proposed Action.

Design Features Applied to the Proposed Action

2.2.5.1 Wildlife (Sensitive Animals)

Spotted Bat and Townsend’s Big-Eared Bat (Bat Conservation Measures [2011])

1. Establish a 100-m buffer around roosting sites.
2. If the site is identified as a maternity colony, no disturbance (e.g., foot traffic, digging, noise) will be allowed within 100 m from 15 April to 1 September.

3. If a site is identified as hibernacula, no disturbance will be allowed within 100 m from 1 November – 1 April.
4. If the site is occupied and no further determination is made, no disturbance will be allowed within the buffer from 1 November – 1 September.
5. No personnel shall enter a cave or adit where bat roosting or hibernation may occur without a prior survey from a qualified bat biologist.

Northern Goshawk Protected Activity Center (PAC)

1. If northern goshawks exhibiting breeding behavior are detected in the project area, a localized nest search will be conducted by a qualified biologist.
2. If an occupied northern goshawk nest is located, no disturbance will be allowed within a 100-m buffer during the limited operating period (LOP).
3. Maintain a LOP around occupied northern goshawk nest sites from 15 February – 30 September or until young have fledged.
4. The LOP for occupied nest site may extend from the breeding season through fledging.

Great Gray Owl Protected Activity Center (PAC)

1. If great gray owls exhibiting breeding behavior are detected in the project area, a localized nest search will be conducted by a qualified biologist.
2. If a Great Gray Owl nest is located, no disturbance will be allowed within 100-m buffer during the LOP.
3. Maintain a LOP around occupied great gray owl nest sites from 1 March – 15 August or until young have fledged.
4. No disturbing activities and/or noise-making (troop movement, bivouacs, training exercises, aircraft operations and pyrotechnics) during the LOP within occupied great gray owl 1/4-mile buffer.

California Spotted Owl Protected Activity Center (PAC)

1. If California spotted owls exhibiting breeding behavior are detected in the project area, a localized nest search will be conducted by a qualified biologist.
2. No disturbance will be allowed within 100 m of the nest during the LOP.
3. Maintain a LOP around occupied spotted owl nest sites from 1 March – 15 August or until young have fledged.
4. No disturbing activities and/or noise-making activities including aircraft operations and pyrotechnics during the LOP in occupied California spotted owl PACs.

Mule Deer Habitat

1. No disturbance in known fawning areas from 1 June – 31 August.

Marten Den Sites

1. No disturbance will be allowed within 100 m of the den site during the LOP.
2. If a marten den site is located, maintain a LOP from 1 May – 31 July.

Sierra Nevada Red Fox, Sierra Nevada DPS

1. If a den site is detected, a forest carnivore specialist will conduct an analysis to determine if activities within 5 miles of the detection have potential to affect the species.

2. No disturbance will be allowed within 100 m of the den site during the LOP, unless the forest carnivore specialist determines that a greater buffer distance is required.
3. If a Sierra Nevada red fox den site is located, maintain a LOP from 1 January - 30 June, or until the den is no longer active.
4. Military use, including avalanche initiation (use of explosives), small arms fire, snowmobiling and other loud noise (above 85 dB) will not be allowed within Sierra Nevada red fox den site buffers during the LOP.
5. To prevent Sierra Nevada red fox habituation to human food, all food, including trash (i.e., food packaging, food scraps, etc.), should be stored in a manner (e.g., mammal-proof canisters) that wildlife cannot access and completely removed from the site at the conclusion of training activities.
6. Surveys for and monitoring of potential impacts to the Sierra Nevada red fox will be conducted by a biologist using methods agreed upon by the USMC, Forest Service, and USFWS. If monitoring indicates impacts to the Sierra Nevada red fox from training activities, additional mitigation measures may be applied as part of adaptive management.

Wolverine

1. When verified sightings occur, conduct an analysis to determine if activities within 5 miles of the detection have a potential to affect the species. If necessary, apply a limited operating period from 1 January to 30 June to avoid adverse impacts to potential breeding. Evaluate activities for a 2-year period for detections not associated with a den site.

Bald Eagle

1. If bald eagles exhibiting breeding behavior are detected in the project area, a localized nest search will be conducted by a qualified biologist.
2. Maintain a LOP around occupied bald eagle nest sites from 1 February – 30 June or until young have fledged.
3. No disturbance will be allowed within 100 m of the nest during the LOP.

Sage-Grouse Bi-State Population

1. No disturbance will be allowed within 1/2 mile of active/pending leks from 1 March – 15 May.
2. Activities associated with the Sweetwater Airstrip including runway maintenance, landing of aircraft, or other concentrated activities (groups larger than 25 individuals) will not occur from 1 March – 30 June during the sage-grouse breeding/early brood-rearing season.
3. Offsite noise will be limited to less than 10 decibels (dBA) above ambient measures from 2 hours before until 2 hours after sunrise at the perimeter of a lek during the active lek season to ameliorate potential impacts caused by aircraft activity.
4. The MCMWTC will participate in and provide proportionate cost-sharing for the Bi-State Sage-Grouse Monitoring Program as presented in Appendix G to the Bi-State Sage-Grouse Final Environmental Impact Statement (Forest Service and BLM 2015) Record of Decision. This includes monitoring the Desert Creek/Fales and Bodie Population Management Units that occur in the MCMWTC permit areas. MCMWTC participation will become part of the INRMP that is being prepared. Data collected through the program will be used to assess the effectiveness of and, if warranted, to adjust design features to minimize disturbance to the sage-grouse Bi-State population.

Flammulated Owl

1. If flammulated owls exhibiting breeding behavior are detected in the project area, a localized nest search will be conducted by a qualified biologist.

2. No disturbance will be allowed within 100 m of the nest during the LOP.
3. Maintain a LOP around occupied flammulated owl nest sites from 15 May – 31 July or until young have fledged.

Migratory Birds (willow flycatcher, Mountain quail, White-headed woodpecker, and other MIS Bird Species)

1. If ground disturbing activities (including tree/vegetation removal) are planned between 15 May and 31 August, then the area should be surveyed for nests or evidence of nesting before implementation.
2. If nests are observed, a minimum 30-m buffer should be delineated to prevent disturbance to nests until they are no longer active.

Peregrine Falcon

1. If peregrine falcons exhibiting breeding behavior are detected in the project area, a localized nest search will be conducted by a qualified biologist.
2. If an occupied peregrine falcon nest is located, no disturbance will be allowed within 100 m of the nest while it is active.

2.2.5.2 Vegetation and Rare Plants

Vegetation

1. Aircraft would not land on dense sagebrush vegetation, including areas where vegetation is visible above the level of snowpack.

Whitebark Pine

1. No whitebark pines, including whole trees, seedlings, branches, and/or cones will be removed or pruned.

Bodie Hills Draba, Cup Lake Draba, Skypilot, and Alpine Dusty Maidens

1. Apply 30-m buffer to all occupied habitat during flowering season.
2. No landing of aircraft, ground disturbing activities (e.g., digging, vegetation removal), or activities involving groups larger than 25 individuals on identified species occupied habitat.
3. No live fire where the impact zone is in identified species occupied habitat.
4. Occurrences in mitigated or extended Surface Danger Zone (SDZ) is authorized.

Botrychium Fern Habitats (this would include Upswept, Dainty, Slender, and Tunux Moonwort ferns)

1. Apply 30-m buffer to all occupied habitat during flowering season.
2. No landing of aircraft, ground disturbing activities (e.g., digging, vegetation removal), or activities involving groups larger than 25 individuals on identified species occupied habitat.
3. No live fire where the impact zone is in identified species occupied habitat.
4. Occurrences in mitigated or extended SDZ is authorized.
5. Due to the survey effort required to detect moonwort ferns, an emphasis will be placed to maintain riparian habitats including fens, wet meadows, and lakeshore vegetation in good condition. Activities involving groups larger than 25 individuals will not occur in these areas. Evidence of impacts to riparian habitats attributed to MCMWTC activities will be restored and such sites will be off-limits to training.

Masonic Mountain Jewel Flower

1. Apply 30-m buffer to all occupied habitat during flowering season.

2. No landing of aircraft, ground disturbing activities (e.g., digging, vegetation removal), or activities involving groups larger than 25 individuals on identified species occupied habitat.
3. No live fire where the impact zone is in identified species occupied habitat.
4. Occurrences in mitigated or extended SDZ is authorized.
5. No setup of climbing lanes in flowering areas on the rocky cliff side, north of the Grouse Meadows area during the 1 May – 31 July flowering season.
6. Other restrictions apply within rare plant occupied habitat in the eastern portion of the district during planned maneuvers. This includes buffering Masonic Mountain jewel flower occurrences as described above and conducting activities outside of the occupied habitat.

Training Corridor Sensitive Plant Species (Lucky Boy Pass, Burcham Flat Road, Lobdell Lake Road, and Masonic Road)

1. No activities involving groups larger than 25 individuals or disturbance activities will occur on known sensitive species locations.

2.2.5.3 Aquatic Species/Habitats and Critical Aquatic Refuges

Fishing Restrictions

1. Mill Creek and Silver Creek are closed to all fishing.
2. Wolf Creek Lake is closed to all fishing. Wolf Creek is only open to catch and release fishing with artificial flies and barbless hooks from 1 August – 15 November.
3. All anglers, including military personnel, within the training center must have a valid state of California fishing license and be compliant with CDFW regulations when fishing open waters.
4. All current fishing regulations will be followed, including potential future changes to fishing regulations.
5. At no time should any life stage of any amphibian species be consumed during survival exercises due to the potential presence of federally listed amphibians.

Critical Aquatic Refuges

CARs occur throughout the MCMWTC training areas as protected habitat in an effort to identify and protect populations of YT, SNYLF, and LCT (Figure 2.2-6). CARs provide recognition to areas with at-risk populations of aquatic or semi-aquatic species.

1. Standards and guides for CARs will be followed per the Sierra Nevada Framework.
2. Identified CARs include:
 - 1) Summit Meadows (5,100 acres) support(ed) SNYLF.
 - 2) Silver Creek (6,000 acres) supports SNYLF and LCT.
 - 3) Wolf Creek (3,200 acres) supports SNYLF and LCT.
 - 4) Mill Canyon (6,404 acres) supports LCT.
 - 5) Koenig Lake (1,990 acres) supports YT.

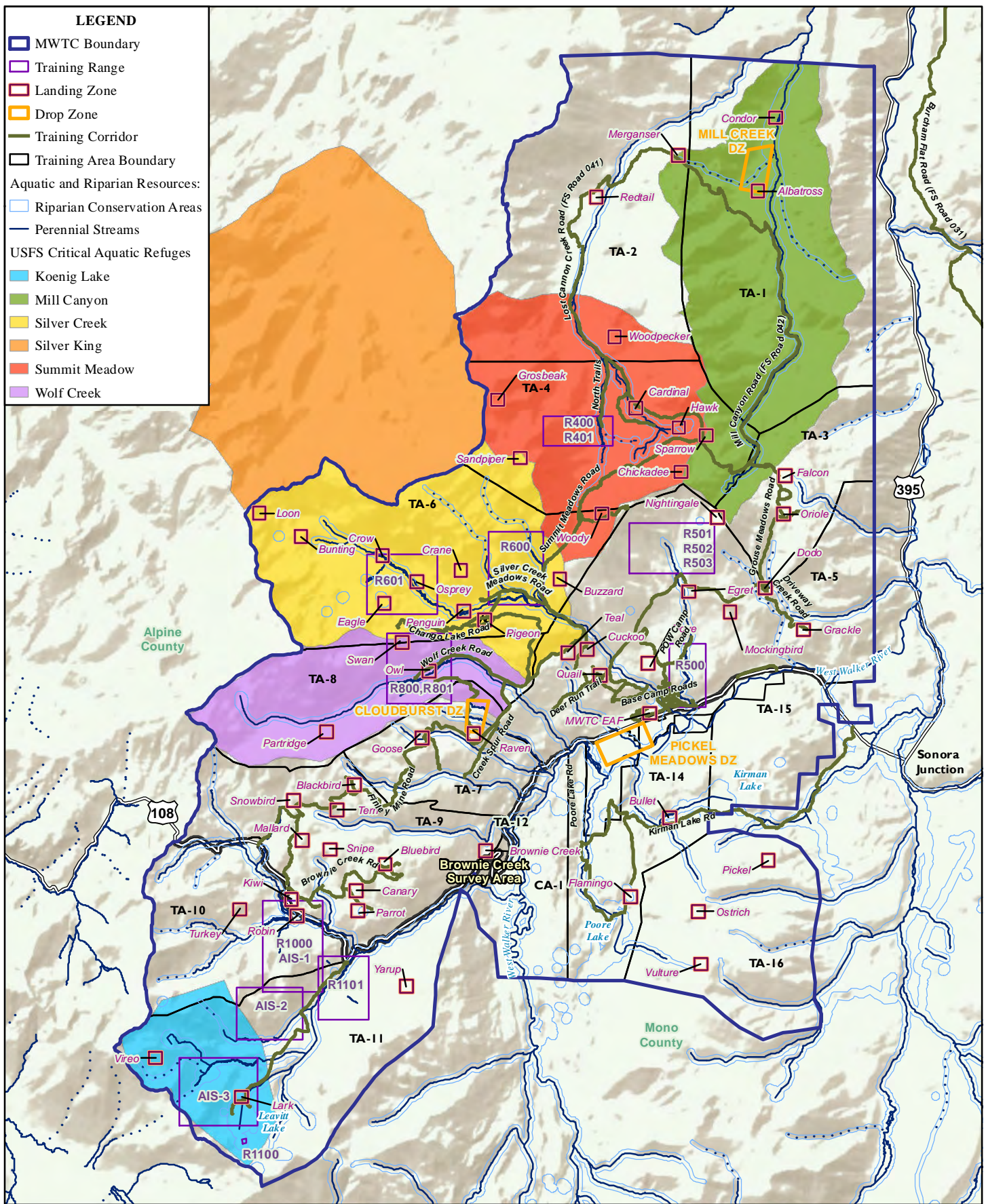
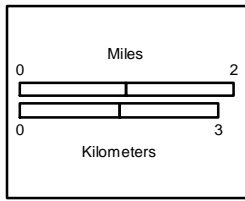


Figure 2.2-6
Critical Aquatic Refuges and Riparian Conservation Areas
in the MCMWTC



Lahontan Cutthroat Trout

1. At no time will any LCT be captured and/or consumed.
2. No landing of aircraft, ground disturbing activities (e.g., digging, vegetation removal), bivouacking, or activities involving groups larger than 25 individuals within 100 m of occupied LCT streams, except for temporary placement of bridges for JAB and MGB exercises and group stream crossings at hardened areas (see LCT Design Feature 4, below). Vehicles and personnel will not move into or out of the water to place or use the JAB, and vehicles will not move into or out of the water during MGB assembly or use. In addition, vegetation would not be removed during these exercises.
3. Motorized vehicles will only cross streams on designated roads and/or crossing points.
4. No wading or walking up and downstream within the stream channel in LCT occupied streams would occur. Stream crossings are allowed for small groups (< 25 people); larger groups would cross only at bridges and existing roads and trails.
5. Creation of rock/log dams that could impede fish passage is not authorized.
6. The deployment of the MGB in Mill, Silver, and Wolf Creeks is limited to one (1) two-day event per stream every three years.
7. To limit impacts to LCT during spawning activities, the MGB would not be deployed between 1 April to 30 July.

Yosemite Toad and Sierra Nevada Yellow-Legged Frog Habitat

1. No training activities within occupied breeding habitat during the breeding season (1 May to 30 July). Questions regarding occupied habitat should be directed to the MCMWTC Environmental Office and/or Range Control.
2. Designated critical habitat areas will have the same requirements as CARs.
3. At no time will any life stage of any amphibian species be consumed during survival exercises.
4. No landing of aircraft, ground disturbing activities (e.g., digging, vegetation removal), bivouacking, or activities involving groups larger than 25 individuals within 100 m of streams, lakes, meadows, marsh areas, or wetlands within critical habitat, except for temporary placement of bridges for JAB and MGB exercises and group stream crossings at hardened areas (see LCT Design Feature 4), and for placement of RHUs and COCs within previously disturbed footprints at the Highway 108/Finley Mine Road junction. Vehicles and personnel will not move into or out of the water to place or use the JAB, and vehicles will not move into or out of the water during MGB assembly or use. In addition, vegetation would not be removed during these exercises. Existing public roads would continue to be used.
5. Based on input from USFWS, the USFS and USMC will place graduated stakes and markers around occupied YT breeding habitat so that the depth of snowpack will be clearly visible, and to ensure that no training occurs in these areas. If the snow depth is below the minimum required, then no activity is authorized. Known breeding areas may be marked such that breeding ponds will be off-limits to training activities when the minimum snow depth is achieved.
 - 1) No training will occur in TA-10 unless there is 2 ft of snow measured at the Sardine Meadows measuring point. MCMWTC will measure the snow depth at that location for Sardine Meadows before each training exercise. A date-stamped photo will be taken of the measuring post and provided by MCMWTC Natural Resources to the USFS and USFWS as the season progresses. Post-use photos will be taken immediately after (within 24 hours) the completion of any bivouac activities.

- 2) No training will occur in TA-11 until a minimum of 2 ft of snow is present at the Sonoran Pass and Leavitt Lake junction sign. A date-stamped photo will be taken of the measuring post and provided by MCMWTC Natural Resources to the USFS and USFWS as the season progresses. Post-use photos will be taken immediately after (within 24 hours) the completion of any bivouac activities.
6. MCMWTC will provide a written report to the USFS and USFWS at the close of the season (winter training) that will include at least the following information: description of actual use activities, dates and numbers, accompanying date stamped photos (including post use), and written summary identifying any unexpected issues or concerns.
7. Except for the use of existing public roads, no training activities or exercises involving overland foot travel or groups larger than 25 individuals will occur within 100 m of YT breeding ponds, regardless of season (winter/summer).
8. All MCMWTC initiated avalanches will be planned to occur outside the avalanche zone covering Koenig Lake.
9. Within Yosemite toad critical habitat, RHUs are only allowed on 2 ft of snowpack or more.

2.2.5.4 Stock Use

Weed Free Forage Requirement

1. The MCMWTC will comply with the USFS Weed Free Forage Requirements, purchase only feed that is certified weed free, and ensure that all pack animals are fed only feed that is certified weed free.

Livestock Control

1. Fences will not be cut or removed by troops. Fences will be undisturbed by military vehicles. Pasture gates will be left as they were found, either closed or open.
2. The MCMWTC is responsible for the removal of cattle or horses occupying the National Forest System lands as a result of damage to fences by military training.
3. The MCMWTC will repair to the USFS standards or pay for repair of fences damaged by military training.

2.2.5.5 Range Resources

Grazing Allotments

1. The following safe distances are required whenever engines and rotors are running (excluding remote-controlled aircraft) to prevent animals from being injured by debris:
 - 1) Aircraft will not hover over any animal at a distance closer than 100 ft (30 m).
 - 2) Aircraft will not fly over any animal at a distance closer than 50 ft (15 m).
2. Shotguns, semi-automatic shotguns, and guns using blanks shall not be fired any closer than 25 ft (8 m) from any animal.

2.2.5.6 Heritage Resources

Site Discovery

1. Historical or archaeological sites discovered during operations in the training areas shall be reported to the MCMWTC Environmental Office and the USFS and evaluated for significance for potential inclusion in the NRHP. Discoveries will be avoided and undisturbed, until the agency decides that

appropriate consultations (California or Nevada SHPO and tribes) are complete and a course of management is determined.

Site Protection

1. Subject to consultation with the California or Nevada SHPOs, all sites in, or potentially eligible for inclusion in, the NRHP (plus a 30-m buffer) are off limits to military training activities that could potentially damage the resource and will be plainly described and/or physically protected on the ground as agreed to by both the MCMWTC and USFS.
2. No ground disturbing activities (e.g., digging, trenching, grading, blading) will occur on archaeological sites. Foot traffic is permitted. Transit on established Forest Service roads is permitted. No damage to arborglyphs (trees) will occur including, carving, cutting limbs, or chopping down. Restrictions on activities will be briefed as part of the pre-exercise activities. Proposed activities are subject to consultation with the California or Nevada SHPOs as agreed to by both the MCMWTC and the USFS.

Tribal Consultation

1. The USFS and Marine Corps will continue tribal consultation to meet federal laws and policies and to protect historic properties and tribally sensitive values and locations.

2.2.5.7 Water/Soils

1. No waste or by-product will be discharged on the ground or into water sources.
2. Training units will stay 100 m away from trails, streams, lakes, springs, wet meadows, and other sensitive areas for bivouac. All human waste disposal will be done using fully maintained and/or enclosed methods that are carried out (e.g., port-a-johns and wag bags).
3. No driving will be conducted in wetlands and meadows, except on designated roads and designated crossing points.
4. Motorized vehicles will only cross streams, wet meadows, and wetlands where there is an existing designated road or motorized trail crossing. Institute erosion control in such disturbed areas mutually agreed upon by the USFS and the MCMWTC.
5. Consistent with the 2016 AOP, the MCMWTC will report twice a year to the USFS on their training operations impact program (digging, off-road driving, etc.).
6. Comply with all applicable federal, state, and local water and air quality regulations.
7. Utilize water subject to all existing water rights.

2.2.5.8 Trees and Fuel Wood

1. The MCMWTC will prevent unnecessary damage to forest tree seedlings, saplings, pole timber, and saw timber to the extent possible within authority of federal laws.
2. The MCMWTC will contact the USFS whenever timber is planned for removal from National Forest lands and the USFS, in coordination with the MCMWTC, will then determine the method of disposal.
3. When necessary to support vehicle passage, the MCMWTC will be allowed to remove fallen limbs or trees from the road surfaces and remove low-hanging limbs to prevent damage to the remainder of the tree.
4. No cutting or clearing of any National Forest vegetation without prior specific approval of the USFS, except as specified in Trees and Fuel Wood Design Feature 3 to support vehicle passage on roads.

2.2.5.9 Pesticides/Herbicides

1. The MCMWTC will not use pesticides/herbicides on National Forest System land without the prior written approval of the USFS.
2. Vehicles will be cleaned of vegetable matter before entering the training area to prevent the accidental introduction of invasive plant species.
3. Requests for approval of planned uses of pesticides/herbicides will be submitted as needed by the MCMWTC before pesticide purchase or use on National Forest System land.
4. No pesticides or herbicides will be disposed of on National Forest System lands.
5. Pesticides and herbicides will be applied according to label instructions.

2.2.5.10 Lands

1. The MCMWTC will preserve the continued existence of all public land monuments and boundary lines within the use area; reestablish or restore within their authority all public land monuments or boundary lines disturbed or destroyed by military use; and aid the USFS in determining, constructing and maintaining property corners and lines common to lands administered by each agency.

2.2.5.11 Visuals

1. The MCMWTC will use the National Forest in ways consistent with protecting its scenic and aesthetic values.

2.2.5.12 Fire and Fuels

1. The MCMWTC will limit and monitor the use of incendiary devices, ordnance, explosives, live ammunition, pyrotechnics, and campfires during fire restriction.

2.2.5.13 Recreation

1. No motorized vehicles are allowed to drive on or cross the PCT.
2. Vehicles are permitted only on designated motorized trails and roads per Forest Service Motor Vehicle Use Map. Use of motorized vehicles off designated roads or motorized trails is not authorized.
3. All designated NFS roads and motorized and non-motorized trails within the MCMWTC are open for public use.
4. Training activities, including landing of aircraft, are prohibited on the lands and waters within the boundaries of designated wilderness areas.

2.2.5.14 Trash Cleanup

1. The MCMWTC will conduct a trash cleanup (“Mountain Sweep”) twice per year after the snow melt (spring and fall).
2. The MCMWTC will conduct a Mountain Sweep after every Mountain Exercise event; MCMWTC staff and the training unit will follow the training path and pick up all visible trash.
3. The MCMWTC will conduct a weekly Mountain Sweep after snow melt begins, and will continue to monitor for trash (“Police Call”) until MCMWTC Range Control and Environmental clear the areas.
4. The MCMWTC will conduct Mountain Sweep in TAs 10/11 and Upper Sardine Meadows (TA-9), only after concurrence is received by the USFWS and the USFS. A small Marine working party

and Biological Monitor (MCMWTC Environmental or USFS Staff) would be dispatched to Police Call the training areas as the snow level decreases.

5. The importance of trash cleanup and “leave no trace” procedures, as outlined above, are included as part of the brief given to new students onboarding at the MCMWTC.

2.2.5.15 Monitoring and Adaptive Management Program

1. Training activities will be monitored and adaptively managed to reduce potential impacts to federally listed species and other resources as specified below. Resource conditions will be evaluated on a year-to-year basis (or more frequently, if deemed necessary in areas of high activity) so that trends can be detected and adjustments made if it appears that conditions are degrading as a result of MCMWTC activities. The adaptive management of MCMWTC operations and training will be incorporated into the INRMP that is being prepared.
2. The condition of natural habitats subject to use by the MCMWTC will be monitored by establishing permanent reference sites and collecting relevant data, including digital photographs, on an annual basis at approximately 100 locations throughout the permit area. Year-to-year comparisons will be used to assess trends in the condition of resources and their most likely causes. The type of data collected will depend upon the setting, the resources of interest, and the overlap of training activities. Digital photography from a UAV or UAS may be used where appropriate to provide a relatively rapid and non-intrusive method of surveying broad-scale areas. For the ESA-listed aquatic species, the relevant measurement indicators would include, but are not necessarily limited to:
 - a. Continued presence of a breeding population within historically occupied areas as indicated through standard population sampling methods.
 - b. The area, bordering vegetative cover, and degree of disturbance of occupied meadows, ponds, and streams.
 - c. Road widths and evidence of expansion/erosion along the edges in close proximity to aquatic habitats.
3. The MCMWTC Commanding Officer will appoint a maneuver damage inspector(s) to conduct maneuver damage inspection and monitoring on an annual or as needed basis in all areas where federally listed species could potentially occur or be affected by training activities to minimize or avoid damage to soils, vegetation, and aquatic habitats.
4. Areas to be monitored an annual or as needed basis for the protection of ESA-listed aquatic species (either by UAV/UAS aerial photography or by ground-monitoring) include, but are not limited to:
 - a. Temporary bridge (JAB and MGB) deployment areas that may affect LCT and SNYLF on the West Walker River, Silver Creek, Mill Creek, and Wolf Creek.
 - b. Highway 108/Finley Mine Road junction where RHU and COC establishment would occur adjacent to the YT Upper Sardine Meadows breeding pond (11SKC 7122 4547) (11N 271960/4243940).
 - c. LZs within SNYLF and/or YT critical habitat (i.e., Bunting, Crow, Eagle, Lark, Loon, Merganser, Osprey, Owl, Partridge, Penguin, Pigeon, Robin, Snowbird, Swan, and Turkey).
5. The maneuver damage inspector would identify sites on Forest Service lands needing protection to facilitate recovery from maneuver damage to soils, vegetation, aquatic habitats, and other federally listed species resources. Sites would be marked as temporarily off-limits to training activities, and recovery would be monitored. Closed areas would be added as needed to the “Off-Limits” map used to help military trainers for planning purposes. This includes areas where the MGB is deployed

- on the West Walker River, Mill, Silver, and/or Wolf Creeks; where small groups (25 personnel or less) cross LCT-occupied streams; and any known YT and/or SNYLF breeding locations.
6. The MCMWTC Commanding Officer will appoint an official representative who will be responsible for compliance with all protective measures agreed upon by the USMC, Forest Service, and the USFWS. This person will receive and investigate reports of non-compliance with the ESA, including the terms and conditions of the Biological Opinion (BO), and will have the authority to stop all activities that may violate the ESA or these measures.
 7. MCMWTC shall provide a written report to the Forest Service and USFWS by January 31 of each year the BO is in effect, beginning the year following issuance of the BO. Each report will document the types, numbers, and locations of training activities conducted within critical habitat, occupied habitat, and/or the applicable buffers of federally listed species; discuss the effectiveness of MCMWTC's protective measures and the terms and conditions of the existing BO; and recommend any other measures that allow for better protection of federally listed species or more workable implementation.
 8. If monitoring indicates impacts to resources from training activities, additional mitigation measures may be applied as part of adaptive management.
 9. Where access for purposes of research and monitoring by qualified biologists has been approved by USFWS, CDFW, and the Forest Service, MCMWTC will facilitate and deconflict such access with training activities as much as practicable.
 10. Wetlands and other waters (outside of those areas protected for federally listed species) would be monitored every 5 years to identify areas that are susceptible to training activities and cattle trampling (e.g., increased sedimentation, increased non-native plant cover, etc.). Such areas would be protected with exclusionary fencing, and if needed, revegetated as appropriate.
 11. Stream crossings (outside of those areas protected for federally listed species) would be monitored on an annual basis for signs of erosion and sedimentation. If a stream crossing shows signs of deterioration from training activities, then the crossing will be closed and erosion control measures would be implemented as mutually agreed upon by the USFS and the MCMWTC, until it is deemed that the crossing can be opened.
 12. Protected cultural resources sites would be monitored for maneuver damage on an annual basis. The MCMWTC would bear responsibility for site restoration should training impact a protected site. If ever necessary, site restoration would occur in consultation and coordination with the Forest Service and the applicable cultural resource or tribal agencies. Should monitoring indicate impacts to cultural resources, MCMWTC would implement protective measures to ensure the site is more aptly protected (e.g., prohibiting training in the area).

2.3 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD

The following alternatives were considered during project planning, but were eliminated from detailed analysis during the scoping process and the evaluation described below. Alternatives not considered in detail may include, but are not limited to, those that fail to meet the stated purpose and need, are technologically infeasible or illegal, or would result in unreasonable environmental harm (HTNF 2012). A potential conflict with local or federal law does not automatically render an alternative unreasonable, although such conflicts must be considered.

2.3.1 Expanded Training without Avoidance and Mitigation Measures

This alternative represents the USMC's original proposal presented during public scoping and before mitigation measures were developed by the USMC and Forest Service. Under this alternative, two

additional training corridors would be re-authorized, an additional 45 LZs would be authorized for use by the MV-22, more extensive JAB training would occur, and a larger number of new vehicles, aircraft, and equipment/weaponry would be used. Since the development of this alternative, the MCMWTC and Forest Service have developed mitigation that refined the original proposal to avoid or minimize potentially significant impacts to biological and cultural resources. These mitigation measures include eliminating two training corridors, restricting the MV-22 to landing points within LZs without resource impacts, reducing JAB training, and reducing the number of new vehicles, aircraft, and equipment/weaponry that could be used. This mitigated alternative is the Action Alternative analyzed in detail in this EA. Since the original proposal without such mitigation measures would not provide appropriate protections for the natural, cultural, and other environmental resources of the NFS lands in question, the original proposal does not meet the purpose of and need for the Proposed Action. It was, therefore, eliminated from detailed evaluation in this EA.

2.3.2 Establish a New MCMWTC in Colorado or Alaska

Under this alternative, existing MCMWTC training and all proposed training would be transferred to a yet to be determined location in Colorado or Alaska, such as near Fort Carson, Colorado, or Fort Richardson, Alaska. Environmental considerations in both locations may involve more natural and cultural resource constraints than affect MCMWTC's current location that would further limit or hinder the training that currently occurs at MCMWTC (Fort Carson & U.S. Army Environmental Command 2009; U.S. Army Alaska 2004). There would be additional costs for leasing or land acquisition, infrastructure development, and the cost to deploy Marine Corps units to these areas would almost double current costs. Additionally, the socioeconomics of Mono County and surrounding areas would be adversely affected by a move of the MCMWTC. In 2013, MCMWTC itself generated over 760 jobs in the local economy through MCMWTC payroll and spending, and paid over \$600,000 in state and local taxes (MCMWTC 2013b).

Based on these technical and economic considerations, this alternative is not feasible and would not meet the purpose of and need for the Proposed Action. It was considered but eliminated from further discussion/analysis in this EA.

2.3.3 Train at an Army Mountain Warfare Center

This alternative considered training all or a portion of USMC units at the Army Mountain Warfare School at the Ethan Allen Firing Range in Jericho, Vermont, or at the Army Northern Warfare Training Center in Black Rapids, Alaska. The Ethan Allen Firing Range and Northern Warfare Training Center have an elevation of only approximately 800 and 2,200 ft, respectively. Since they are at a substantially lower elevation compared to the MCMWTC, they cannot replicate the required training experience and were eliminated from further discussion/analysis in this EA.

2.3.4 Move All New and Existing MCMWTC Operations to Near Hawthorne, Nevada

Under this project alternative, the existing operations and all proposed operations at the MCMWTC would be transferred to a new location near Hawthorne, Nevada. In addition, some existing DoD infrastructure would be utilized; however, further infrastructure development and upgrades would be required due to the age and condition of existing DoD property there. Leasing property at Hawthorne would add to that cost.

Although some live-fire and combined arms training could be transferred to the Hawthorne area and ranges, the high-altitude, steep, mountainous, and cold-weather terrain that the MCMWTC currently provides cannot be replicated in the Hawthorne area.

Based on the discussion presented above, this alternative would not meet the purpose of and need for the Proposed Action. It was considered but eliminated from further discussion/analysis in this EA.

CHAPTER 3

AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND CUMULATIVE EFFECTS

This chapter describes the existing environmental conditions and the potential direct, indirect, and cumulative effects of the No-Action Alternative and the Proposed Action. For each individual resource area, the existing environmental conditions serve as baseline data to which the proposed alternatives are compared to identify and evaluate potential environmental impacts.

In compliance with NEPA, CEQ regulations, and Forest Service and DoN/USMC procedures for implementing NEPA, the description of the affected environment focuses only on those resource areas potentially subject to impacts. Applying these guidelines to this EA, the following resources are described in this section: soils and water resources, biological resources, cultural resources, public health and safety, air quality, transportation, noise, and recreation. After a brief discussion of the resources not carried forward, the subsequent subsections provide a definition of each resource and describe the existing conditions that would potentially be affected by the Proposed Action.

For each resource area, the existing condition discussion is followed by the environmental consequences of potential direct and indirect effects of the No-Action Alternative and the Proposed Action on the affected environment. Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducement; changes in land use, population density, or growth rate; or changes to the components, structures, and function of ecosystems. A determination of significance follows 40 CFR 1508.27 and considers the unique characteristics of the site; violations of federal, state, or local laws; and the potential for controversy, uncertainty, or precedence-setting. Specific approaches to analysis or significance criteria are described within each resource section.

The cumulative effects analysis for each individual resource area follows the individual environmental consequences sections. Cumulative effects are evaluated for potential significance and include both the context and intensity of the potential effects. The cumulative effects analyses address additional considerations required by NEPA, including cumulative effects; growth inducement; possible conflicts between the action and the objectives of federal, regional, state, and local plans, policies, and controls; irreversible and irretrievable commitment of resources; and short-term versus long-term productivity.

3.1 INFORMATION ON OTHER RESOURCES

Resources not evaluated in detail in this EA include: airspace, community services, land use, population and housing, socioeconomics and environmental justice, visual resources, and utilities because the potential for impacts was considered negligible or non-existent as described below.

Airspace. Nearly all of the airspace in and around the MCMWTC is Class E airspace with a floor of either 12,300 ft Mean Sea Level (MSL) or 13,100 ft MSL. No Military Operations Areas exist in or near the MCMWTC. The Proposed Action would not affect the current airspace. Current MCMWTC activity occurring below the Class E airspace is largely composed of helicopter operations and would continue at approximately the same tempo, with the most significant change being the replacement of the CH-46E Sea Knight by the MV-22. The number and frequency of flight operations would not change relative to the existing conditions. Aircraft would continue to utilize the existing airspace in a similar manner so no changes to the airspace around MCMWTC would be needed under the Proposed Action.

Community Services. The Proposed Action would not affect the number of Marines stationed and assigned to the MCMWTC. The number and frequency of training events and the number of USMC personnel involved with training activities would not increase under the Proposed Action. Furthermore, the Proposed Action would not require the expansion of existing facilities or require providing new facilities for community services including fire, police, health care services, or public schools. Consequently, there would be no impacts on community services.

Land Use. The MCMWTC training sites located on Forest Service lands are all located in the Bridgeport Ranger District of the HTNF. Outdoor recreation, Forest Service management programs, MCMWTC training, and grazing are the dominant land uses. Land uses in the vicinity of the project area, such as grazing and mining, would not be affected by the Proposed Action. No impacts to prime farmland, rangeland, or forest land would occur. The implementation of the Proposed Action would be consistent with the Toiyabe National Forest Land and Resource Management Plan (Forest Plan) and policies. It would not alter existing land use in the area, and it would be consistent with adjacent land uses. Therefore, no impacts would occur to existing land uses under the Proposed Action.

Population and Housing. The Proposed Action would not affect the number of Marines stationed and assigned to the MCMWTC. The number and frequency of training events and the number of USMC personnel involved with training activities would not increase under the Proposed Action. Furthermore, training would continue within established and designated TAs; therefore, the project would not impact local demographics or result in the need to remove housing or people from the site. Consequently, there would be no impacts on population and housing.

Socioeconomics and Environmental Justice. Recreational activities in the region are a source of economic value to desert communities and generate revenues to the nearby communities. Data on tourist attractions visited in Mono County was reviewed to determine if any important tourist attractions would be affected by the Proposed Action. The Proposed Action would not restrict access to Sonora Pass and it would be unlikely that the Proposed Action would deter any visits to Mono County as the result of activities occurring near Sonora Pass. Overall, impacts to tourism under the No-Action Alternative would be similar to those estimated under the Proposed Action. Both alternatives would have negligible impacts on tourism, employment, personal income, purchase of goods and services, or other economic growth in Mono County. With respect to environmental justice, no census tract in Mono County had a minority population greater than 50% or had 20% or more of its population living in poverty (U.S. Census 2012); as such no minority or low-income areas in Mono County were identified. Consequently, there would be no impacts to socioeconomics or environmental justice.

Visual Resources. Training activities would continue at the MCMWTC in established and existing TAs, and established training routes and training corridors would continue to be used. No new construction is proposed. No visual receptors would be affected by the Proposed Action. Training activities along the training corridors are mobile and temporary, and the training equipment is removed after training activities are completed. Recreational users along the Pacific Crest Trail (PCT) in the summer would not see evidence of military training activities or equipment within 1 mile or more of the trail. During the winter, small groups of military personnel cross over the PCT on foot and recreational trail users may see aircraft using LZ Vireo in TA-11. However, LZ Vireo is used very infrequently in the winter, and any visual impacts to recreational trail users would be temporary and minor as the aircraft would only be at the LZ for a short time, and the hiker would continue along the trail. Consequently, there would be no impacts to visual resources.

Utilities. The Proposed Action would not include/require the construction of new facilities/utilities or impact any existing utilities, including potable water, electrical, sanitary sewer, phone, information technology, or gas transmission lines. The Proposed Action would not affect the number of Marines stationed and assigned to the MCMWTC and associated utility demand. The number and frequency of training events and the number of USMC personnel involved with training activities would not increase under the Proposed Action. Consequently, there would be no impacts to utilities.

3.2 SOILS AND WATER RESOURCES

3.2.1 Definition of Resource

Soil refers to unconsolidated earthen materials overlying bedrock or other parent material. Soils are typically described in terms of their type, slope, physical characteristics, and relative compatibility or limitations with regard to particular construction activities and types of land use.

Water resources include hydrology, surface water resources, and water quality. Hydrology is the science that deals with global water, its properties, circulation, and distribution, on and under the surface of the earth and in the atmosphere, from the moment of precipitation until it returns to the atmosphere through evapotranspiration or is discharged into another water body. Surface waters include all water naturally open to the atmosphere (rivers, lakes, reservoirs, ponds, streams, wetlands, impoundments, seas, estuaries, etc.) (State Water Resources Control Board 2014). Water quality describes the chemical and physical composition of water as affected by natural conditions and human activities.

The region of influence (ROI) for soils and water resources includes the areas located within the TAs of MCMWTC and the training corridors, DZs, LZs, and EAFs.

3.2.2 Existing Conditions

3.2.2.1 Soils

In general soils that develop at elevations above 6,000 ft from granitic substrates tend to be thin and rocky. However, pockets of highly productive soils may occur throughout the range in these elevations where substrate and topography allow. Soil formation is highly affected by vegetation characteristics. Where vegetation is ample, the incorporation of organic matter into mineral soils modifies both nutrient and water-holding capacity to increase productivity. The productivity of soils tends to be low wherever vegetation is sparse, slopes are steep, or after ground disturbing events (Forest Service 2001). The soils in the project area are described in detail in the *Soil Survey of Toiyabe National Forest Area, California* (USDA 2006).

Soil types on the MCMWTC have the potential for producing a wide range of runoff rates, from low to very high, with the majority of soils having the potential for producing very high runoff rate. The soils can have low to moderately low inherent soil erodibility. Many of the predominant soils within the training areas are rated to have low susceptibility to wind erosion, but some soils are rated to have fairly high susceptibility to wind erosion (Figure 3.2-1). In general, the relatively steep topography of the MCMWTC, soil characteristics, fire frequency, and climate variability (e.g., heavy snowfall) can produce locally high erosion rates on the MCMWTC.

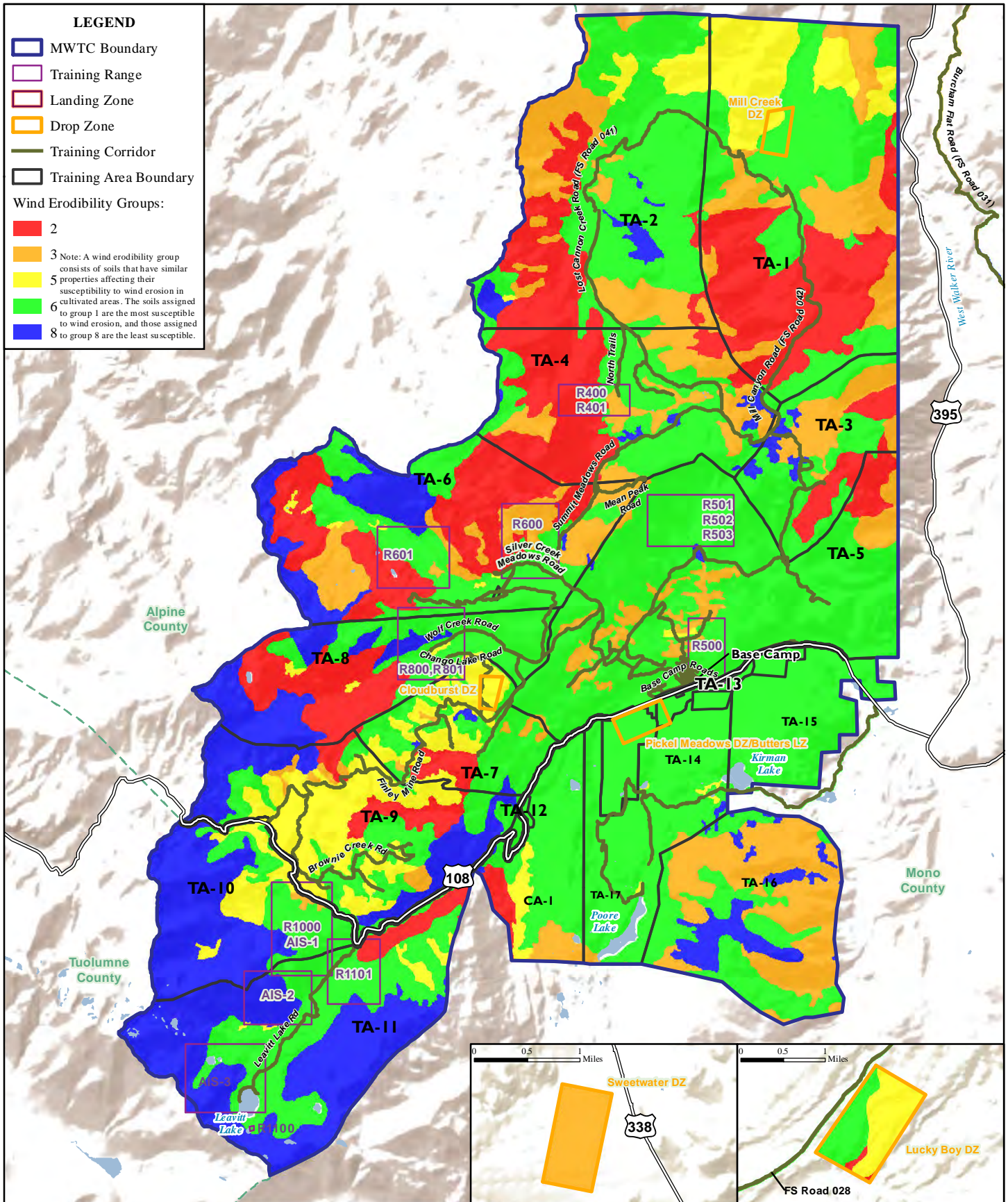
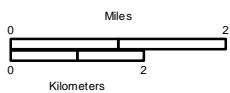


Figure 3.2-1
Wind Erodibility of Soils at MCMWTC



Source: USDA 2006

Soils are currently managed on MCMWTC through design features, as described in Section 2.1.6 and in the existing AOP and SUPs (see Appendix A). The primary goals of soil resources management on MCMWTC are to protect soil resources, to identify areas prone to soil erosion, and to prevent soil erosion and the potential subsequent impact on military facilities, water, and wildlife habitat quality. Additionally, just under half of the lands within the HTNF (about 3 million acres) are identified as Inventoried Roadless Areas (IRAs). The Proposed Action lies within or directly adjacent to 13 IRAs. Although IRAs can and do include motorized roads and trails, the Forest Service manages these areas with the intent to maintain high quality and/or relatively undisturbed soils.

Because of the topography of MCMWTC, soil resources are susceptible to erosion from hydraulic forces, particularly during the winter rainy season. An INRMP is being prepared that may identify additional Best Management Practices (BMPs) to prevent and control soil erosion and reduce the likelihood of sedimentation of drainages and associated wetlands from existing and future erosion. Some BMPs to minimize erosion that are currently used within operational training areas consist of dampers across the roads and redirection of drainage ditches, specifically on steeper sloped roads. Other erosion control measures include the introduction of physical barriers off particular areas of the road to prevent ground disturbance from vehicle traffic and keep vegetation in place.

3.2.2.2 Water Resources

Hydrology

General hydrology in the region of the MCMWTC is characterized by high elevation surface waters, mostly from snowmelt. Surface water bodies within the MCMWTC training areas consist of freshwater alpine lakes and intermittent and perennial creeks. Small springs and associated wetlands occur in many locations within MCMWTC, and the spring water either infiltrates back into the groundwater at the higher elevations or feeds perennial streams. Surface water bodies along the training corridors to the east of MCMWTC are predominantly derived from the runoff of snowmelt and rainfall.

Surface Waters

Many high-gradient perennial streams and rivers, numerous alpine lakes, and several reservoirs are found in the region. MCMWTC is located within the Walker River Basin, which encompasses approximately 2,658,420 acres along the eastern side of the Sierra Nevada and the western portion of the Great Basin (MCMWTC 2013a). The major streams located within the MCMWTC boundaries include Leavitt Creek, Wolf Creek, Silver Creek, Sardine Creek, Lost Cannon Creek, and Mill Creek (Figure 3.2-2) (U.S. Geological Survey [USGS] 2014). These streams and additional smaller creeks are part of watersheds and sub-watersheds that drain MCMWTC and discharge into the West Walker River. Burcham Flat Road traverses Burcham Creek and Deep Creek. Lobdell Lake Road traverses several small streams including South Fork Cottonwood Creek and Coyote Creek and has one major crossing through Desert Creek with no bridge or culvert. Masonic Road crosses numerous small washes but has no major stream crossing. Lucky Boy Pass Road traverses through very arid lands, numerous small washes, and one major stream crossing at Rough Creek with no bridge or culvert. Refer to Figure 3.2-2 for streams and wetlands in the project area.

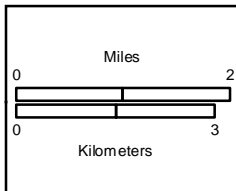
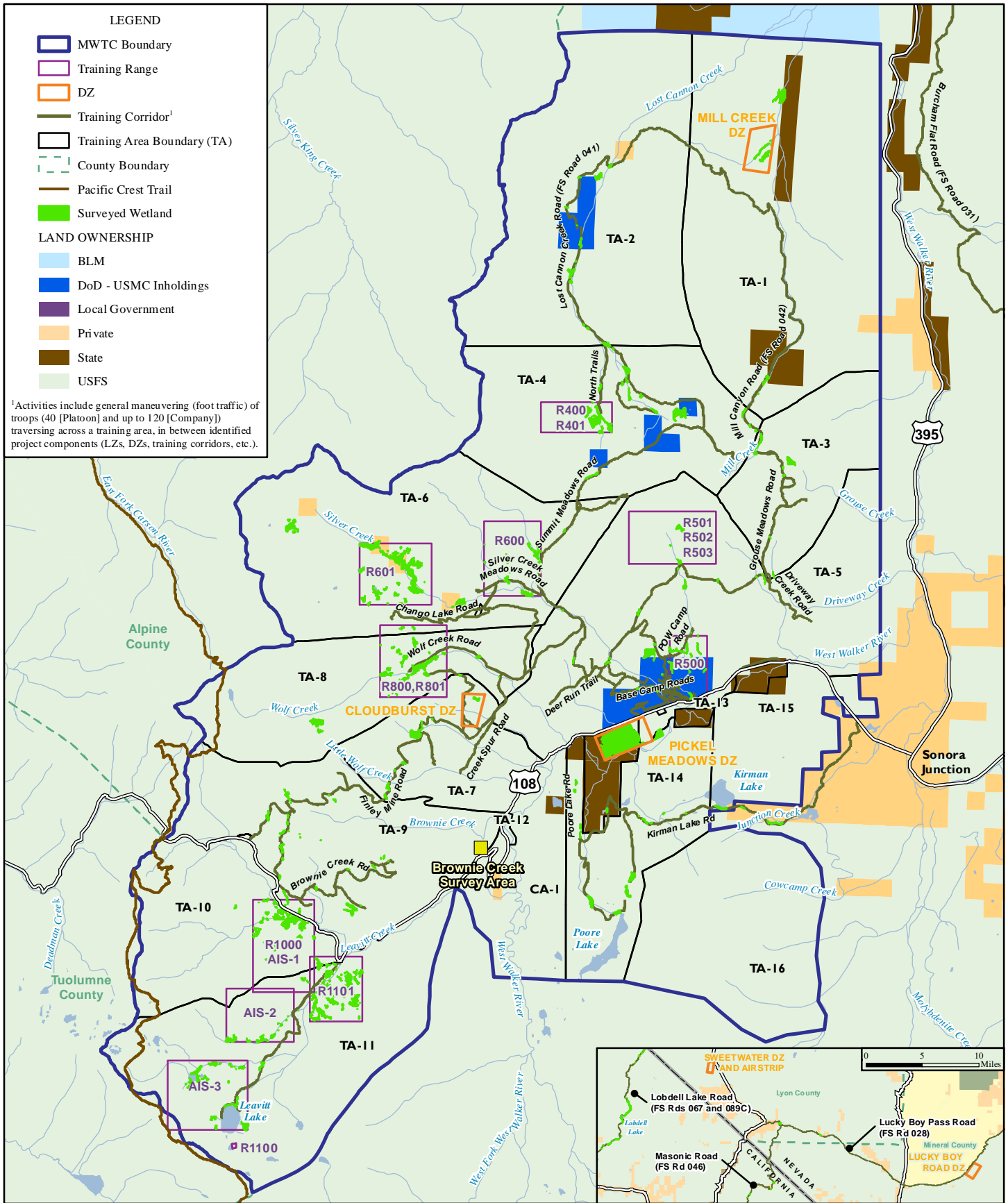


Figure 3.2-2
Streams and Surveyed Wetlands in the Project Area



Wetlands and aquatic habitats are some of the most productive habitats, and often provide important migration corridors for a variety of species. Wetlands provide essential breeding, spawning, nesting, and wintering ground for numerous wildlife species. Wetlands and aquatic systems are also sensitive to disturbance and can be slow to heal, especially those at high elevations with short growing seasons and low productivity.

Wetlands and other U.S. waters are subject to the regulatory jurisdiction of the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act (33 CFR §§ 320-330). Under Section 404 of the Clean Water Act, wetlands are defined as 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.”

Surveys of jurisdictional wetlands and other waters of the U.S. were conducted in 2009, 2010, and 2011 during times when conditions allowed for a ready evaluation of soils, hydrology, and plants (Science Applications International Corporation [SAIC] 2009; MCMWTC and Forest Service 2012). The 2009 survey was conducted at 50 LZs scattered throughout MCMWTC and 2 LZs in Nevada at other training locations (SAIC 2009). The 2010 and 2011 surveys were conducted at 5 Training Corridors, 15 designated training ranges, 5 LZs (Pickel, Ostrich, Vulture, Flamingo, and Bullet), and 5 DZs (MCMWTC and Forest Service 2012). Lower elevation sites were surveyed earlier in the year once wetland plant species were identifiable, to maximize field time during the growing season. Both years had above normal precipitation. The following wetland and deepwater classifications were found in the survey area.

Palustrine System

The palustrine system includes all nontidal wetlands and tidal wetlands where salinity due to ocean derived salts is below 0.5%, and dominated by trees (PFO), shrubs (PSS), persistent emergents, and emergent mosses or lichens (PEM) (Cowardin et al. 1979). The palustrine system comprises vegetated wetlands traditionally referred to as marsh, swamp, bog, fen, and/or prairie. It also includes the small, shallow, permanent, or intermittent water bodies often called ponds (see PUB below). Palustrine wetlands may be situated shoreward of lakes, river channels, or estuaries; on river floodplains; in isolated catchments; or on slopes. They may also occur as islands in lakes or rivers (Cowardin et al. 1979). The total wetlands acreages surveyed in the project area are provided in Table 3.2-1.

- **Palustrine Emergent (PEM) Wetlands** - PEM wetlands are characterized by erect, rooted, herbaceous hydrophytic vegetation (Cowardin et al. 1979). The majority of fens, bogs, marshes, and wet meadows found in mountain habitats are classified under this system. PEM wetlands were the most commonly observed system within the project survey area and are the dominant Cowardin habitat classification in the meadows within the project area.
- **Palustrine Scrub-Shrub (PSS) Wetlands** - PSS wetlands are dominated by woody vegetation less than 20 ft tall (Cowardin et al. 1979). Component dominant species can include true shrubs, young trees, and trees or shrubs that are small or stunted as a result of environmental conditions. Many PSS wetlands were mixed with PEM wetlands; often, small PSS areas were included within larger PEM habitats.
- **Palustrine Forested (PFO) Wetlands** - PFO wetlands are dominated by woody vegetation that is at least 20 ft tall, and are most common in the eastern U.S. but also occur in those sections of the West where moisture is relatively abundant, particularly along rivers and in the mountains

(Cowardin et al. 1979). Palustrine forested wetlands occur in floodplains, springs, seeps, adjacent to running waters, and in other areas with high water tables (U.S. Army Corps of Engineers 2010).

- **Palustrine Unconsolidated Bottom (PUB)** - PUB wetlands are shallow water or deep water habitats with at least 25% cover of particles smaller than stones, and a vegetative cover less than 30%. There were a few shallow ponds in the project area (totaling 0.15 acre) that met this classification.

Table 3.2-1. Delineated Wetland and Open Water Acreages within Survey Areas

<i>Project Component</i>	<i>Open Water</i>	<i>PEM</i>	<i>PEM/ PFO</i>	<i>PEM/ PSS</i>	<i>PFO</i>	<i>PFO/ PSS</i>	<i>PSS</i>	<i>PUB</i>	<i>Grand Total</i>
TA-1	0.17	6.00	-	-	0.62	-	4.43	-	11.22
TA-2	0.09	2.49	-	0.65	2.90	-	1.72	-	7.85
TA-3	-	4.39	-	-	-	0.44	1.2	-	6.03
TA-4	-	23.5	0.36	0.18	3.11	1.9	6.44	-	35.49
TA-5	-	17.76	0.13	0.52	-	-	3.26	-	21.67
TA-6	2.65	30.48	9.93	11.41	4.37	0.20	8.76	-	67.8
TA-7	-	6.54	-	1.57	-	-	0.99	-	9.10
TA-8	0.33	5.15	-	9.91	-	0.59	7.14	-	23.12
TA-9	0.41	8.32	-	1.15	0.03	-	1.32	-	11.23
TA-10	0.96	7.02	-	11.19	0.11	0.89	1.18	-	21.35
TA-11	59.08	2.45	0.05	38.89	0.32	1.04	8.71	0.15	110.69
TA-13	-	0.72	-	-	-	-	-	-	0.72
TA-14	-	13.42	-	1.65	-	-	0.09	-	15.16
TA-15	-	1.64	-	-	-	-	-	-	1.64
TA-16	-	-	-	-	-	-	-	-	-
MCMWTC Total	63.69	129.88	10.47	77.12	11.46	5.06	45.24	0.15	343.07
Burcham Flat Road	-	0.30	-	-	-	-	-	-	0.3
Kirman Rd (outside MCMWTC)	-	1.37	-	-	-	-	0.11	-	1.48
Lobdell Lake Road	-	12.31	-	0.08	-	-	0.16	-	12.55
Lucky Boy Pass Road	-	0.93	-	-	-	-	0.68	-	1.61
Masonic Road	-	0.35	-	-	-	-	-	-	0.35
Training Corridor Total	-	15.26	-	0.08	-	-	0.95	-	16.29
Grand Total	63.69	145.14	10.47	77.20	11.46	5.06	46.19	0.15	359.36

Notes: MCMWTC = Marine Corps Mountain Warfare Training Center; PEM = Palustrine Emergent (wetlands); PFO = Palustrine Forested (wetlands); PSS = Palustrine Scrub-Shrub (wetlands); PUB = Palustrine Unconsolidated Bottom (wetlands); TA = Training Area.

Riverine Systems

The riverine system includes all wetlands and deepwater habitats contained within a channel, with the exception of wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens (Cowardin et al. 1979). The term “channel” can refer to an artificially or naturally created watercourse that periodically or continuously contains moving water and/or connects two bodies of standing water. The riverine system is bounded on the landward side either by upland, by the channel bank (including natural and manmade levees), or by wetland dominated by trees, shrubs, persistent emergents, emergent mosses,

or lichens (Cowardin et al. 1979). Water is typically, but not always, flowing in the riverine system. Riparian and/or wetland habitats often occur adjacent to the banks of the riverine system, typically on a floodplain.

The riverine system is divided into four subsystems as defined by Cowardin et al. (1979), of which two were used to classify all riverine habitats within the project area:

- **Upper Perennial** - the gradient is high and velocity of the water is fast. There is no tidal influence and some water flows throughout the year. The substrate consists of rock, cobbles, or gravel with occasional patches of sand. The natural dissolved oxygen concentration is normally near saturation. The fauna is characteristic of running water, and there are few or no planktonic forms. There is very little floodplain development.
- **Intermittent** - the channel contains flowing water for only part of the year. When the water is not flowing, it may remain in isolated pools or surface water may be absent. Though many of these habitats lacked surface water during field investigations, they often provided evidence of connectivity and drainage between larger wetland habitats.

For the purposes of this EA, riverine habitats in the project area were mapped and classified only to the subsystem level: upper perennial or intermittent. Ephemeral streams were included in the intermittent category for purposes of the Cowardin classification. A third category of canal/ditch was also included for man-made features.

Lacustrine System

The Lacustrine System includes wetlands and deepwater habitats that are tidal or nontidal; however, ocean derived salinity is always less than 0.5%. Lacustrine systems have the following characteristics: (1) situated in a topographic depression or a dammed river channel; (2) lacking trees, shrubs, persistent emergents, emergent mosses or lichens with greater than 30% areal coverage; and (3) total area exceeds 20 acres. Similar wetland and deepwater habitats totaling less than 20 acres are also included in the Lacustrine System if an active wave-formed or bedrock shoreline feature makes up all or part of the boundary, or if the water depth in the deepest part of the basin exceeds 6.6 ft at low water. The lacustrine system habitats are summarized here as one Open Water category (see Table 3.2-1). Several types occur in the project area as described below.

Lacustrine Aquatic Bed

Lacustrine Aquatic Bed habitats are dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Water regimes include subtidal, irregularly exposed, regularly flooded, permanently flooded, intermittently exposed, semi-permanently flooded, and seasonally flooded.

- **Lacustrine Unconsolidated Bottom** - Lacustrine Unconsolidated Bottom habitat includes all lacustrine habitats with at least 25% cover of particles smaller than stones, and a vegetative cover less than 30% (Cowardin et al. 1979). These habitats have bottoms that are characterized by the lack of large stable surfaces, and are usually found in areas with lower energy than rock bottom habitats.

Protection of Wetlands and Other Waters of the U.S.

Wetlands enhance the quality of surface waters by impeding the erosive forces of moving water and trapping waterborne sediment and associated pollutants. Per Executive Order (EO) 11990, *Protection of*

Wetlands, federal agencies are required to: “take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands.” Management measures and associated strategies to protect and enhance the water and wetland resources at MCMWTC are identified in the Preliminary Draft INRMP and provided below. These measures would be finalized when the INRMP is finalized.

- Support the mitigation policy of avoidance, minimization, and compensation for any wetland losses, as mandated by EO 11990, *Protection of Wetlands*. Perform wetland delineations before conducting activities in areas identified as potentially jurisdictional wetlands.
- Inventory and map wetland and non-wetland waters of the U.S. and the State of California that have not been inventoried. Maintain a comprehensive Geographic Information System (GIS) database of these resources.
- Conduct monitoring of wetland and riparian areas every 5 years. Identify areas that are susceptible to cattle trampling; maintain exclusionary fencing around these areas and revegetate, as appropriate.
- Enhance identified wetland habitats by annually eradicating and removing non-native and invasive wetland plant species (e.g., *Bromus* and *Poa* spp.).
- Restore identified wetland habitats that have been significantly disturbed by cattle and human activities (including weed control activities). Revegetate these areas with appropriate native species that are known from the local region.
- Continue to implement, regulate, and monitor stream crossings within designated, authorized crossing locations.
- Monitor wetland community plant species composition and relative cover. Pay particular attention to invasive plant species and aquatic vegetation.
- Identify and develop suitable wetland and riparian habitat restoration opportunities.
- Continue to implement buffers from training activities (i.e., 100-m from streams and lakes).

Additionally, as previously discussed for soils, the Proposed Action lies within or directly adjacent to 13 IRAs, which the Forest Service manages with the intent to maintain high quality and/or relatively undisturbed waters.

Water Quality

The MCMWTC portion of the project area is within the north Lahontan Basin, managed by the State of California Lahontan Regional Water Quality Control Board (RWQCB). The roads outside of the MCMWTC located in California are in the area managed by the Lahontan RWQCB, and the roads in Nevada are in the area managed by the State of Nevada Bureau of Water Quality Planning (BWQP). Water quality standards for surface waters and groundwater within California are contained in the Water Quality Control Plan for the Lahontan Region (Lahontan RWQCB 1995). The plan designates beneficial uses for water bodies and establishes water quality objectives, prohibitions, and other implementation measures. For surface waters in Nevada, water quality standards define water quality goals of a water body by designating beneficial uses of the water and setting criteria necessary to protect those uses (Nevada BWQP 2014). Beneficial uses for surface waters in the project area are provided in Tables 3.2-2 and 3.2-3.

Table 3.2-2. Beneficial Uses of Surfaces Water in Project Area – California

Hydrologic Unit Number	Hydrologic Unit/Subunit Drainage Feature	Beneficial Uses MUN	Beneficial Uses AGR	Beneficial Uses GWR	Beneficial Uses FRSH	Beneficial Uses REC-1	Beneficial Uses REC-2	Beneficial Uses COMM	Beneficial Uses WARM	Beneficial Uses COLD	Beneficial Uses WILD	Beneficial Uses BIOL	Beneficial Uses RARE	Beneficial Uses SPWN	Beneficial Uses WQE	Beneficial Uses FLD
631	WEST WALKER RIVER HYDROLOGIC UNIT															
631.10	Antelope Valley Hydrologic Area															
631.10	Mill Creek	X		X		X	X	X		X	X		X	X		
631.10	Lost Cannon Creek	X		X		X	X	X		X	X		X	X		
631.10	Minor Surface Waters	X	X	X	X	X	X	X		X	X		X	X		
631.10	Minor Wetlands	X	X	X	X	X	X	X		X	X		X	X	X	X
631.30	Desert Creek Hydrologic Area															
631.30	Desert Creek	X	X	X		X	X	X		X	X			X		
631.30	Lobdell Lake	X	X	X		X	X	X		X	X	X	X	X		
631.30	Minor Surface Waters	X	X	X		X	X	X		X	X		X	X		
631.30	Minor Wetlands	X	X	X		X	X	X		X	X		X	X	X	X
631.40	Upper West Walker River Hydrologic Area															
631.40	Silver Creek	X	X	X		X	X	X		X	X		X	X		
631.40	Pickle Meadow Wetlands	X	X	X		X	X			X	X				X	X
631.40	Leavitt Meadow Wetlands	X	X	X		X	X			X	X				X	X
631.40	Minor Surface Waters	X	X	X	X	X	X	X	X	X	X		X	X		
631.40	Minor Wetlands	X	X	X	X	X	X	X	X	X	X		X	X	X	X

Table 3.2-2. Beneficial Uses of Surfaces Water in Project Area – California

Hydrologic Unit Number	Hydrologic Unit/Subunit Drainage Feature	Beneficial Uses MUN	Beneficial Uses AGR	Beneficial Uses GWR	Beneficial Uses FRSH	Beneficial Uses REC-1	Beneficial Uses REC-2	Beneficial Uses COMM	Beneficial Uses WARM	Beneficial Uses COLD	Beneficial Uses WILD	Beneficial Uses BIOL	Beneficial Uses RARE	Beneficial Uses SPWN	Beneficial Uses WQE	Beneficial Uses FLD
630	EAST WALKER RIVER HYDROLOGIC UNIT															
630.10	Masonic Hydrologic Area															
630.10	Minor Surface Waters	X	X	X	X	X	X	X		X	X		X	X		
630.10	Minor Wetlands	X	X	X	X	X	X	X		X	X		X	X	X	X

Notes:

- MUN** Municipal and Domestic Supply
- AGR** Agricultural Supply
- GWR** Groundwater Recharge
- FRSH** Freshwater Replenishment
- REC-1** Water Contact Recreation
- REC-2** Non-contact Water Recreation
- COMM** Commercial and Sportfishing
- WARM** Warm Freshwater Habitat
- COLD** Cold Freshwater Habitat
- WILD** Wildlife Habitat
- BIOL** Preservation of Biological Habitats of Species of Significance
- RARE** Rare, Threatened, or Endangered Species
- SPWN** Spawning, Reproduction, and Development
- WQE** Water Quality Enhancement
- FLD** Flood Peak Attenuation/Flood Water Storage

Source: Lahontan RWQCB 1995.

Table 3.2-3. Beneficial Uses of Surface Water in Project Area – Nevada

<i>Hydrologic Unit Number</i>	<i>Hydrologic Unit/Subunit Drainage Feature</i>	<i>Beneficial Uses IRR</i>	<i>Beneficial Uses STOCK</i>	<i>Beneficial Uses REC-1</i>	<i>Beneficial Uses REC-2</i>	<i>Beneficial Uses IND</i>	<i>Beneficial Uses MUN</i>	<i>Beneficial Uses WILD</i>	<i>Beneficial Uses AQUATIC</i>
WALKER RIVER BASIN									
445A.164	Sweetwater Creek	X	X	X	X	X	X	X	X
445A.165	East Walker Creek (at Stateline)	X	X	X	X	X	X	X	X
445A.1655	East Walker Creek (Stateline to Bridge B-1475)	X	X	X	X	X	X	X	X
445A.169	Desert Creek	X	X	X	X	X	X	X	X

Notes:

- IRR** Irrigation
STOCK Watering of Livestock
REC-1 Recreation Involving Contact with the Water
REC-2 Recreation Not Involving Contact with the Water
IND Industrial Supply
MUN Municipal or Domestic Supply, or Both
WILD Propagation of Wildlife
AQUATIC Propagation of Aquatic Life

Source: Nevada BWQP 2014.

Impairments to water quality are generally caused by erosion from vehicle and foot traffic, maintenance of unpaved roads, and livestock grazing. Road maintenance can result in erosion and siltation when grading of dirt roads occurs adjacent to streams. Erosion results in the impairment of wetland and stream function. During the 2010 and 2011 surveys, many of the wetlands within the MCMWTC TAs showed signs of disturbance from livestock grazing or trampling and, to a lesser extent, foot traffic from training activities (MCMWTC and Forest Service 2012). In some wetlands, trampling by livestock was severe and soil was heavily disturbed. However, despite the heavy trampling in some areas, substantial erosion was not observed. Wherever livestock impacts were noted, cow-pies were also prevalent. These grazing impacts are completely independent of MCMWTC activities.

Wetlands and streams along Burcham Flat Road and Masonic Road had minimal livestock (i.e., grazing independent of MCMWTC activities) or other disturbance when surveyed in July 2010 (MCMWTC and Forest Service 2012). Kirman Lake Road traversed Poore Creek at one location with no bridge or culvert and some erosion was noted at this location. Lucky Boy Pass Road traverses through very arid lands and had numerous locations where washes crossing roads were altered by grading. Alterations included stream courses modified near the road and soil banks created from grading operations at locations where washes would normally cross the road (likely to impede water flow at times of heavy rain). There was one major stream crossing at Rough Creek with no bridge or culvert. Lobdell Lake Road traversed several small streams and had one major crossing through Desert Creek (no bridge or culvert). Observations at these crossings during the 2010 and 2011 surveys indicated that vehicles did not always cross the creek at the same location and likely varied depending on conditions at the time of the crossing and the judgment of the driver (MCMWTC and Forest Service 2012). Some erosion was noted at these locations and additional crossings create the potential for more erosion. Erosion has the potential to result in impairment of stream function. Wetlands along Lobdell Lake Road had moderate livestock trampling and grazing. The eastern portion of Lobdell Lakes "Road" (connecting with Risue Road) was a foot trail running along and, at several points, crossing Desert Creek. This area had minimal disturbance.

Water quality impacts could also occur due to the release of munitions constituents (MC) during training operations. Existing range operations at MCMWTC were assessed under the Range Environmental Vulnerability Assessment (REVA) program, which is a proactive program designed to support the USMC's Range Sustainment Program. USMC operational ranges are assessed through the REVA program to identify areas and activities that are subject to possible impacts from external influences, as well as to determine whether a release or substantial threat of a release of MC from operational ranges to off-range areas may create an unacceptable risk to human health and/or the environment. This is accomplished through a baseline assessment of operational range areas and periodic 5-year review assessments, and where applicable, the use of fate and transport modeling of the REVA indicator MC (e.g., lead) based upon site-specific environmental conditions at the operational ranges and training areas (Headquarters Marine Corps 2008; MCICOM 2012).

A baseline assessment under the REVA Program covering munitions use through 2006 was conducted in 2007 on all 13 ranges (Headquarters Marine Corps 2008). The subsequent 5-year review covering munitions use from 2007 through 2011 has been completed (MCICOM 2012). Both the baseline REVA and the 2012 5-year review are included within Attachment D. The baseline REVA assessment completed for the MCMWTC in 2007 evaluated lead, which is the indicator MC associated with small arms ranges. No MC loading areas were identified at which cyclotrimethylene trinitramine (RDX), 2,4,6-trinitrotoluene (TNT), cyclotetramethylene tetranitramine, or perchlorate was used.

The surface water and groundwater evaluation rankings for small arms ranges resulted in minimal scores. A “minimal score” means that the small arms range has minimal or no potential for lead migration, but actions may be necessary to ensure that continuing training activity at the range does not pose a future threat to human health and the environment. Two ranges had moderate rankings (groundwater for R-500 and surface water for R-600), but both of these rankings were modified to minimal because the potential for lead migration and exposure to groundwater receptors is low for R-500 and the loading potential for lead is low for R-600. The primary reasons for all the other small arms ranges to be ranked as minimal include low MC loading and the low potential for lead transport in surface water and groundwater based on site-specific conditions. The assessment of operational ranges at MCMWTC in this 5-year review determined that a release or substantial threat of a release of MC from operational ranges to off-range areas does not create an unacceptable risk to human health and/or the environment. The operational ranges and training areas at MCMWTC will be evaluated again in 5 years to support the Marine Corps’ Range Sustainment Program (MCICOM 2012).

3.2.3 Approach to Analysis

This section evaluates potential impacts to soils and water resources as a result of implementation of the No-Action Alternative or the Proposed Action. The environmental consequences evaluation for water resources includes a qualitative analysis of hydrology, surface water, and water quality.

The analysis of potential impacts to soils considers both direct and indirect impacts. Direct impacts result from physical soil disturbances, while indirect impacts to soils occur away from the operation site. Quantitative thresholds for impact assessment are not available for soils analyses. Therefore, the significance of potential project impacts was evaluated qualitatively based on the degree of project-induced change in a particular factor relative to existing conditions, as well as by regulatory standards, where applicable.

As for soils, the analysis of potential impacts to hydrology considers both direct and indirect impacts. Direct impacts result from disturbance of hydrology or surface waters and alteration of water quality, while indirect impacts include effects to water quality that manifest away from the training operation. Impacts are determined to be significant if operations associated with the project would violate the applicable federal or state laws and regulations. The following factors are also considered in evaluating potential impacts to water resources:

- Degrading the quality of surface waters by introducing pollutants that pose a risk to human health, agricultural use, or ecological conditions.
- Decreasing existing and/or future beneficial uses of surface waters.
- Increasing the risk of flooding.

In this evaluation, design features as described in Section 2.1.6 (No-Action Alternative) and Section 2.2.5 (Proposed Action) are assessed for their ability to avoid, minimize, or reduce/eliminate potential impacts to water resources, in compliance with local, state, or federal regulations.

3.2.4 Environmental Consequences

3.2.4.1 No-Action Alternative

Under the No-Action Alternative, training activities would be limited to the vehicles, weapons systems, engineer systems, aircraft, ordnance, and equipment currently utilized by the USMC and other military

agencies as authorized in the AOP, 40-year SUP, and four existing temporary SUPs (Appendix A). Therefore, the condition of soils and water resources under the No-Action Alternative would be the same as described under existing conditions in Section 3.2.2. There would continue to be some minor impairment of water quality due to foot traffic in streams, vehicles crossing streams at designated crossings, and from road maintenance; however, the resulting sedimentation is minor.

Vehicle maneuvering can cause erosion and impact water quality; however, the use of existing roads and the prohibition of off-road vehicle use – other than over-the-snow travel – would reduce the potential effects to soils and water quality. Soils would continue to be subject to small areas of disturbance by rounds and target maintenance. The existing SUPs and AOP require that areas subjected to damage from training activities be repaired and “rested” if necessary, to reduce or mitigate impacts. The 2016 AOP requires that the MCMWTC report twice a year to the Forest Service on their training operations impact program. After each Mountain Exercise event, MCMWTC does a range sweep to collect trash and inspect damage; they also inspect for damage during the training exercises (e.g., digging, off-road driving).

The No-Action Alternative would be a continuation of the current use of live-fire ranges and suite of weapons and artillery. The same target areas and firing points that have been previously established would be used. The target areas are backed by terrain (i.e., a hillside) limiting the area of disturbance and the distance rounds can travel. At take-off and landing sites, rotor wash underneath rotary aircraft can be expected to blow away soil. Effects related to rotor wash from rotary-wing aircraft would diminish with distance from the source.

The Animal Packers Course has the potential to affect soils and water resources by disturbing soils along trails and substrate at stream crossings. However, these activities would be off-limits within sensitive habitats, and impacts would be comparable to current ongoing training and public use of the area by pack animals.

Potential impacts to water quality could occur by way of munitions debris expelled into creeks or from MC entering into surface waters or groundwater. However, it is currently required under existing training regulations to collect and remove discarded munitions materials from the ranges following training events and, therefore, maintain existing conditions of the ground surface (including shorelines and creek beds) that may inadvertently receive dispelled munitions debris during live-fire training. Continued implementation of this practice under the No-Action Alternative would reduce potential impacts to water resources. In addition, the assessment of operational ranges under the REVA program (refer to Section 3.2.2.2) determined that a release or substantial threat of a release of MC from operational ranges to off-range areas does not create an unacceptable risk to human health and/or the environment. The operational ranges and training areas at MCMWTC would continue to be evaluated every 5 years under the REVA program to support the USMC’s Range Sustainment Program. The talcum or cornstarch [baby] powder used in the IED simulators is non-toxic and would not impact water quality or soils.

Under the No Action Alternative, the design features and restrictions pertaining to LZs and DZs currently in place under the 40-year SUP, including LOPs, minimum snow depth, weight restrictions, and aircraft type designations, are sufficient to minimize any potential adverse effects to soils and waters in IRAs from use of LZs and DZs. Small to moderate amounts of soil compaction may occur in IRAs immediately alongside the roadbed as a result of parked convoy vehicles, vehicles circumventing road obstacles (seasonal mudholes, large rocks, trenching, etc.), and vehicle passing. Water quality downstream from these training exercises may be impacted somewhat following snowmelt as a result of erosion and sediment generated by convoy activities occurring on wet, unstable road surfaces in IRAs. Annual snowpack

conditions would measurably increase or decrease these effects based on the amount of snowfall (and resulting snowmelt and soil moisture content).

The potential impacts to soils and surface waters (including wetlands, streams, rivers, and lakes) and the associated water quality and beneficial uses of these surface waters, would be avoided or minimized with implementation of the existing design features as described in Section 2.1.6 and identified in the AOP, 40-year SUP, and four existing temporary SUPs (refer to Appendix A). In addition, the measures identified in the Preliminary Draft INRMP to protect soils and water resources would be implemented and updated, as necessary. Therefore, with continued implementation of the REVA program, design features, and any new INRMP measures, direct and indirect impacts to soils and water resources would be negligible and less than significant under the No-Action Alternative.

3.2.4.2 Proposed Action

Over the course of the 40-year SUP, changes in training activities under the Proposed Action would result in minimal, if any, change in impacts to soils and water resources as described under the No-Action Alternative. However, impacts associated with use of the LZs/DZs, including soil disturbance, are likely to be greater under the Proposed Action, as downdraft and outwash from the MV-22 would be greater than from other aircraft at a given height above the ground. However, these effects would continue to be localized and would diminish with distance from LZs/DZs. The 2009 Home Basing EIS found that rotor wash from the MV-22 would be up to 10% greater than the CH-53 and potentially three to four times greater than the CH-46. Wind velocities could reach 90 knots (103.6 mph) directly below the MV-22 when hovering at 100 ft (30.48 m) AGL (Marine Corps Installations West 2009). In extreme cases, soil can be scoured to the extent that small shrubs can be uprooted or nearly uprooted. Dust cloud development from the displacement of soil and loose vegetation is another common effect from rotor wash.

The susceptibility to wind erosion of soils in the project area is shown in Figure 3.2-1. LZs and DZs that contain soils having higher susceptibility to wind erosion would be monitored for effects of rotor wash induced erosion. If substantial erosion is detected, the LZs/DZs could be hardened using methods such as application of a dust abatement polymer/portland cement dust which is entirely inert and poses no environmental hazards, or another dust binder matrix after consulting with the Forest Service. The application of these hardeners would minimize future rotor wash induced erosion, but conditions would continue to be monitored.

Under the Proposed Action, training operations with the potential to release MC to the environment would be similar to those under the No-Action Alternative. Assessments of operational ranges under the REVA program (refer to Section 3.2.2.2) would continue to be conducted every 5 years to determine if any release or substantial threat of a release of MC to off-range areas would create an unacceptable risk to human health and/or the environment. This continued implementation of the REVA program would help minimize the potential impacts associated with MC.

JAB and MGB training would occur adjacent to surface waters. However, vehicles and personnel would not be moving into or out of the water to place or use the JAB, and vehicles would not move into or out of the water during MGB assembly or use, resulting in no direct impacts to surface waters. Vehicles that carry and deliver the JAB and MGB would be parked in previously disturbed areas and follow existing measures to reduce the risks and impacts associated with spills, resulting in less than significant indirect impacts to surface waters.

Under the Proposed Action, the design features in Section 2.2.5.7 and restrictions pertaining to LZs and DZs currently in place under the 40-year SUP, including LOPs, minimum snow depth, weight restrictions,

and aircraft type designations, are sufficient to minimize any potential adverse effects to soils and waters in IRAs from use of LZs and DZs. Impacts to soils and waters in IRAs from convoy and other ground training would be similar to those discussed under the No-Action Alternative, except that such impacts would occur along a portion of Lobdell Lake Road (convoy training would occur from the southern terminus of the road to the where it connects to Jackass Flat Road). Although some level of erosion and sedimentation would likely occur along the portion of Lobdell Lake Road used for convoy training, the road is currently used by OHV enthusiasts and other recreationists, and design features in Section 2.2.5.7 would minimize such impacts, as discussed above.

Potential impacts to soils and surface waters (including wetlands, streams, rivers, and lakes) and the associated water quality and beneficial uses of these surface waters, would be avoided or minimized with implementation of design features listed in Section 2.2.5.7 that limit and/or prohibit waste discharge, training, and driving in aquatic habitats and call for erosion control in disturbed areas. In addition, any new measures identified in the INRMP (currently being prepared) to protect soils and water resources would be implemented and updated, as necessary. The 2016 AOP requires that, “The MCMWTC will protect USFS improvements and resources as required by law, such as environmentally sensitive areas, meadows, cultural resource sites, scenic, visual quality, and aesthetic values on National Forest System lands as far as possible, consistent with the authorized use, and the availability of appropriated funds. If damage due to training activities is observed, appropriate measures will be employed to repair damages at these sites, as funds allow.” Therefore, with continued implementation of the REVA program, the SUP and AOP requirements, the Proposed Action design features (Section 2.2.5.7), and measures to be implemented after completion of the INRMP, direct and indirect impacts to soils and water resources would be negligible and less than significant under the Proposed Action.

3.2.5 Cumulative Effects

In addition to the direct and indirect environmental consequences already discussed, additional considerations required by NEPA include the potential cumulative effects of the Proposed Action. Potential cumulative effects could occur when the effects of the Proposed Action are combined with other past, present, and reasonably foreseeable projects (Appendix E). The ROI for cumulative impact analysis is dependent upon the specific resource being analyzed. For soils and water resources, the ROI for the cumulative impact analysis is the same as the ROI for the Proposed Action (refer to Section 3.2.1).

The Proposed Action would result in no alterations to hydrology. Cumulative effects from the Proposed Action were assessed when added to: (1) the existing environmental conditions as a proxy for the impacts of past actions (refer to Section 3.2.2); (2) the “MCMWTC Operations and Training Baseline Project” as described in Appendix E; and (3) other past, present, and reasonably foreseeable projects in the ROI. However, potential impacts to soils and surface waters (including wetlands, streams, rivers, and lakes) and the associated water quality and beneficial uses of these surface waters, would be avoided or minimized with continued implementation of the REVA program, design features, and any new measures identified in the INRMP (currently being prepared). Therefore, no significant cumulative impacts would occur to soils and water resources with implementation of the Proposed Action along with past, present, and reasonably foreseeable projects in the ROI.

3.3 BIOLOGICAL RESOURCES

3.3.1 Definition of Resource

Biological resources include plant and animal species and the habitats within which they occur. This analysis focuses on species that are important to the function of ecosystems, are of special societal importance, or are protected under federal or state law. These resources are commonly divided into the following categories: *Plant Communities*, *Wildlife*, and *Special Status Species*.

Biological resources are grouped and analyzed in this EA as follows:

- *Plant Communities* include plant associations and dominant constituent species that occur in the project area. Aquatic habitats are discussed in detail in Section 3.3. Special status plant species are discussed in more detail below.
- *Wildlife* includes the characteristic animal species that occur in the project area. Special consideration is given to bird species protected under the Migratory Bird Treaty Act (MBTA) and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*. Special status wildlife species are discussed in more detail below.
- *Special Status Species* are those species that are listed, have been proposed for listing, or are candidates for listing by the USFWS. The federal Endangered Species Act (ESA) protects federally listed threatened and endangered species and their associated designated critical habitat. For the purpose of this EA, special status species designation is also given to species recognized by the Forest Service as sensitive species, management indicator species, and species of interest.

3.3.2 Existing Conditions

Existing conditions data for biological resources is based on the Wildlife Survey Reports (Davenport Biological Services and Cardno 2012) and the Botanical Resources Specialist Field Survey Report (Reynolds and Cardno 2012) that were prepared for this project, which in turn consolidated the information from literature, database, and museum records for the region as a whole, and from field surveys of the project area.

In addition to GIS-mapped locations from project-specific surveys, GIS location data for species and their habitat was provided by the Forest Service (2010b) and obtained from state databases (California Natural Diversity Database [CNDDDB] 2014 and Nevada Natural Heritage Program [NNHP] 2010). Additional information was provided by Forest Service biologists in conjunction with review of the survey reports.

3.3.2.1 Regulatory Setting

The regulatory framework and management direction relevant to biological resources include the following laws, regulations, and Forest Service Manual direction:

- ESA of 1973, as amended (16 USC §§ 1531-1544)
- Bald and Golden Eagle Protection Act (16 USC § 668)
- MBTA of 1972 (16 USC §§ 703-719)
- EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*
- EO 13112, *Invasive Species*
- Forest Service Manual and Handbooks (FSM/H 2670)
- MIS (1982 Planning Rule) (36 CFR 219)
- National Forest Management Act of 1976 (16 USC §§1600-1687)

- Toiyabe National Forest Land and Resource Management Plan (Forest Plan)
- Sierra Nevada Forest Plan Amendment (SNFPA)
- Intermountain Region R4 Sensitive Species List
- Bi-State Sage-Grouse Conservation Strategy
- Wetland and Meadow Habitat (Management Standard & Guideline 70)
- California Spotted Owl and Northern Goshawk (Management Standard & Guidelines 87 and 89)
- Fisher and Marten (Management Standard & Guidelines 87 and 89)

3.3.2.2 Plant Communities

Vegetation of the region encompassing the project areas has been classified at the plant community (alliance) level using the California Vegetation (CALVEG) classification system (Forest Service 2009b) for the Great Basin Ecological Province – CALVEG Zone 9 (Revised 23 March 2009).

CALVEG is a medium-scale classification system that, when applied across the combined project area, is at a resolution that makes it difficult to discern vegetation boundaries and patterns. Therefore, for the purpose of this report, CALVEG alliances have been converted to the coarser scale California Wildlife Habitat Relationships (CWHR) system developed by the CDFW (Mayer and Laudenslayer 1988). The CWHR system was developed to recognize and logically categorize major vegetative complexes at a scale sufficient to predict wildlife-habitat relationships. Table 3.3-1 provides a crosswalk between the CWHR habitats, the CALVEG alliances, and the corresponding California Native Plant Society (CNPS) (Sawyer et al. 2009) alliances. During the botanical survey conducted in 2010 and 2011, 53 plant communities throughout the project area were sampled for cover and documented for targeted threatened and endangered species plant habitat characteristics. These descriptions are available in the botanical survey report (Reynolds and Cardno 2012). Vegetation and wildlife habitats at the MCMWTC and the training corridors are shown in Figures 3.3-1 and 3.3-2, respectively. The CWHR habitats that occur in the project areas are described below. CWHR acreages are provided in Table 3.3-2.

Table 3.3-1. Crosswalk of Vegetation Types in the Combined Project Area

<i>CWHR Habitat</i>	<i>CALVEG Alliance</i>	<i>CNPS Vegetation Series</i>
Alpine-Dwarf Shrub	Alpine Grasses and Forbs	Many Series
Alpine-Dwarf Shrub	Alpine Mixed Scrub	Many Series
Annual Grassland	Annual Grasses and Forbs	California Annual Grassland
Aspen	Quaking Aspen	Quaking Aspen Forest
Barren	Barren	No Corresponding Type
Barren	Snow / Ice	No Corresponding Type
Bitterbrush	Bitterbrush	Antelope Bitterbrush Shrubland
Bitterbrush	Bitterbrush – Sagebrush	Antelope Bitterbrush Shrubland
Bitterbrush	Rabbitbrush	Rubber Rabbitbrush Scrub
Eastside Pine	Eastside Pine	Jeffrey Pine - Ponderosa Pine Forest And Woodland
Eastside Pine	Eastside Pine	Ponderosa Pine - Black Oak
Eastside Pine	Eastside Pine	Ponderosa Pine Forest
Freshwater Emergent Wetland	Tule-Cattail	Bulrush - Cattail Wetland
Jeffrey Pine	Jeffrey Pine	Jeffrey Pine Forest And Woodland
Juniper	Utah Juniper	Utah Juniper Woodland
Juniper	Western Juniper	Western Juniper
Lacustrine	Water	No Corresponding Type
Lodgepole Pine	Lodgepole Pine	Lodgepole Pine Forest
Low Sage	Black Sagebrush	Black Sagebrush Dwarf Scrub
Low Sage	Low Sagebrush	Low Sagebrush
Montane Chaparral	Great Basin - Mixed Chaparral Transition	Many Series
Montane Chaparral	Greenleaf Manzanita	Greenleaf Manzanita Shrubland
Montane Chaparral	Pinemat Manzanita	No Corresponding Type
Montane Chaparral	Snowberry	No Corresponding Type
Montane Chaparral	Snowbrush	Tobacco Brush Montane Chaparral
Montane Chaparral	Upper Montane Mixed Chaparral	Many Series
Montane Hardwood-Conifer	Douglas Fir	Douglas Fir – Ponderosa Pine Forest
Montane Riparian	Black Cottonwood	Black Cottonwood Riparian Forests And Woodlands
Montane Riparian	Willow (Shrub)	Many Series
Montane Riparian	Willow (Tree)	Many Series
Perennial Grassland	Perennial Grasses and Forbs	Many Series
Pinyon-Juniper	Singleleaf Pinyon Pine	Singleleaf Pinyon
Pinyon-Juniper	Singleleaf Pinyon Pine	Singleleaf Pinyon - Utah Juniper
Red Fir	Red Fir	Red Fir Forest
Sagebrush	Basin Sagebrush	Big Sagebrush Shrubland
Sagebrush	Big Basin Sagebrush	Big Sagebrush Shrubland
Sagebrush	Curleaf Mountain Mahogany (Shrub)	Curleaf Mountain Mahogany Woodland And Scrub
Sagebrush	Curleaf Mountain Mahogany (Tree)	Curleaf Mountain Mahogany Woodland And Scrub
Sagebrush	Great Basin Mixed Shrub	Many Series
Sagebrush	Mountain Sagebrush	Mountain Big Sagebrush Scrub
Sierran Mixed Conifer	Mixed Conifer – Fir	Mixed Conifer
Subalpine Conifer	Mountain Hemlock	Mountain Hemlock Forest
Subalpine Conifer	Subalpine Conifer	Subalpine Fir Forest
Subalpine Conifer	Western White Pine	Western White Pine Forest

Table 3.3-1. Crosswalk of Vegetation Types in the Combined Project Area

<i>CWHR Habitat</i>	<i>CALVEG Alliance</i>	<i>CNPS Vegetation Series</i>
Subalpine Conifer	Whitebark Pine	Whitebark Pine Forest
Urban	Urban/Developed	No Corresponding Type
Wet Meadow	Wet Meadows	Many Series
White Fir	White Fir	White Fir Forest

Notes: CWHR = California Wildlife Habitat Relationships; CALVEG = California Vegetation; CNPS = California Native Plant Society

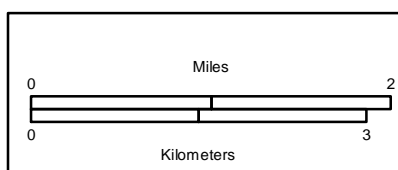
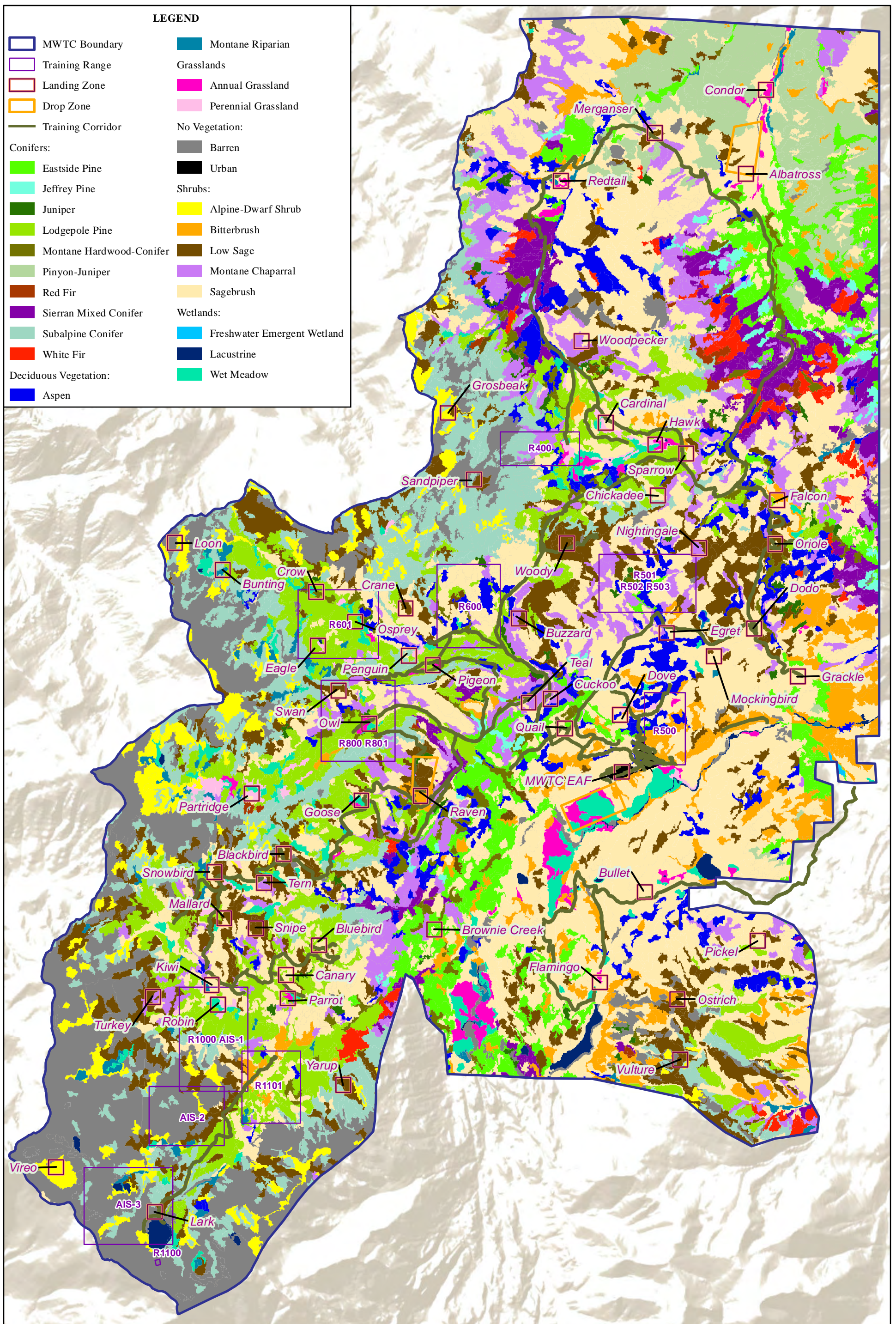


Figure 3.3-1
Vegetation and Wildlife Habitats in the MCMWTC



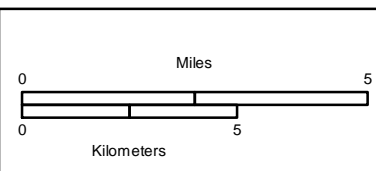
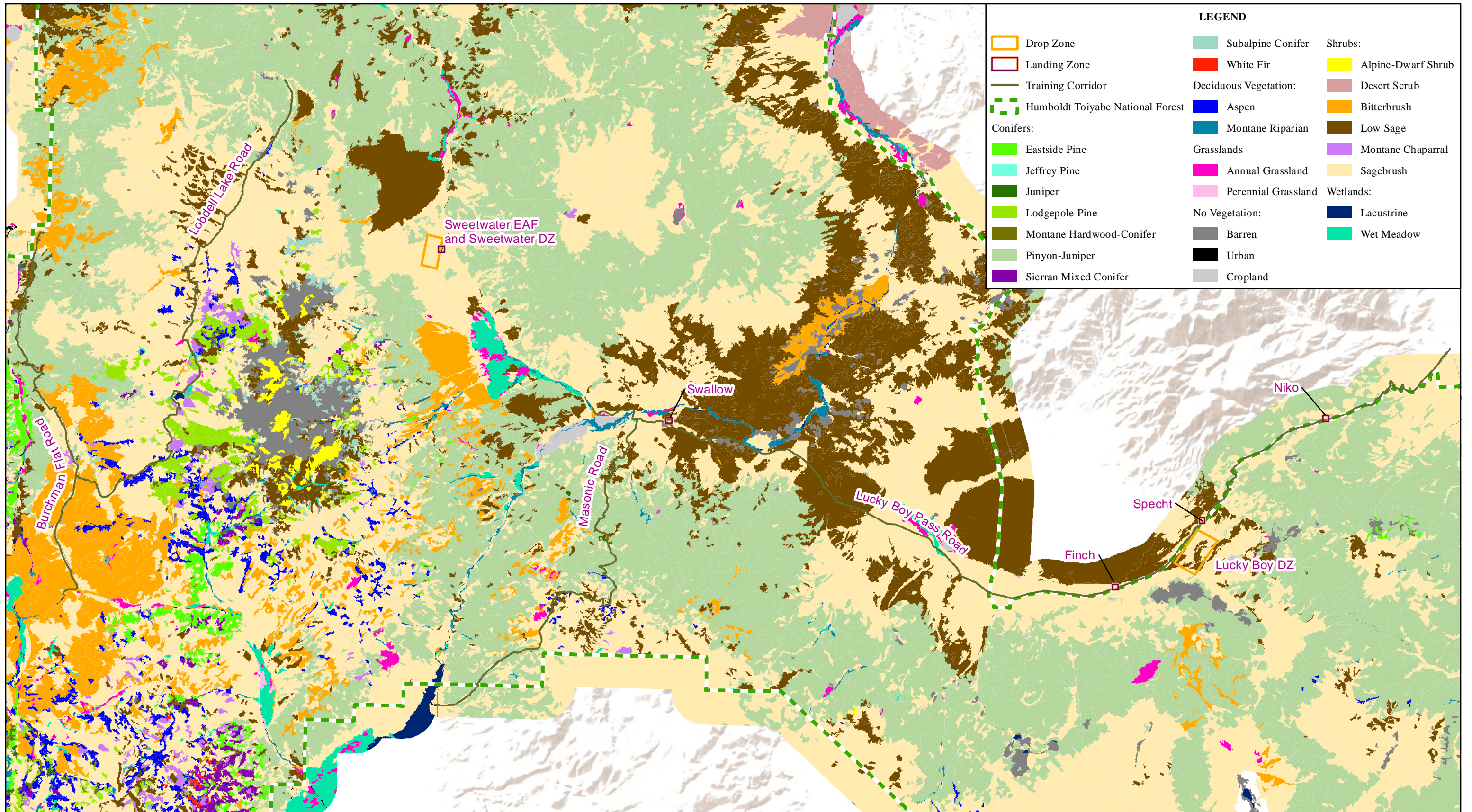


Figure 3.3-2
Plant Communities and Habitats along Training Corridors



Table 3.3-2. Vegetation/Habitat (CWHR) Acreages in the Project Area

Project Area	Alpine-Dwarf Shrub	Annual Grassland	Aspen	Barren	Bitterbrush	Eastside Pine	Freshwater Emergent Wetland	Jeffrey Pine	Juniper	Lacustrine	Lodgepole Pine	Low Sage	Montane Chaparral	Montane Hardwood-Conifer	Montane Riparian	Perennial Grassland	Pinyon-Juniper	Red Fir	Sagebrush	Sierran Mixed Conifer	Subalpine Conifer	Urban	Wet Meadow	White Fir	
Training Corridors																									
Burcham Flat Road				5	79							45	3				85		106						
Kirman Lake Road		6		1	26	2				1		2							85					9	
Lobdell Lake Road			11	6	24					1	16	34	22				34		292					7	
Lucky Boy Pass Road				38	4							158			2		71		480			16	13		
Masonic Road		1	6	7	6				1			48			2		167		138						
All Other Roads	5	8	97	19	69	82	-	12	7	3	299	133	72	49	1	15	10	-	524	61	37	29	23	2	
Subtotals	5	15	114	76	208	84	0	12	8	5	315	420	97	49	5	15	367	0	1,625	61	37	45	52	2	
LZs																									
Albatross																1			2						
Blackbird				3															17						
Bluebird																			2						
Brownie Creek					1	13							1						5						
Bunting																					13		7		
Buzzard											3	4	1						11						
Bullet																			5						
Canary											9								11						
Cardinal																			5						
Chickadee				8							9								2						
Condor																			2						
Crane																			20						
Crow											18													2	
Cuckoo			2					5											13			1			
Dodo																			5						
Dove			2																4						
Eagle										2					1						15		2		
Egret																			5						
Falcon												5													
Finch												2							17			2			
Flamingo		1																	2						
Goose											5				1				10			1	6		
Grackle												1							5						
Grosbeak	15																				5				
Hawk											4	3												13	
Kiwi																			1						
Lark																2									
Loon				6																					
Mallard												2							1						
Merganser																			2						
Mockingbird																			20						
MCMWTC EAF				1	1														2			16			
Nightingale												1													
Niko				1													1		18						
Oriole																			2						
Osprey											3													2	
Ostrich												2													
Owl									2		8	1			1	5								4	
Parrot		1									8	2							5					5	

Table 3.3-2. Vegetation/Habitat (CWHR) Acreages in the Project Area

Project Area	Alpine-Dwarf Shrub	Annual Grassland	Aspen	Barren	Bitterbrush	Eastside Pine	Freshwater Emergent Wetland	Jeffrey Pine	Juniper	Lacustrine	Lodgepole Pine	Low Sage	Montane Chaparral	Montane Hardwood-Conifer	Montane Riparian	Perennial Grassland	Pinyon-Juniper	Red Fir	Sagebrush	Sierran Mixed Conifer	Subalpine Conifer	Urban	Wet Meadow	White Fir	
Partridge											1				1	1							2		
Penguin											3	1							1						
Pickle											1	3							16						
Pigeon	1										6		8			2						2			
Quail						1													4						
Raven								1			1	1	1						17						
Red Tail																			1				2		
Robin										1	16								8			1	4		
Sandpiper	2																								
Snipe				2								1							4						
Snowbird																			2						
Sparrow											6								14						
Specht				1								6							14						
Swallow				2								10							8						
Swan				1															2						
Sweetwater EAF																			16			4			
Teal			1										9	4					6						
Tern													2						2						
Turkey				1								1													
Vireo	20																								
Vulture	2			5								13									1				
Woodpecker													1												
Woody												1							1						
Yarup											2	1		2					16						
Subtotals	40	2	5	31	2	16	0	6	2	3	101	61	23	6	4	57	0	195	117	34	5	55	16	0	
DZs																									
Cloudburst					2				4		1	39	1			3			12						
Lucky Boy												193							369						
Mill Creek		2		1								11				2	13		95						
Pickel Meadow		44			1														35				72		
Sweetwater																			282						
Subtotals	0	46	0	1	3	0	0	0	4	0	1	243	1	0	0	5	16	0	793	0	0	0	72	0	
Ranges																									
AIS-2	19			251							28	59			8				5		16		2		
AIS-3	63			320						60	14	24			10	9			10		104		5		
R1000 AIS-1	35			93	8						174	78	9		7	10			139		71		11		
R1100				2																					
R1101			8	3	32						164		5	15	7				114		9				
R400		8	9	35							35		46			15			30		62		8		
R500		4	51		75	2									5				99			2			
R501 R502 R503			47	2	7	20			12			65	121	8					221						
R600			72						2		80	13	21	14					242		6		3		
R601		4	18	1					3		288	4	6	27	5	8			61		24		25		
R800 R801		2	11	1	9				3		156	23	85	33					104		82		6		

Table 3.3-2. Vegetation/Habitat (CWHR) Acreages in the Project Area

Project Area	Alpine-Dwarf Shrub	Annual Grassland	Aspen	Barren	Bitterbrush	Eastside Pine	Freshwater Emergent Wetland	Jeffrey Pine	Juniper	Lacustrine	Lodgepole Pine	Low Sage	Montane Chaparral	Montane Hardwood-Conifer	Montane Riparian	Perennial Grassland	Pinyon-Juniper	Red Fir	Sagebrush	Sierran Mixed Conifer	Subalpine Conifer	Urban	Wet Meadow	White Fir	
Subtotals	117	18	216	708	131	22	0	0	20	60	939	266	293	97	37	47	0	0	1,025	0	374	2	60	0	
Other Training Areas																									
CA 1		133	19	89	90	512			11	20	0	75	7	58	34				636	49			94		
Pickel Meadow State Land		82		26	44	2				20		9				7			215			0	141		
TA-1		44	66	48	161	1035		169	23	0	52	126	638	119	26		2060	79	1640	841	51	0	2	307	
TA-2	53	19	485	221	198	172		23	54		173	386	856	84	21	6	371	20	2490	324	375		19	67	
TA-3			228	49	24	23		20	24		112	316	242	62	13			3	787	84	7		14	61	
TA-4	163	31	176	311	52	0			15	1	660	279	242	91	5	43			706	10	947		75		
TA-5		5	474	29	730	498		76	45	13	39	520	510	121	11	8	18		2517	161		10	13	11	
TA-6	321	2	71	912					19	1	706	539	112	25	84	19			489	0	1298	0	73		
TA-7	4	4	170	3	41	122		19	14		309	166	225	88		1			405	17	122		32	11	
TA-8	380	12	7	486	22	15		10	10	4	467	140	89	18	56	80		16	266	65	525		79		
TA-9	94	1	74	342	24	121		7	32	0	613	568	303	49	28	26			1021	63	365	0	55		
TA-10	158		6	1117							201	366	77		44	4			150		154	0	27		
TA-11	267		23	1914	25	13		2	0	20	406	250	41	27	36				131	21	623		26	86	
TA-12					12	32							15	6					25				1		
TA-13		10		0	15											2			101			2	7		
TA-14		41	72	30	180	167			7	79		137	5			1			1671	20			66		
TA-15		7	64	15	318	154	9			43		79	4			1	23		988				13		
TA-16	31		153	220	320	6			11		366	583	173	27	23			8	1399	23	205			64	
Subtotals	1,471	390	2,088	5,812	2,254	2,872	9	326	264	203	4,106	4,540	3,541	775	382	198	2,471	127	15,637	1,678	4,674	12	737	607	
PROJECT AREA TOTALS	1,633	471	2,423	6,628	2,598	2,994	9	344	298	271	5,462	5,530	3,955	927	428	322	2,854	322	19,197	1,773	5,090	114	937	609	
TOTAL WITHIN THE BRIDGEPORT RANGER DISTRICT	11,152	6,548	13,494	53,760	45,555	9,166	26	382	1,611	3,382	27,073	122,132	14,123	2,645	4,729	544	316,501	260	372,988	7,938	22,122	234	7,881	2,142	

Notes: DZ = Drop Zone; EAF = Expeditionary Air Field; LZ = Landing Zone; MCMWTC = Marine Corps Mountain Warfare Training Center

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The CWHRs found in the project areas are described below.

Alpine-Dwarf Shrub habitats typically are low herbaceous communities with a mixture of dwarf-shrubs (often cushion plants). The perennial herbs or dwarf shrubs comprising these communities are usually less than 1.5 ft (0.5 m) tall. Alpine-dwarf shrub habitat is restricted to the highest elevations, generally above timberline.

Annual Grassland habitats are open grasslands composed primarily of annual plant species, primarily introduced annual grasses. It occurs mostly on flat plains to gently rolling foothills at various elevations.

Aspen habitat is composed of mature stands of quaking aspen (*Populus tremuloides*) with relatively open canopies, often shared with other deciduous trees and a few conifer species, typically pines. Associated subdominant tree species may include willows (*Salix* spp.), black cottonwood (*Populus trichocarpa*), lodgepole pine (*Pinus contorta*), Jeffrey pine (*Pinus jeffreyi*), ponderosa pine (*Pinus ponderosa*), red fir (*Abies magnifica*), white fir (*Abies concolor*), and Douglas fir (*Pseudotsuga menziesii*). Aspen stands occur primarily at higher elevations near seeps, streams, and meadows on the eastern slopes of the Sierra Nevada.

Barren habitat is defined by the absence of vegetation. Alpine barren habitat includes exposed parent rock, glacial moraines, talus slopes, and any surface permanently covered with snow or ice.

Bitterbrush stands range from small, widely spaced antelope bitterbrush (*Purshia tridentata*) shrubs to large, closely spaced shrubs with more than 90% canopy cover. Antelope bitterbrush often occurs as a co-dominant with big sagebrush (*Artemisia tridentata*) or rubber rabbitbrush (*Ericameria nauseosa* var. *speciosa*). Antelope bitterbrush ranges from about 3,500 to 11,000 ft (1,050 to 3,350 m) on flats and slopes with deep, well-drained soils on the eastern slopes of the Sierra Nevada.

Eastside Pine is characterized by short to moderate height, 65 to 115 ft (20 to 35 m) tall pine trees at maturity. Ponderosa pine is the dominant tree with less representation by Jeffrey pine, lodgepole pine, white fir incense-cedar (*Calocedrus decurrens*), Douglas fir California black oak (*Quercus kelloggii*), and western juniper (*Juniperus occidentalis*). This habitat occurs on the east side of the Sierra Nevada at elevations from 4,000 to 6,500 ft (1,200 to 1,980 m).

Freshwater Emergent Wetland habitats are characterized by erect, rooted herbaceous hydrophytes. Dominant vegetation is generally perennial monocots. Fresh emergent wetland habitats occur on virtually all exposures and slopes, provided a basin or depression is saturated or at least periodically flooded.

Jeffrey Pine is a conifer-dominated habitat with Jeffrey pine as the primary species. It usually forms pure stands but may have as its associates ponderosa pine, sugar pine (*Pinus lambertiana*), lodgepole pine, white fir, red fir, and incense-cedar. A sclerophyllous shrub layer is common to most Jeffrey pine stands. East of the Sierra-Cascade crest, it occurs between subalpine conifer at higher elevations and pinyon-juniper or sagebrush at lower elevations.

Juniper habitats are characterized as woodlands of open to dense aggregations of junipers (*Juniperus* spp.) in the form of large shrubs or small trees. Associated tree species include white fir, Jeffrey pine, ponderosa pine, whitebark pine (*Pinus albicaulis*), and singleleaf pinyon (*Pinus monophylla*). A number of different shrub and grass/forb species co-occur in Juniper habitats. Juniper habitats occur on virtually all exposures and slopes but are common on level to gently rolling topography at elevations from 2,450 to 4,900 ft (750 to 1,500 m).

Lacustrine habitats are inland depressions or dammed riverine channels containing standing water, commonly called lakes or ponds.

Lodgepole Pine typically forms open stands of similarly sized lodgepole pine (*Pinus contorta*) individuals in association with few other species and with a sparse understory. Occasional associate species include quaking aspen and mountain hemlock (*Tsuga mertensiana*). The understory may be virtually absent, consisting of scattered shrubs and herbs, or a rich herbaceous layer at meadow margins. Many lodgepole stands are associated with meadow edges and streams, where the understory consists of grasses, forbs, and sedges. Well-developed lodgepole pine habitats are found above 5,900 ft (1,800 m), typically above red fir and below the other subalpine conifer habitats.

Low Sage habitat is generally dominated by broad-leaved, low-growing, evergreen shrubs. Canopy cover is very low and often very sparse. It may be dominated by either low sagebrush (*Artemisia arbuscula*) or black sagebrush (*Artemisia nova*), often in association with rabbitbrush, antelope bitterbrush, or big sagebrush. Low sage is generally restricted to elevated arid plains along the eastern flanks of the Sierra Nevada.

Montane Chaparral is dominated by treelike to small shrubs. When mature, it is often impenetrable to large mammals. Species composition changes with elevational and geographical range, soil type, and aspect. Typical dominants include ceanothus (*Ceanothus* spp.), manzanita (*Arctostaphylos* spp.), and mountain mahogany (*Cercocarpus* spp.). In the Sierra Nevada, it occurs above 7,000 ft (2,134 m) and is often a successional stage following disturbance in ponderosa pine and mixed coniferous forest habitat types.

Montane Hardwood-Conifer habitat includes both conifers and hardwoods, often as a closed forest. To be considered Montane Hardwood-Conifer, at least one-third of the trees must be conifer and at least one-third must be broad-leaved. In the Sierra Nevada, common associates include California black oak, white alder (*Alnus rhombifolia*), Douglas-fir, incense-cedar, and ponderosa pine. Geographically and biologically, Montane Hardwood-Conifer is transitional between dense coniferous forests and montane hardwood, mixed chaparral, or open woodlands and savannahs.

Montane Riparian habitat typically occurs along waterways as a narrow, often dense grove of broad-leaved, winter deciduous trees with a sparse understory. At high mountain elevations, dominant species are usually less than 50 ft (15 m) high with more shrubs in the understory. Characteristic species include willows, aspen/cottonwood, and alder. Riparian areas are found at various elevations associated with montane lakes, ponds, seeps, bogs and meadows as well as rivers, streams and springs.

Perennial Grassland habitats are dominated by perennial, primarily native grass species. Most of these habitats are relic, climax stands of perennial bunchgrasses that have not been invaded by non-native annual grasses. Perennial grasslands are found at various elevations.

Pinyon-Juniper habitat is typically an open woodland of low, round-crowned, bushy trees that are needle-leaved, evergreen, and less than 30 to 50 ft (10 to 15 m) in height. Overstory species composition at lower and mid-level elevations ranges from pure stands of singleleaf pinyon to stands of pinyon mixed with western and/or Utah juniper (*Juniperus osteosperma*). At lower elevations, pinyon-juniper intermixes with desert scrub habitats and at higher elevations with eastside pine, perennial grass, and Jeffrey pine. This habitat is found from 6,000 to 9,000 ft (1,980 to 2,745 m) on the eastern side of the Sierra Nevada.

Red Fir habitat typically consists of even-aged stands of red fir that cover extensive areas at elevations from 6,000 to 9,000 ft (1,800 to 2,750 m). Mature red fir stands are normally monotypic, with very few other plant species in any layer.

Sagebrush habitats are typically large, open, discontinuous stands of big sagebrush of fairly uniform height. Often the habitat is composed of pure stands of big sagebrush, but many stands include other species of

sagebrush, rabbitbrush, gooseberry (*Ribes* spp.), mountain mahogany, and bitterbrush. It occupies dry slopes and flats from about 1,600 ft (500 m) to 10,500 ft (3,200 m) in elevation.

Sierran Mixed Conifer is an assemblage of conifer and hardwood species that forms a multilayered forest. Five conifers and one hardwood typify the mixed conifer forest: white fir, Douglas fir, ponderosa pine, sugar pine, incense-cedar, and California black oak. This habitat occurs in the Sierra Nevada at elevations between 4,000 and 10,000 ft (1,230 and 3,076 m).

Subalpine Conifer is characterized by open forests with conifers of low to medium stature. In the Sierra Nevada, this habitat occurs at elevations between 9,000 and 11,000 ft (2,700 and 3,350 ft) and intergrades with lodgepole pine, Jeffrey pine, and red fir habitats at lower elevations. Common species include mountain hemlock, western white pine (*Pinus monticola*), lodgepole pine, and whitebark pine (*Pinus albicaulis*).

Urban vegetation varies, with five types of vegetative structure: tree grove, street strip, shade tree/lawn, lawn, and shrub cover. These areas are typically adjacent to developed structures (roads, buildings, etc.) and can be regularly maintained.

Wet Meadow habitats at all elevations generally have a simple structure consisting of a layer of herbaceous plants. Shrub or tree layers are usually absent or very sparse; however, they may be an important feature of the meadow edge. A variety of species occur in wet meadows, but grasses, sedges, and rushes are very common.

White Fir habitat is characterized by nearly monotypic, even-aged overstory of white fir. There is typically little understory. This habitat occurs in the Sierra Nevada between mixed conifer and red fir habitats at approximately 5,500 ft (1,675 m).

Invasive Plants

Invasive plants are introduced (non-native) plant species that can thrive in areas beyond their natural range of dispersal. These plants are characteristically adaptable, aggressive, and have a high reproductive capacity. Their vigor combined with a lack of competition often leads to outbreak populations. Invasive plants typically establish by accident in disturbed sites or from deliberate introductions, but can then spread into native habitats, displacing native vegetation, disrupting ecological relationships, and ultimately causing economic damage to forest resources. The invasive plants with the greatest potential to spread and cause damage are recognized as noxious weeds.

Within the MCMWTC and training corridors, seven noxious weed species listed by the California Department of Food and Agriculture (2016) and/or the Nevada Department of Agriculture (2016) were documented during project-specific surveys (Table 3.3-3) (Reynolds and Cardno 2012). Other non-native and invasive species not designated noxious were also documented. Invasive species have the potential to result in an indirect impact to native vegetation communities. Other invasive plant species encountered during project specific surveys were cheatgrass (*Bromus tectorum*), tumble mustard (*Sisymbrium altissimum*), and halogeton (*Halogeton glomeratus*).

Table 3.3-3. Noxious Weeds Documented in the Project Area

<i>Noxious Weeds</i>	<i>Project Area MCMWTC</i>	<i>Project Area Burcham Flat Rd</i>	<i>Project Area Lobdell Lake Rd</i>	<i>Project Area Masonic Rd</i>	<i>Project Area Lucky Boy Rd</i>
Globe podded hoarycress (<i>Lepidium appelianum</i>)	X				X
Bull thistle (<i>Cirsium vulgare</i>)	X	X	X		X
Poison hemlock (<i>Conium maculatum</i>)					X
Field bindweed (<i>Convolvulus arvensis</i>)	X				
Perennial pepperweed (<i>Lepidium latifolium</i>)				X	X
Dalmatian toadflax (<i>Linaria dalmatica</i> ssp. <i>dalmatica</i>)	X				
Russian thistle (<i>Salsola tragus</i>)	X	X			X

Note: MCMWTC – Marine Corps Mountain Warfare Training Center

3.3.2.3 Aquatic Ecosystems

The Aquatic Management Strategy (AMS) within the SNFPA (Forest Service 2004a) includes nine broad goals for the management of watershed processes and functions, habitats, attributes, and populations. These nine goals are described below (Forest Service 2004a).

- **Water Quality:** Maintain and restore water quality to meet goals of the Clean Water Act and Safe Drinking Water Act, providing water that is fishable, swimmable, and suitable for drinking after normal treatment.
- **Species Viability:** Maintain and restore habitat to support viable populations of native and desired non-native plant, invertebrate, and vertebrate riparian-dependent species. Prevent new introductions of invasive species. Where invasive species are adversely affecting the viability of native species, work cooperatively with appropriate state and federal wildlife agencies to reduce impacts to native populations.
- **Plant and Animal Community Diversity:** Maintain and restore the species composition and structural diversity of plant and animal communities in riparian areas, wetlands, and meadows to provide desired habitats and ecological functions.
- **Special Habitats:** Maintain and restore the distribution and health of biotic communities in special aquatic habitats (such as springs, seeps, vernal pools, fens, bogs, and marshes) to perpetuate their unique functions and biological diversity.
- **Watershed Connectivity:** Maintain and restore spatial and temporal connectivity for aquatic and riparian species within and between watersheds to provide physically, chemically, and biologically unobstructed movement for their survival, migration, and reproduction.
- **Floodplains and Water Tables:** Maintain and restore the connections of floodplains, channels, and water tables to distribute flood flows and sustain diverse habitats.

- **Watershed Condition:** Maintain and restore soils with favorable infiltration characteristics and diverse vegetative cover to absorb and filter precipitation and to sustain favorable conditions of stream flows.
- **Streamflow Patterns and Sediment Regimes:** Maintain and restore in-stream flows sufficient to sustain desired conditions of riparian, aquatic, wetland, and meadow habitats and keep sediment regimes as close as possible to those with which aquatic and riparian biota evolved.
- **Stream Banks and Shorelines:** Maintain and restore the physical structure and condition of stream banks and shorelines to minimize erosion and sustain desired habitat diversity.

Key elements of the AMS are land allocations, specifically CARs and Riparian Conservation Areas (RCAs) (Figure 2.2-5), that delineate aquatic, riparian, and meadow habitats, which are to be managed consistent with the following riparian conservation objectives (Forest Service 2004a):

- **Riparian Conservation Objective #1:** Ensure that identified beneficial uses for the water body are adequately protected. Identify the specific beneficial uses for the project area, water quality goals from the Regional Basin Plan, and the manner in which the standards and guidelines will protect the beneficial uses.
- **Riparian Conservation Objective #2:** Maintain or restore: (1) the geomorphic and biological characteristics of special aquatic features, including lakes, meadows, bogs, fens, wetlands, vernal pools, springs; (2) streams, including in stream flows; and (3) hydrologic connectivity both within and between watersheds to provide for the habitat needs of aquatic-dependent species.
- **Riparian Conservation Objective #3:** Ensure a renewable supply of large down logs that: (1) can reach the stream channel, and (2) provide suitable habitat within and adjacent to the RCA.
- **Riparian Conservation Objective #4:** Ensure that management activities, including fuels reduction actions, within RCAs and CARs, enhance or maintain physical and biological characteristics associated with aquatic- and riparian-dependent species.
- **Riparian Conservation Objective #5:** Preserve, restore, or enhance special aquatic features, such as meadows, lakes, ponds, bogs, fens, and wetlands, to provide the ecological conditions and processes needed to recover or enhance the viability of species that rely on these areas.
- **Riparian Conservation Objective #6:** Identify and implement restoration actions to maintain, restore, or enhance water quality and maintain, restore, or enhance habitat for riparian and aquatic species.

3.3.2.4 Wildlife

The high diversity of geographic elements and microclimates of MCMWTC provide a high diversity of habitats for wildlife species. Wildlife species occurring on MCMWTC are similar to those occurring in the greater HTNF. A high diversity of mammals, birds, reptiles, amphibians, fish, and invertebrate species occur on MCMWTC.

Many of the birds that use MCMWTC lands for foraging and breeding habitat are protected by federal law under the MBTA and EO 13186. The MBTA, enforced by the USFWS, makes it unlawful “by any means or manner, to pursue, hunt, take, capture [or] kill” any migratory bird except as permitted by regulation. This Act protects all migratory bird species “native to the United States or its territories, which are those that occur as a result of natural biological or ecological processes.” EO 13186 directs federal agencies to avoid or minimize the negative impact of their actions on migratory birds, and to take active steps to protect birds and their habitats.

To provide guidance for conflicts arising between military readiness activities and the MBTA, the USFWS issued the final rule on, “Migratory Bird Permits: Take of Migratory Birds by the Armed Forces” (50 CFR Part 21 in *Federal Register* 28 February 2007, pages 8931-8950). This rule authorizes the military to “take” migratory birds during military readiness activities under the MBTA without a permit. However, if the military determines that the activity will have a “significant adverse effect” on a population of migratory birds, they must work with the USFWS to develop and implement conservation measures to minimize and/or mitigate the effects (MCMWTC 2013a).

3.3.2.5 Special Status Species

Special status species analyzed in this EA include federally listed, proposed, and candidate species; and Forest SS, HTNF MIS, species listed in the Sierra Nevada Framework, and other sensitive plant species included in the Bridgeport Ranger District Rapid Assessment Chart that are known to occur or that have the potential to occur in the project area. Tables 3.3-4 and 3.3-5 summarize the special-status wildlife and plant species, respectively, that are analyzed in this EA and in further detail in the Specialist’s Report (USMC and Forest Service 2016) prepared in support of the EA. The status of each species is updated as of March 2016.

Federally Listed, Proposed, and Candidate Species

Based on surveys completed for this EA (Davenport Biological Services and Cardno 2012; Reynolds and Cardno 2012), GIS location data for species and their habitat provided by the Forest Service (2010b), and state databases (CNDDDB 2014; NNHP 2010), federally listed species known to or likely to occur in the project area include LCT, SNYLF, and YT (Table 3.3-4). These species are described in detail below.

The USMC and Forest Service have prepared a separate Biological Assessment as required by the ESA to address the effects of the Proposed Action on federally listed and proposed species.

Habitat for federal ESA-listed and proposed wildlife species in the project area is provided in Table 3.3-6. The analysis includes only species that are known and/or reasonably expected to occur within the action area.

Table 3.3-4. Distribution of Special-Status Wildlife Species and Occurrence within the Project Area

Species	Status ⁽¹⁾ USFWS	Status ⁽¹⁾ CDFW/ NDCNR	Status ⁽¹⁾ USFS	Habitat	Distribution in the Bridgeport Ranger District	Occurrence within Project Area ⁽²⁾
FEDERALLY LISTED, PROPOSED, AND CANDIDATE WILDLIFE SPECIES						
Sierra Nevada bighorn sheep (<i>Ovis canadensis sierrae</i>)	E	E/-	SS	Alpine and sub-alpine zones with steep, rocky terrain.	Southwestern portion of the Bridgeport Ranger District	No presence and not likely to occur.
Sierra Nevada red fox, Sierra Nevada DPS (<i>Vulpes vulpes necator</i>)	C	T/-	SS	Subalpine forest and meadow.	Recently rediscovered at high elevations on the Bridgeport Ranger District.	Present Detected in surveys, den locations unknown.
North American wolverine (<i>Gulo gulo luscus</i>)	PT	T/-	SS	Various habitat types used, coniferous forests, subalpine and alpine areas above 8,000 ft; requires areas with persistent, deep snow cover.	The California subspecies once occurred but is now extinct. An unverified wolverine sighting was reported at the Sonora Pass/U.S. Highway 395 junction in 1978. The presence of a lone male has been confirmed near Truckee, California but genetic analysis indicates long-distance dispersal from the Rocky Mountains.	No presence and not likely to occur.
Lahontan cutthroat trout (<i>Oncorhynchus clarkii henshawi</i>)	T	-/V	MIS	LCT in streams prefer conditions with pools in close proximity to cover, vegetated stable stream banks, and riffle-run areas with relatively silt-free, gravel substrate.	Populations have been introduced to Wolf Creek, Silver Creek, and Mill Creek on MCMWTC. Regularly stocked by CDFW in the EF Walker River, Bridgeport Reservoir, Lane Lake, and Roosevelt Lake on the Bridgeport Ranger District. LCT are also present within the By-Day Creek CAR, Murphy Creek, and Slinkard Creek.	Present Documented occurrences in Mill Creek, Silver Creek, and Wolf Creek. Regularly stocked by CDFW in the WF Walker River and Kirman Lake.
Sierra Nevada yellow-legged frog (<i>Rana sierrae</i>)	E, PCH	T/HO	SS	Typically found along lakeshores and low gradient streams with irregular shores and from 4,500 to over 12,000 ft.	Populations have been documented within the MCMWTC in the Koenig Lake and Silver Creek CARs and outside of MCMWTC in the Kirkwood Lake CAR and various locations within the West and East Walker River Basins.	Present Populations occur at Chango Lake, Wolf Creek Lake, and Upper Silver Creek.
Yosemite toad (<i>Anaxyrus canorus</i>)	T, PCH	SSC/-	SS	Thick meadow vegetation and patches of low willows, usually in shallow, warm water areas in habitats surrounded by lodgepole or whitebark pine from 6,400-11,300 ft elevation.	Populations have been documented in the Koenig Lake CAR, Sardine Creek, and Sardine Meadows at MCMWTC and outside the MCMWTC at various locations within the West and East Walker River Basins.	Present Known populations at Koenig Lake CAR within wetlands near Leavitt Lake, Leavitt Creek, Sardine Creek, and Sardine Meadows (Upper and Lower, outside Koenig Lake CAR).
FOREST SERVICE SENSITIVE WILDLIFE SPECIES						
Fisher west coast population (<i>Martes pennanti</i>)	-	C/-	SS	Late-seral closed canopy coniferous forests.	Not known to occur on the Bridgeport Ranger District or the HTNF.	No presence and not likely to occur.
Greater sage-grouse bi-state population (<i>Centrocercus urophasianus</i>)	-	SSC/V	SS	Sagebrush-dominated vegetation and bordering riparian, meadow, and forested areas.	Leks documented by the Forest Service in numerous areas east of U.S. Highway 395. Potential habitat is extensive throughout Bridgeport Ranger District.	Present Leks at Sweetwater DZ and along Lucky Boy Pass Road; extensive habitat in project area; recent sightings near Mean Peak and Little Wolf Creek.
Bald eagle (<i>Haliaeetus leucocephalus</i>)	BCC	E/V	SS	Mature conifer forest near large bodies of water.	Known wintering at Twin Lakes, Topaz Lake, Poore Lake, and the West and East Walker Rivers; observed during project surveys nesting at Poore Lake.	Present Known to occur at Poore Lake.
Peregrine falcon (<i>Falco peregrinus</i>)	BCC	FP/I	SS	Can be found hunting over a variety of habitats. Nests on cliffs and steep, rocky habitats.	No documented nesting, uncommon otherwise, but could occur during migration and post-breeding dispersal.	Possible transient occurrence.
Northern goshawk (<i>Accipiter gentilis</i>)	-	SSC/I	SS	Mature and late-seral forest; moderate to closed canopy with open understories; at least two canopy layers.	Breeding territories located in the Twin Lakes, Sonora Pass, and Mill Canyon areas on the west side of the Bridgeport Ranger District.	Present 4 PACs within MCMWTC. Observed during project surveys at numerous MCMWTC locations.
Flammulated owl (<i>Otus flammeolus</i>)	BCC	-/-	SS	Old growth yellow pine forests with an abundance of large diameter snags.	Known to occur in the Mill Canyon area (northwest portion of the District)	Present Documented north of MCMWTC in Mill Canyon; observed during project surveys along Grouse Meadows Rd.
California spotted owl (<i>Strix occidentalis occidentalis</i>)	BCC	SSC/CI	SS	At low elevations using habitat dominated by hardwoods. At higher elevations, habitat increasingly dominated by conifers, including mature and late seral closed canopy coniferous forest; multiple canopies.	Historic occurrences in Mill Canyon area.	Present Likely to breed within project area based on 2010 sightings in Mill Canyon, Pickel Meadow.
Great gray owl (<i>Strix nebulosa</i>)	-	E/-	SS	Conifer forest adjacent to montane meadows and other openings.	Historically occurred on the Bridgeport Ranger District but has not been sighted in over 30 years and current range does not include Mono County.	Suitable habitat but no known presence.
Mountain quail (<i>Oreortyx pictus</i>)	-	-/-	SS	Montane chaparral.	Habitat primarily on west side of the Bridgeport Ranger District with some potential in Sweetwater Mountains.	Present Numerous sightings and areas of suitable habitat.

Table 3.3-4. Distribution of Special-Status Wildlife Species and Occurrence within the Project Area

Species	Status ⁽¹⁾ USFWS	Status ⁽¹⁾ CDFW/ NDCNR	Status ⁽¹⁾ USFS	Habitat	Distribution in the Bridgeport Ranger District	Occurrence within Project Area ⁽²⁾
White-headed woodpecker (<i>Picoides albolarvatus</i>)	BCC	-/-	SS	Mixed conifer forest with large diameter trees and snags	Western portion of the Bridgeport Ranger District.	Present Few sightings but suitable habitat is scattered throughout project area.
Spotted bat (<i>Euderma maculatum</i>)	-	SSC/I	SS	Occurs in montane coniferous stands and roosts in caves, abandoned mines, buildings, cracks, and crevices in cliffs and canyons, often near wetlands or water.	Suitable habitat more likely on the east side of the Bridgeport Ranger District due to abundance of abandon mines and desert like ecology	Suitable habitat but no known presence. Historic mining districts along the Masonic Road corridor with smaller areas along Burcham Flat Road and Lucky Boy Pass Road.
Townsend's big-eared bat (<i>Plecotus townsendii townsendii</i>)	-	SSC/I	SS	Roosts in caves or cave-like habitats (mining adits, shafts), including rock crevices and under overhanging cliffs; in desert environs.	Suitable habitat occurs throughout the Bridgeport Ranger District, primarily in areas with abandoned mines and desert-like ecology.	Present Few known detections. Potential habitat occurs in eastern portions of project area.
Pygmy rabbit (<i>Brachylagus idahoensis</i>)	-	SSC/V	SS	Tall, dense sagebrush with deep sandy soils.	Occurs on the east side of the Bridgeport Ranger District and in many places on the HTNF.	No presence and not likely to occur.
Desert bighorn sheep (<i>Ovis canadensis nelsoni</i>)	-	-/-	SS	Visually open, sagebrush/brush habitats with steep, rocky escape terrain.	East Walker River section of the Bridgeport Ranger District.	No presence and not likely to occur.
HTNF MANAGEMENT INDICATOR WILDLIFE SPECIES						
Hairy woodpecker (<i>Picoides villosus</i>)	-	-/-	MIS	Mature coniferous, hardwood, and mixed forests.	Western portion of the Bridgeport Ranger District.	Present Several sightings, assumed present in suitable habitat.
Williamson's sapsucker, (<i>Sphyrapicus thyroideus</i>)	-	-/-	MIS	Ponderosa pine, open coniferous, mixed deciduous-coniferous with quaking aspen, and subalpine forests with abundant snags.	Western portion of the Bridgeport Ranger District.	Present Numerous sightings, present in suitable habitat.
Yellow warbler (<i>Dendroica petechia</i>)	-	SSC/-	MIS	Breeds in wet, deciduous thickets, especially willows, also shrubby areas and old fields.	Occurs throughout the Bridgeport Ranger District.	Present Numerous sightings, present in suitable habitat.
Yellow-rumped warbler (<i>Dendroica coronata</i>)	-	-/-	MIS	Variety of habitats including coniferous and deciduous forests, mixed woodlands, bogs, forest edges, and openings.	Occurs throughout the Bridgeport Ranger District in forested areas.	Present Numerous sightings, present in suitable habitat.
Mule deer (<i>Odocoileus hemionus</i>)	-	-	MIS	A variety of shrubland habitats, especially drainages.	Occurs throughout the Bridgeport Ranger District.	Present Throughout project area.
American marten (<i>Martes americana</i>)	-	-/I	MIS	Mature, dense conifer, deciduous, and mixed conifer-hardwood forests.	Detected in at several locations in project-specific surveys of MCMWTC.	Present In suitable habitat.
Benthic macroinvertebrates	-	-/-	MIS	Lakes, ponds, perennial streams, and intermittent streams (when flowing).	Occur throughout Bridgeport Ranger District within the habitats specified.	Present Occur throughout project area within the habitats specified.
FOREST SERVICE WILDLIFE SPECIES OF INTEREST						
Willow flycatcher (<i>Empidonax traillii</i>)	BCC	E/CI	SoI	Riparian thickets along streams, rivers, lakes, springs, wet meadows, mountainside seepages; often with standing or running water.	None detected in Forest Service surveys from 2001-2009. Observed during project surveys along East Walker River.	Suitable habitat but no known presence.
Pronghorn (<i>Antilocapra americana</i>)	-	-/-	SoI	Desert shrublands and Great Basin sagebrush/grasslands.	Eastern portion of the Bridgeport Ranger District	Suitable habitat but no known presence.
American pika (<i>Ochotona princeps</i>)	-	-/I	SoI	Rock-and-ice features such as talus slopes from 6,000 to 12,750 ft in elevation, particularly when adjacent to meadows.	Presence can be assumed throughout Bridgeport Ranger District in high-elevation rock-and-ice features.	Present Presence assumed in high-elevation rock-and-ice features.
Mount Lyell salamander (<i>Hydromantes platycephalus</i>)	-	SSC/-	-	Associated with granite talus with water seeping through it. Inhabits caves, rock fissures, rocky stream edges, and seepages from springs and melting snow from 4,000 to 12,000 ft.	Known occurrence at Sardine Falls.	Present One occurrence known on MCMWTC (McCay Creek, TA-10).

Notes: ⁽¹⁾ NDCNR = Nevada Department of Conservation and Natural Resources; E = Endangered; T = Threatened; PT = Proposed Threatened; C = Candidate for listing; BCC = Birds of Conservation Concern; SSC = Species of Special Concern; SS = Sensitive Species; CI = Critically Imperiled; HO = Historical Occurrence; I = Imperiled; V = Vulnerable; MIS = Management Indicator Species; SoI = Species of Interest.

⁽²⁾ Bur = Burcham Flat Road, LBP = Lucky Boy Pass Road, Mas = Masonic Road, Y = Yes, N = No

H = Indicates habitat is present and therefore the potential to support the species in this survey area.

CAR = Critical Aquatic Refuge; CDFW = California Department of Fish and Wildlife; DZ = Drop Zone; EF = East Fork; ft = feet/foot; HTNF = Humboldt-Toiyabe National Forest; LCT = Lahontan Cutthroat Trout; MCMWTC = Marine Corps Mountain Warfare Training Center; PAC = Protected Activity Center; WF = West Fork; TA = Training Area

Sources: Tanner et al. 2003; Heath and Ballard 2005; CDFW 2014a, 2015; Great Basin Bird Observatory 2010; NNHP 2010, 2015; Forest Service 2005b, 2010a, c; USFWS 2008, 2013a, b, 2016a; Mono County 2007; Spencer and Rustigian-Romsos 2012.

Table 3.3-5. Distribution of Special Status Plant Species on the Bridgeport Ranger District and Occurrence within the Project Areas

<i>Species</i>	<i>Federal/ State Listing⁽¹⁾</i>	<i>Other Status⁽²⁾</i>	<i>Elevation Range in the Bridgeport Ranger District (ft)⁽³⁾</i>	<i>Community and Habitat</i>	<i>Distribution in the Bridgeport Ranger District</i>	<i>Habitat/Occurrence in the Project Area</i>
Federally Listed, Proposed, and Candidate Plant Species						
Webber’s ivesia (<i>Ivesia webberi</i>)	T/-	CNPS: 1B.1	4,000 to 5,950	Low sagebrush in sparsely vegetated areas	Not currently known from the Bridgeport Ranger District.	Suitable habitat but no known presence Suitable habitat along Lucky Boy Pass Road and at Sweetwater DZ/EAF
Whitebark pine (<i>Pinus albicaulis</i>)	C/-	Forest Service Sensitive Species	9,000 to 12,000	Whitebark pine	Scattered at high elevations throughout the Bridgeport Ranger District.	Present In subalpine forest throughout project area.
Forest Service Sensitive Plant Species						
Long Valley milkvetch (<i>Astragalus johannis-howellii</i>)	-	CRPR: 1B.2 NNHP: At-Risk	6,700 to 8,400	Sagebrush on sandy soils often in hot springs areas	Documented in the Bridgeport Ranger District (Mono and Mineral Counties) June – August and found at Lucky Boy DZ in project-specific surveys.	Present Suitable habitat throughout project area, known from Lucky Boy Pass Road/Sweetwater area.
Lavin’s milkvetch (<i>Astragalus oophorus</i> var. <i>lavinii</i>)	-	CRPR: 1B.2 NNHP: At-Risk NNPS: Watch	5,700 to 7,467	Pinyon-juniper or sagebrush zone in somewhat barren areas	Documented in the Bridgeport Ranger District (Douglas, Lyon, Mineral, Mono counties) and found in project-specific surveys.	Present Suitable habitat throughout project area, known from Lucky Boy Pass Road/Sweetwater area and Masonic Road.

Table 3.3-5. Distribution of Special Status Plant Species on the Bridgeport Ranger District and Occurrence within the Project Areas

<i>Species</i>	<i>Federal/ State Listing⁽¹⁾</i>	<i>Other Status⁽²⁾</i>	<i>Elevation Range in the Bridgeport Ranger District (ft)⁽³⁾</i>	<i>Community and Habitat</i>	<i>Distribution in the Bridgeport Ranger District</i>	<i>Habitat/Occurrence in the Project Area</i>
Bodie Hills rockcress (<i>Boechera bodiensis</i>)	-	CRPR: 1B.3 NNHP: At-Risk NNPS: Watch	6,720 to 9,970	Pinyon-juniper, mountain sagebrush, subalpine, alpine in exposed rocky areas	Documented in the Bridgeport Ranger District (Sweetwater Mountains, Bodie Hills and Sierra Nevadas) and found in project-specific surveys.	Present Suitable habitat throughout project area, known from Lucky Boy Pass Road/Sweetwater area and Masonic Road.
Tiehm's rockcress (<i>Boechera tiehmii</i>)	-	CRPR: 1B.3 NNHP: At-Risk NNPS: Watch	Over 9,000	Alpine in boulder or talus	Documented in the Bridgeport Ranger District (Tioga crest) but not documented in the project area.	Suitable habitat but no known presence
Upswept moonwort (<i>Botrychium ascendens</i>)	-	CRPR: 2B.3 NNHP: At-Risk NNPS: Watch	8,500 to 11,155 in NV	Riparian, seeps, springs in open areas	Documented in the Bridgeport Ranger District (Hoover wilderness) but not found in project-specific surveys.	Suitable habitat but no known presence
Dainty moonwort (<i>Botrychium crenulatum</i>)	-	CRPR: 2B.2 NNHP: At-Risk NNPS: Watch	7,900 to 11,150 in NV	Riparian, seeps, springs in dense herbaceous vegetation	Not currently known from the Bridgeport Ranger District.	Suitable habitat but no known presence
Slender moonwort (<i>Botrychium lineare</i>)	-	CRPR: 1B.1 NNHP: Watch list NNPS: Watch	Up to 9,840	Riparian, seeps, springs or subalpine conifer	Not currently known from the Bridgeport Ranger District.	Suitable habitat but no known presence
Tunux moonwort (<i>Botrychium tunux</i>)	-	CRPR 2B.1 NNHP: At-Risk	11,800	Riparian, seeps, springs in rocky meadows	Documented in the Bridgeport Ranger District but not found in project-specific surveys.	Suitable habitat but no known presence

Table 3.3-5. Distribution of Special Status Plant Species on the Bridgeport Ranger District and Occurrence within the Project Areas

Species	Federal/ State Listing ⁽¹⁾	Other Status ⁽²⁾	Elevation Range in the Bridgeport Ranger District (ft) ⁽³⁾	Community and Habitat	Distribution in the Bridgeport Ranger District	Habitat/Occurrence in the Project Area
Tioga Pass sedge (<i>Carex tiogana</i>)	-	CRPR: 1B.3	10,100 to 10,900	Alpine in cirques	Documented in the Bridgeport Ranger District (Mono County) but not found during project-specific surveys.	Suitable habitat but no known presence
Bodie Hills draba (<i>Cusickiella quadricostata</i>)	-	CRPR: 1B.2 NNHP: At-Risk	6,000 to 8,500	Great Basin scrub including low sagebrush, grasslands, pinyon-juniper, mountain mahogany	Documented in the Bridgeport Ranger District (Douglas, Lyon, Mineral, and Mono Counties) and found in project-specific surveys.	Present Suitable habitat throughout project area, known from MCMWTC (TAs 6 and 16) and Masonic Road area.
Star draba (<i>Draba asterophora</i> var. <i>asterophora</i>)	-	CRPR: 1B.2 NNHP: At-Risk NNPS: Watch	8,000 to 10,200	Subalpine conifer in rocky areas on steep slopes	Documented in the Bridgeport Ranger District at MCMWTC and found in project-specific surveys.	Present Suitable habitat and occurrences at MCMWTC (TAs 4 and 6).
Three-ranked hump moss (<i>Meesia triquetra</i>)	-	CRPR: 4.2 NNHP: At-Risk NNPS: Watch	4,265 to 9,690	Wetlands in various communities	Documented in the Bridgeport Ranger District but not documented in project-specific surveys.	Suitable habitat but no known presence
Shevock's rockmoss (<i>Orthotrichum shevockii</i>)	-	NNHP: Watch list	2,460 to 6,890	Pinyon-juniper on granitic rock	Not currently known from the Bridgeport Ranger District.	Suitable habitat but no known presence
Spjut's bristle-moss (<i>Orthotrichum spjutii</i>)	-	CRPR: 1B.3	8,500	Riparian in shaded granitic rock outcrops in spray of waterfalls.	Documented in the Bridgeport Ranger District at falls below Koenig Lake in MCMWTC TA-11, but not found in project-specific surveys.	Suitable habitat but no known presence

Table 3.3-5. Distribution of Special Status Plant Species on the Bridgeport Ranger District and Occurrence within the Project Areas

Species	Federal/ State Listing ⁽¹⁾	Other Status ⁽²⁾	Elevation Range in the Bridgeport Ranger District (ft) ⁽³⁾	Community and Habitat	Distribution in the Bridgeport Ranger District	Habitat/Occurrence in the Project Area
Wassuk beardtongue (<i>Penstemon rubicundus</i>)	-	NNHP: At-Risk	4,200 to 6,850	Desert scrub, sagebrush, pinyon-juniper on open rocky to gravelly soils, often in areas with enhanced runoff or burns	Documented in the Bridgeport Ranger District (Douglas, Esmeralda, Mineral County endemic) and found in project-specific surveys.	Suitable habitat but no known presence Suitable habitat along Burcham Flat Road, Lucky Boy Pass Road, and Masonic Road. Known from Lucky Boy Pass Road.
Mono phacelia (<i>Phacelia monoensis</i>)	-	CRPR: 1B.1 NNHP: At-risk NNPS: Watch	6,000 to 9,000	Pinyon-juniper, low sagebrush, and mountain sagebrush, often in disturbed places	Documented in the Bridgeport Ranger District (Esmeralda, Lyon, Mineral, Nye, and Mono County) and found in project-specific surveys.	Present Suitable habitat throughout project area, known from Lucky Boy Pass Road/Sweetwater area and Masonic Road.
Clustered popcorn flower (<i>Plagiobothrys glomeratus</i>)	-	NNHP: At-Risk NNPS: S2S3	4,850 to 6,650	Sagebrush, pinyon-juniper, montane conifer on dry, acidic soils	Documented in the Bridgeport Ranger District (Sweetwater Mountains) but not found in project-specific surveys.	Suitable habitat but no known presence Suitable habitat along Burcham Flat Road, Lucky Boy Pass Road, and Masonic Road
Marsh's bluegrass (<i>Poa abbreviata</i> ssp. <i>marshii</i>)	-	CRPR: 2B.3 NNHP: At-risk	Above 11,600	Alpine in soil pockets of rocky areas	Documented in the Bridgeport Ranger District (Mono County) but not found in project specific surveys.	No presence and not likely to occur
White Mountain skypilot (<i>Polemonium chartaceum</i>)	-	CRPR: 1B.3 NNHP: At-Risk NNPS: Watch	5,900 to 13,700	Alpine and subalpine in rocky areas	Documented in the Bridgeport Ranger District and found in project-specific surveys.	Suitable habitat but no known presence Suitable habitat at MCMWTC and along Masonic Road. Known from MCMWTC (TA-11).

Table 3.3-5. Distribution of Special Status Plant Species on the Bridgeport Ranger District and Occurrence within the Project Areas

<i>Species</i>	<i>Federal/ State Listing⁽¹⁾</i>	<i>Other Status⁽²⁾</i>	<i>Elevation Range in the Bridgeport Ranger District (ft)⁽³⁾</i>	<i>Community and Habitat</i>	<i>Distribution in the Bridgeport Ranger District</i>	<i>Habitat/Occurrence in the Project Area</i>
Williams combleaf (<i>Polyctenium fremontii</i>)	-/E	CRPR: 1B.2 NNHP: At-Risk NNPS: Threatened	5,600 to 8,900	Pinyon-juniper, sagebrush on barren margins of seasonal lakes	Documented in the Bridgeport Ranger District east of Sweetwater DZ but not found in project-specific surveys.	Suitable habitat but no known presence
Mono ragwort (<i>Senecio pattersonensis</i>)	-	CRPR: 1B.3 NNHP: At-Risk NNPS: Watch	9,500 to 12,200	Alpine in rocky areas and gravelly ridges	Known from Bridgeport Ranger District (Sierra Nevada and east of Sierra Nevada) south of MCMWTC and east of Lobdell Lake Road, but not found in project-specific surveys.	Suitable habitat but no known presence
Masonic Mountain jewelflower (<i>Streptanthus oliganthus</i>)	-	CRPR: 1B.2 NNHP: At-Risk NNPS: Watch	6,400 to 10,000	Pinyon-juniper, sagebrush-grass, and Jeffery pine in rocky or decomposing rock areas	Documented in the Bridgeport Ranger District in numerous areas and found in project-specific surveys.	Present Suitable habitat throughout project area. Known from MCMWTC (TAs 1, 3, 10, and 16) and along Masonic Road.
Other Plant Species Considered						
Subalpine cryptantha (<i>Cryptantha crymophila</i>)	-	CRPR: 1B.3	8,500 to 10,500	Subalpine conifer zone in rocky volcanic soils	Documented in the Bridgeport Ranger District (Mono County) and found in project-specific surveys.	Present Suitable habitat at MCMWTC and along Masonic Road. Known from MCMWTC (TAs 4, 5, 6, and 10).
Sweetwater cryptantha (<i>Cryptantha ursina</i>)	-	Still being ranked	NR	Alpine in fellfields	Documented in the Bridgeport Ranger District in MCMWTC and found in project-specific surveys.	Present Suitable habitat at MCMWTC and along Masonic Road. Known from MCMWTC (TAs 11 and 16).

Table 3.3-5. Distribution of Special Status Plant Species on the Bridgeport Ranger District and Occurrence within the Project Areas

<i>Species</i>	<i>Federal/ State Listing⁽¹⁾</i>	<i>Other Status⁽²⁾</i>	<i>Elevation Range in the Bridgeport Ranger District (ft)⁽³⁾</i>	<i>Community and Habitat</i>	<i>Distribution in the Bridgeport Ranger District</i>	<i>Habitat/Occurrence in the Project Area</i>
Subalpine fireweed (<i>Epilobium howellii</i>)	-	CRPR: 4.3	6,400 to 8,900	Meadows, seeps, and subalpine conifer.	Not currently known from the Bridgeport Ranger District.	Suitable habitat but no known presence
Beatley buckwheat (<i>Eriogonum rosense</i> var. <i>beatleyae</i>)	-	NNHP: At-risk	5,500 to 9,200	Desert shrub, Wyoming sagebrush, pinyon-juniper on dry volcanic outcrops	Documented in the Bridgeport Ranger District east of MCMWTC but not found in project-specific surveys	Suitable habitat but no known presence
Yellow goodmania (<i>Goodmania luteola</i>)	-	CRPR: 4.2 NNHP: At-Risk NNPS: Watch	Up to 7,200	Desert scrub, mixed grassland, sagebrush in dry lakebeds, sinks, and meadows	Documented in the Bridgeport Ranger District (Mono and Mineral counties) but not documented in project-specific surveys.	Suitable habitat but no known presence
Long-petaled lewisia (<i>Lewisia longipetala</i>)	-	CRPR: 1B.3	8,200 to 9,600	Subalpine, alpine in rocky areas	Known from the Bridgeport Ranger District (Sweetwater Range) but not documented in project-specific surveys.	Suitable habitat but no known presence
Nevada suncup (<i>Eremothera nevadensis</i>)	-	NNHP: Watch list	NR	Desert scrub, sagebrush	Documented in the Lucky Boy Pass Road and Masonic Road areas during project-specific surveys.	Present Suitable habitat and occurrences along Lucky Pass Boy Road/Sweetwater area and Masonic Road.
Douglas' dustymaiden (<i>Chaenactis douglasii</i> var. <i>alpina</i>)	-	CRPR: 2B.3	NR	Alpine, gravelly and rocky areas	Documented in MCMWTC TAs 9, 10, and 11 during project-specific surveys.	Present Suitable habitat and occurrences at MCMWTC (TAs 9, 10, and 11).

Table 3.3-5. Distribution of Special Status Plant Species on the Bridgeport Ranger District and Occurrence within the Project Areas

<i>Species</i>	<i>Federal/ State Listing⁽¹⁾</i>	<i>Other Status⁽²⁾</i>	<i>Elevation Range in the Bridgeport Ranger District (ft)⁽³⁾</i>	<i>Community and Habitat</i>	<i>Distribution in the Bridgeport Ranger District</i>	<i>Habitat/Occurrence in the Project Area</i>
Sand cholla (<i>Grusonia pulchella</i>)	-	CRPR: 2B.2 NNHP: At-Risk	NR	Pinyon-juniper, sagebrush in sandy areas	Documented in the Lucky Boy Pass Road and Masonic Road areas during project-specific surveys.	Present Suitable habitat and occurrences along Lucky Boy Pass Road/Sweetwater area and Masonic Road.

Notes: ⁽¹⁾ Candidate for Listing; E = Endangered; T = Threatened.

⁽²⁾ California Rare Plant Ranks (CRPR) created by the California Native Plant Society (CNPS):

1B - Plants rare, threatened, or endangered in California and elsewhere

2B - Plants rare, threatened, or endangered in California, but more common elsewhere

4 - Plants of limited distribution – a watch list

CNPS Threat Ranks

0.1 - Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)

0.2 - Moderately threatened in California (20-80 percent occurrences threatened)

0.3 - Not very threatened in California (<20 percent of occurrences threatened or no current threats known)

⁽³⁾ NR=Not Reported; source for elevations listed is Forest Service (2010d); additional elevation information is provided in text discussions.

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Table 3.3-6. ESA-Listed and Proposed Wildlife Species Habitat in the Project Area

Project Area	Sierra Nevada Red Fox, Sierra Nevada DPS Habitat (acres)	North American Wolverine Habitat (acres) ¹	LAHONTAN CUTTHROAT TROUT		SIERRA NEVADA YELLOW-LEGGED FROG		YOSEMITE TOAD		
			Occupied Stream Segments (meters)	100-m (328-ft) Buffer of Occupied Streams (acres)	25-m (82-ft) Buffer of Aquatic Features that are within Critical Habitat (acres)	100-m (328-ft) Buffer of Aquatic Features that are Occupied or within CARs (acres)	Known Occupied Breeding Habitat within Critical Habitat (acres)	Upland Habitat within Critical Habitat (1.25- km [0.78-mile] Buffer of Known Occupied Breeding Habitat) (acres)	100-m (328-ft) Buffer of Aquatic Features that are Occupied or within CARs (acres)
Training Corridors									
Burcham Flats Road	-	-	-	-	-	-	-	-	-
Kirman Lake Road	-	-	-	0.7	-	-	-	-	-
Lobdell Lake Road	-	-	-	-	-	-	-	-	-
Lucky Boy Pass Road	-	-	-	-	-	-	-	-	-
Masonic Road	-	-	-	-	-	-	-	-	-
All Other Roads	65.6	3.9	3,218	159.5	58.7	231.9	2.1	87.8	17.3
Subtotals	65.6 (3.17 miles of roads)	3.9 (0.14 miles of roads)	3,218 meters	160.2 (6.9 miles of roads)	58.7 (2.8 miles of roads)	231.9 (10.4 miles of roads)	2.1 (0.01 mile of roads)	87.8 (4.1 miles of roads)	17.3 (0.9 mile of roads)
LZs									
Albatross	-	-	-	-	-	-	-	-	-
Blackbird	5.0	-	-	-	-	-	-	-	-
Bluebird	-	-	-	-	-	-	-	-	-
Brownie Creek	-	-	-	-	-	-	-	-	-
Bullet	-	-	-	-	-	-	-	-	-
Bunting	20.0	-	-	-	17.1	20.0	-	-	-
Buzzard	-	-	-	-	-	-	-	-	-
Canary	-	-	-	-	-	-	-	-	-
Cardinal	-	-	-	-	-	17.1	-	-	-
Chickadee	-	-	-	-	-	-	-	-	-
Condor	-	-	316	10.7	-	-	-	-	-
Crane	-	-	-	-	-	-	-	-	-
Crow	-	-	296	14.0	19.0	20.0	-	-	-
Cuckoo	-	-	-	-	-	-	-	-	-
Dodo	-	-	-	-	-	-	-	-	-
Dove	-	-	-	-	-	-	-	-	-
Eagle	-	-	-	-	20.0	20.0	-	-	-
Egret	-	-	-	-	-	-	-	-	-
Falcon	-	-	-	-	-	-	-	-	-
Finch	-	-	-	-	-	-	-	-	-
Flamingo	-	-	-	-	-	-	-	-	-
Goose	-	-	-	-	-	-	-	-	-
Grackle	-	-	-	-	-	-	-	-	-
Grosbeak	-	-	-	-	-	-	-	-	-
Hawk	-	-	-	-	-	20.0	-	-	-
Kiwi	-	-	-	-	-	-	-	-	-
Lark	18.1	-	-	-	-	-	1.9	20.0	14.6
Loon	20.0	-	-	-	-	-	-	18.1	-
Mallard	1.1	-	-	-	-	-	-	-	-
Merganser	-	-	-	-	-	-	-	20.0	-

Table 3.3-6. ESA-Listed and Proposed Wildlife Species Habitat in the Project Area

Project Area	Sierra Nevada Red Fox, Sierra Nevada DPS Habitat (acres)	North American Wolverine Habitat (acres) ¹	LAHONTAN CUTTHROAT TROUT		SIERRA NEVADA YELLOW-LEGGED FROG		YOSEMITE TOAD		
			Occupied Stream Segments (meters)	100-m (328-ft) Buffer of Occupied Streams (acres)	25-m (82-ft) Buffer of Aquatic Features that are within Critical Habitat (acres)	100-m (328-ft) Buffer of Aquatic Features that are Occupied or within CARs (acres)	Known Occupied Breeding Habitat within Critical Habitat (acres)	Upland Habitat within Critical Habitat (1.25- km [0.78-mile] Buffer of Known Occupied Breeding Habitat) (acres)	100-m (328-ft) Buffer of Aquatic Features that are Occupied or within CARs (acres)
Mockingbird	-	-	-	-	-	-	-	-	-
MCMWTC EAF	-	-	-	-	-	-	-	-	-
Nightingale	-	-	-	-	-	-	-	-	-
Niko	-	-	-	-	-	-	-	-	-
Oriole	-	-	-	-	-	-	-	-	-
Osprey	-	-	220	9.9	20.0	20.0	-	-	-
Ostrich	-	-	-	-	-	-	-	-	-
Owl	-	2.5	303	13.1	15.8	19.4	-	-	-
Parrot	-	-	-	-	-	-	-	-	20.0
Partridge	20.0	-	-	-	15.7	19.3	-	-	-
Penguin	-	-	323	14.8	15.3	19.9	-	-	-
Pickle	-	-	-	-	-	-	-	-	-
Pigeon	-	-	-	-	1.9	6.5	-	-	-
Quail	-	-	-	-	-	-	-	-	-
Raven	-	-	-	-	-	-	-	-	-
Red Tail	-	-	-	-	-	-	-	-	-
Robin	-	-	-	-	-	-	3.1	16.9	13.6
Sandpiper	8.9	-	-	-	-	-	-	-	-
Snipe	0.3	-	-	-	-	-	-	-	-
Snowbird	19.6	-	-	-	-	-	-	5.1	-
Sparrow	-	-	-	-	-	-	-	-	-
Specht	-	-	-	-	-	-	-	-	-
Swallow	-	-	-	-	-	-	-	-	-
Swan	-	-	-	-	1.5	5.5	-	-	-
Sweetwater	-	-	-	-	-	-	-	-	-
Teal	-	-	-	-	-	2.8	-	-	-
Tern	7.2	-	-	-	-	-	-	-	-
Turkey	1.7	-	-	-	-	-	-	20.0	-
Vireo	20.0	-	-	-	-	-	-	-	-
Vulture	2.5	-	-	-	-	-	-	-	-
Woodpecker	-	-	-	-	-	-	-	-	-
Woody	-	-	-	-	-	-	-	-	-
Yarup	1.0	-	-	-	-	-	-	-	-
Subtotals	145.4	2.5	1,457	62.4	126.4	190.6	5.0	100.1	48.2
DZs									
Cloudburst	-	-	-	-	-	14.4	-	-	-
Lucky Boy	-	-	-	-	-	-	-	-	-
Mill Creek	-	-	-	1.3	-	-	-	-	-
Pickel Meadow	-	-	132	15.6	-	-	-	-	-
Sweetwater	-	-	-	-	-	-	-	-	-
Subtotals	0	0	132	16.9	0	14.4	0	0	0

Table 3.3-6. ESA-Listed and Proposed Wildlife Species Habitat in the Project Area

Project Area	Sierra Nevada Red Fox, Sierra Nevada DPS Habitat (acres)	North American Wolverine Habitat (acres) ¹	LAHONTAN CUTTHROAT TROUT		SIERRA NEVADA YELLOW-LEGGED FROG		YOSEMITE TOAD		
			Occupied Stream Segments (meters)	100-m (328-ft) Buffer of Occupied Streams (acres)	25-m (82-ft) Buffer of Aquatic Features that are within Critical Habitat (acres)	100-m (328-ft) Buffer of Aquatic Features that are Occupied or within CARs (acres)	Known Occupied Breeding Habitat within Critical Habitat (acres)	Upland Habitat within Critical Habitat (1.25- km [0.78-mile] Buffer of Known Occupied Breeding Habitat) (acres)	100-m (328-ft) Buffer of Aquatic Features that are Occupied or within CARs (acres)
Ranges									
AIS-2	249.3	-	-	-	-	-	-	-	20.7
AIS-3	507.0	-	-	-	-	-	47.8	513.4	310.5
R1000 AIS-1	33.0	-	-	-	-	-	4.2	487.4	21.1
R1100	2.2	-	-	-	-	-	-	2.2	2.2
R1101	2.5	12.0	-	-	-	-	-	-	-
R400	0.4	-	-	-	-	91.7	-	-	-
R500	-	-	-	-	-	-	-	-	-
R501 R502 R503	-	-	-	-	-	-	-	-	-
R600	-	-	976	45.5	112.7	208.9	-	-	-
R601	6.6	-	1,283	68.4	286.1	350.4	-	-	-
R800 R801	1.6	43.6	1,283	59.5	173.4	258.0	-	-	-
Subtotals	802.6	55.6	3,542	173.4	572.2	909.0	52.1	1,003.0	354.5
Other Training Areas									
CA 1	-	-	6,284	300.3	-	-	-	-	-
Pickel Meadow State Land	-	-	4,388	188.3	-	-	-	-	-
TA-1	-	6	6,335	358.3	-	-	-	-	-
TA-2	8	-	-	-	-	65.9	-	-	-
TA-3	-	-	-	-	-	-	-	-	-
TA-4	255	30	83	11.5	0.6	333.5	-	-	-
TA-5	-	-	4,717	244.2	9.8	12.4	-	-	-
TA-6	2,535	-	1,734	76.9	492.3	512.6	-	-	-
TA-7	4	14	-	0.8	-	-	-	-	-
TA-8	1,728	6	3,475	157.2	160.7	-	-	-	-
TA-9	1,207	-	-	1.0	-	-	-	379.1	1.3
TA-10	1,712	-	-	-	-	-	2.4	1,180.9	25.8
TA-11	2,770	114	-	-	-	-	5.3	952.6	274.9
TA-12	-	-	831	32.7	-	-	-	-	-
TA-13	-	-	110	20.5	-	-	-	-	-
TA-14	-	-	1,917	92.3	-	-	-	-	-
TA-15	-	-	900	113.7	-	-	-	-	-
TA-16	58	-	-	-	-	-	-	-	-
Subtotals	10,275	170	30,775	1,597.7	663.5	924.4	7.7	2,512.5	302.0
TOTALS	11,288.6	232.0	39,124	2010.6	1,420.8	2,270.2	66.9	3,703.5	722.0

Notes: ¹Wolverine has no known presence in the project area and is not likely to occur; reported acreages represent potential habitat only and do not necessarily infer occurrence of the species.

CAR = Critical Aquatic Refuge; DZ = Drop Zone; LZ = Landing Zone; m = meter

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Sierra Nevada Bighorn Sheep

The Sierra Nevada bighorn sheep is federally endangered and inhabits portions of the southern Sierra Nevada along the eastern boundary of California in Tuolumne, Mono, Fresno, Inyo, and Tulare counties. This subspecies differs from the desert bighorn sheep, which occupies desert mountain areas. The Sierra Nevada subspecies is restricted to the Sierra Nevada Mountains and occupies much higher elevations. Critical habitat was designated in 2008; however, there is no designated critical habitat within the project areas (USFWS 2008b). Habitat occurs from the eastern base of the Sierras from 4,760 ft to above 13,120 ft. Habitat types range from Great Basin scrub to alpine, with preferred habitats having visual openness and occurring within close proximity to steep rocky terrain used to escape from predators. Diet is dependent upon nutrient content rather than plant species and varies greatly. Low elevation winter ranges provide high quality forage during the early growing season. Breeding occurs at high elevations from late fall through early winter, mostly November and December. Birthing occurs as early as mid-April to as late as early-July, predominantly in May and June, and correlates with the nutritional regime of females (USFWS 2007).

Habitat/Occurrence within the Project Areas. The Bridgeport Ranger District includes the Northern Recovery Unit for Sierra Nevada bighorn sheep which is comprised of four herd units (Mount Gibbs, Mount Warren, Green Creek, and Twin Lakes), all of which are well south of the project areas. Suitable habitat occurs within the project areas; however, there are no known records of bighorn sheep within the survey areas (CNDDDB 2015, NNHP 2010). The species was not observed during project-specific surveys (Davenport Biological Services and Cardno 2012).

Sierra Nevada Red Fox, Sierra Nevada DPS

The Sierra Nevada red fox historically ranged throughout sub-alpine habitats of the Sierra Nevada and Cascade mountains ranges in California. While the Sierra Nevada red fox has always occurred at low densities, the species experienced a precipitous decline toward the end of the 20th century (Perrine et al. 2010). The Sierra Nevada red fox is generally restricted to habitats at elevations between 4,920 and 11,800 ft, although they have been detected as low as 3,900 ft. The species is most closely associated with open conifer woodlands and mountain meadows, but has also been known to inhabit lodgepole pine and fir vegetation communities. Home ranges vary by season, expanding in the summer to more than 5,683 acres. The Sierra Nevada red fox is an elevational migrant, moving to lower areas with higher density forest vegetation and canopy coverage in the winter. Major prey items include mice, squirrels, and hares. Den sites are similar to other mountain foxes and include natural cavities in talus slopes or rockslides, earthen dens, and boulder piles (Sierra Nevada Red Fox Interagency Working Group 2010, Perrine et al. 2010).

The Sierra Nevada red fox is now considered extirpated from much of its historical range, with the only known populations consisting of 42 individuals in the Lassen area, 29 individuals in the Sonora Pass area, and unknown numbers within five populations in Oregon (USFWS 2015).

In October 2015, the USFWS issued a 12-month finding that listing the Sierra Nevada red fox as endangered or threatened was not warranted. However, it was found that the Sierra Nevada population segment of the Sierra Nevada red fox is a DPS of the subspecies and that listing the Sierra Nevada DPS is warranted (*Federal Register* Vol. 80, No. 195, 8 October 2015).

Potential Habitat/Occurrence within the Project Areas. Figure 3.3-3 shows habitat and project-specific field survey sightings of the Sierra Nevada red fox within the project area. The Sierra Nevada red fox was thought to have been extirpated from the Bridgeport Ranger District area, although there were numerous CNDDDB (2015) records in the region in the 1980s and 1990s. However, according to Perrine et al. (2010), records of the Sierra Nevada red fox before 2010 were only verified from the Lassen region and the distribution outside of that region was unknown. In 2010, Sierra Nevada red fox was documented within the MCMWTC based on photos captured by a remote auto-triggered camera near Sonora Pass. Based on significant differences in pelage, at least two individual Sierra Nevada red fox have been photographed at that location.

Since that discovery, additional Sierra Nevada red fox have been detected in the greater Bridgeport and Bishop areas through the use of remote auto-triggered cameras. In addition, a young female Sierra Nevada red fox was killed on U.S. Highway 395 near the intersection with State Route 108 (Sherri Lisius, Wildlife Biologist, Forest Service -Bridgeport Ranger District, personal communication, 31 January 2011). In 2012, USFWS (2012) noted a small population in the vicinity of Sonora Pass, which is now estimated at 29 individuals (USFWS 2015). Studies conducted in connection with the Pacific Crest National Scenic Trail Crossing EA (Forest Service 2011) documented centers of fox activity in Wolf Creek and McKay Creek and reported CDFW detections of Sierra Nevada red fox in the Bridgeport Winter Recreation Area along the Leavitt Lake Road and near Kennedy Lake. These studies did not locate any dens despite spring den searching and tracking. Other centers of activity were found in other studies at several locations along the West Walker River drainage (Forest Service 2011).

Potential habitat for the Sierra Nevada red fox occurs across most of the MCMWTC, although primarily in the western and southern portions of the project area (Figure 3.3-3). Project-specific surveys for special status carnivores, including the Sierra Nevada red fox, were conducted in 2010 and 2011. The surveys were composed of auto-triggered, motion-sensitive cameras deployed in a loose grid across the MCMWTC. The grid consisted of 24 cameras placed at a density of 2 cameras per 6 square-miles, with less than 2 miles between individual cameras. Three additional cameras were deployed along the Lobdell Lake Road training corridor where potential carnivore habitat occurred. Bait stations were established at all camera locations and consisted of multiple scents and food bait. Cameras were operational for sampling periods during the spring, summer, fall, and winter in 2010 and 2011. Total operation time per camera ranged between 6 and 12 months (Davenport Biological Services and Cardno, Inc. 2012).

Surveys resulted in the detection of three Sierra Nevada red fox individuals at three locations. These locations were in Range 1100, just outside the western boundary of Range 1000, and 600 ft south of LZ Flamingo in TA-14.

North American Wolverine

Historically, wolverines occurred in remote late successional old growth, coniferous, red fir, lodgepole pine, high-mountain, and subalpine forests and in open terrain including alpine dwarf shrub, alpine fell-fields, alpine meadows, wet meadows, and riparian habitats. Wolverines have been known to range from the northwestern part of the state to the southern Sierra Nevada. Dens are typically located in caves, fallen logs, and rock crevices. The distribution of wolverines has been found to be related to alpine habitats with deep spring snow cover, which is required for denning (Aubrey et al. 2007, Schwartz et al. 2007).

Until recently, wolverine were thought to be extinct in the Sierra Nevada, but an Oregon State University researcher set up a bait station with a remotely-operated camera and photographed a wolverine in February of 2008 on the Tahoe National Forest north of Truckee. This is the first confirmed wolverine sighting in the Sierra since the 1920s. Genetic analysis of scat and hair revealed that this individual was most closely related to populations from the western edge of the Rocky Mountains and not a remnant of the historical California population. This is the first evidence of connectivity between wolverine populations of the Rocky and Sierra Nevada Mountain Ranges (Moriarty et al. 2009). Intense follow-up is ongoing, including searches for tracks, scat, and hair. On 13 March 2008, a night vision camera also captured two images of a wolverine at a bait station on the Tahoe National Forest. Otherwise, there are only anecdotal reports of the wolverine in the central part of the Sierra Nevada Mountains that includes the region of the proposed sites (Moriarty et al. 2009).

On 14 December 2010, the USFWS found that listing the DPS of the North American wolverine that occurs in the contiguous U.S. as threatened or endangered was warranted, but precluded by higher listing priorities. Under the finding, the USFWS determined that wolverines are likely to lose 63% of their current habitat area over the next century and concluded the primary threat to wolverine habitat is from climate change (USFWS 2010d). As of 2016, the North American wolverine is a proposed threatened species under the ESA.

Habitat/Occurrence within the Project Areas. Winter carnivore surveys were conducted for the Forest Service (2010c) in portions of the project area in 1993 (one survey station near Leavitt Creek) and 2003 (two survey stations at Leavitt Creek and Little Wolf Creek), mostly along Highway 108 and no wolverines were observed. According to Forest Service (2010c), there have been six unverified wolverine observations on the Bridgeport Ranger District, dating from 1921 to 1973 but there are no historic wolverine records within the project survey areas (CNDDDB 2015, NHHP 2010). There have been no documented observations since 1973; however, there was an unverified sighting on Sonora Pass/Highway 395 Junction in 1978 adjacent to MCMWTC (S. Lisius, Forest Service, Wildlife Biologist, personal communication 2010). Project-specific surveys did not document any wolverines.

Lahontan Cutthroat Trout

The LCT is federally listed as threatened under the ESA (USFWS 1975). The LCT is an inland cutthroat subspecies and the only trout native to the Lahontan basin of eastern California, southern Oregon, and northern Nevada. The species was abundant and widespread within the Pleistocene Lake Lahontan and associated drainage basin. As Pleistocene waters receded, the LCT was confined to disjunct drainages and populations. The species currently occupies 587.7 miles (8.6%) of streams within their historical range and an additional 52.7 miles of habitat outside their historical range. In addition, the LCT currently occupies five historical lakes (46.8% of historical lake habitat). Within California, only one native, reproductive lacustrine population persists and that population occurs in Independence Lake. Fluvial California populations occur in the Truckee, Carson, and Walker River basins (Coffin and Cowan 1995, USFWS 2009).

The LCT occupies a variety of cold-water habitats, such as large rivers, lakes, and small tributary streams. They thrive in habitats that provide available cover of well-vegetated and stable stream banks, in areas where there are stream velocity breaks, and in relatively silt-free, rocky riffle-run areas. Overhanging vegetation and woody debris are important habitat components, especially for juveniles (USFWS 2009). Although LCT are most abundant in cool waters, they are also tolerant of high temperatures, large daily temperature fluctuations, and high alkalinity.

Spawning generally occurs from April through July and predominantly within streams. Headwater reaches have also been utilized as spawning sites. Depending on water temperature, eggs typically hatch within 4 to 6 weeks with fry emergence 13-23 days later. The LCT forages opportunistically and primarily feeds on drift organisms, insects, and zooplankton. Large individuals will feed on smaller fish (USFWS 2009).

LCT population declines have been attributed to habitat loss and modification, over-fishing, and competitive exclusion resulting from non-native fish introduction (Coffin and Cowan 1995, Gerstung 1988). As detailed in the most recent 5-year review by the USFWS (2009), the main threats to LCT at present are: 1) hybridization and competition with non-native trout, which are widely established and continue to be stocked and managed within historic LCT habitats; 2) population isolation and habitat fragmentation, which makes surviving populations especially vulnerable to extirpation; 3) land use activities that include grazing, roads, mining, and other factors which have increased the load of fine sediments in streams and thus degraded LCT habitat; 4) drought, which has eliminated populations in small streams and may have increasing effects in the future; 5) water quality, specifically, increases in total dissolved solids, in the two lakes (Pyramid and Walker) that currently or recently supported LCT (the species has not been reported in Walker Lake since 2010 [Nevada Department of Wildlife 2015]); 6) water management (dams, levees, diversions, ditches) along the major rivers that support the LCT, including the Walker River; and 7) fires, which appear to be increasing in frequency and severity in watersheds that contain LCT habitat, and which can have a variety of indirect detrimental effects resulting from both the loss of vegetation and fire suppression tactics.

Habitat/Occurrence within the Project Areas. Populations have been introduced to Wolf Creek, Silver Creek, and Mill Creek. Distribution of LCT in Wolf Creek is limited to approximately 3.2 miles of the creek. Increased gradient makes it unlikely that LCT would extend their distribution downstream and low flows make it unlikely they would extend their distribution upstream (Forest Service 2004b). LCT distribution within Silver Creek is approximately 3.3 miles with multiple age classes occurring within the creek (Forest Service 2004c). A large self-sustaining population of brook trout is thought to be the reason why LCT have not moved downstream to other naturally occurring habitat (Forest Service 2004c). Distribution of LCT is limited in Mill Creek to approximately 5.4 miles of the creek (Forest Service 2004d). Surveys conducted in Lost Cannon Creek did not identify any occurrence of LCT; however, potential habitat is present within the creek (Forest Service 2005b). West Walker River is occasionally stocked with hatchery LCT (CDFW 2014a). Hatchery-reared LCT are afforded the same protection under the ESA as wild-born LCT. Kirman Lake is also regularly stocked with LCT by CDFW (USFWS 2016b). Figure 3.3-4 shows occupied reaches of these streams within the project area based on Forest Service information and correspondence with CDFW (Forest Service 2008a; CDFW 2014a). Meters of LCT-occupied stream reaches in the project area are provided in Table 3.3-6.

LCT recovery efforts carried out within or near the project areas have included recontouring of an old irrigation diversion along Mill Creek to allow upstream migration; the improvement of road crossings in Mill and By-Day creeks by building low bridges to prevent vehicles from crossing in the streams and

allowing fish to move more freely up- and downstream; and targeted removals of non-native fish from Silver Creek using rotenone from 1994 to 1996 and electrofishing since 2004 (USFWS 2009).

Sierra Nevada Yellow-Legged Frog

The SNYLF is federally listed as endangered under the ESA (USFWS 2014). The SNYLF is recognized as a distinct species that is part of the mountain yellow-legged frog complex and that inhabits the northern range of this complex. The historical range of the SNYLF has been impacted by habitat degradation and fragmentation as well as habitat competition where fish stocking occurs. In particular, the introduction of fish to SNYLF habitats (i.e., stocking ponds and lakes for recreational purposes) has led to smaller and more isolated populations.

The SNYLF occupies the western Sierra Nevada north of the Monarch Divide in Fresno County and the eastern Sierra Nevada in Inyo and Mono Counties. This species historically occurred in lakes, ponds, marshes, meadows, and streams at elevations ranging from 4,500 ft to over 12,000 ft. They are closely associated with high-elevation water bodies, and although they are rarely found more than 3 ft from water, they are capable of longer distance travel between breeding, foraging, and overwintering habitats. At higher elevations, such as occur within the MCMWTC, the borders of alpine lakes and montane meadows that are used by SNYLF are typically grassy or muddy. They utilize stream habitats of various types, although they are not usually present in the smallest creeks. Adults and tadpoles prefer shallower areas and shelves within water bodies. Both adults and larvae overwinter in the bottoms of lakes that are at least 5.6 ft deep. Adults emerge from overwintering sites immediately after snowmelt and will cross ice to get to breeding sites. Successful breeding sites are located in or connected to lakes and ponds that do not dry out in the summer and are deep enough to avoid both freezing and oxygen-depleted (anoxic) conditions during winter (USFWS 2013a). Breeding activity in lower elevation breeding sites begins in early spring, around April, and begins in May and June at higher elevation breeding sites (CDFW 2013a).

Adults can be found sitting in low vegetation areas on rocks along the shoreline. Adult SNYLF are thought to feed preferentially upon terrestrial insects and adult stages of aquatic insects. Prey species include beetles, ants, bees, wasps, flies, true bugs, and dragonflies. They have also been known to feed on YT tadpoles. SNYLF tadpoles typically feed on benthic detritus, algae, and diatoms along rocky bottoms in streams, lakes, and ponds (USFWS 2010b).

SNYLF populations have persisted in and are mainly restricted to National Parks and National Forests. National parks with extant (surviving) populations of SNYLF include Yosemite, Kings Canyon, and Sequoia. National Forests with extant populations include Humboldt-Toiyabe, Sequoia, Eldorado, Stanislaus, Inyo, Sierra, Plumas, and Tahoe. Surveys conducted from 1995 through 2010 only detected SNYLF populations in 98 of 318 historical locations, indicating a 69% loss of SNYLF metapopulations from historical occurrences. In addition, 44% of historical watersheds no longer support extant SNYLF populations. Remaining populations of the SNYLF were recently estimated at fewer than 10 adults within 90% of the watersheds and fewer than 10 subadults and 100 tadpoles within 80% of the watersheds, rangewide. Based on the observed rate of population loss, the SNYLF is anticipated to be declining at a rate of 10% per year, which is largely the reason behind the ESA listing as endangered (USFWS 2013a, 2014). A long-term monitoring program, the Sierra Nevada Amphibian Monitoring Program, is currently in place for the mountain yellow-legged frog complex (including SNYLF) and is operated by the Forest Service. The CDFW also monitors SNYLF populations as part of their High Mountain Lakes Project within the Inland Deserts Region that includes portions of the MCMWTC training areas (CDFW 2013a). Recent estimates identified approximately 40 very small SNYLF populations within what suitable habitat is remaining. The CDFW is currently conducting restoration projects that involve fish removal and habitat expansion to help increase the amphibian populations that compete with fish for lake habitat (CDFW 2013a).

Remaining SNYLF populations are small, fragmented, and highly vulnerable to extirpation from a combination of factors that include predation by introduced fishes, climate change, disease, habitat degradation, and demographic fluctuations (USFWS 2013a). As a result, remaining areas of occupied habitat, including critical habitat, are essential to the survival of the species. Hence, any activities that would cause mortality or directly or indirectly contribute to the stressors that endanger SNYLF populations (USFWS 2013a), or negatively impact primary constituent elements of critical habitat (USFWS 2013a) should be off-limits in such areas.

Habitat/Occurrence within the Project Areas. Populations have been documented within the MCMWTC in the Silver Creek and Koenig Lake CARs, at Wolf Creek Lake and Chango Lake, and outside of MCMWTC in the Kirkwood Lake CAR (Forest Service 2004b, 2005a, 2008a; CNDDDB 2015, CDFW 2014b). Currently occupied habitat and sightings for the SNYLF, as documented by the CNDDDB (2015) and CDFW (2014b), are shown in Figure 3.3-5. Primarily, sightings have occurred within TA-6 (LZ Eagle), TA-10, and TA-11. Occupied habitat has been documented within TA-6, approximately 560 ft north of LZ Eagle, within TA-8 at Wolf Creek Lake, and within TA-4, approximately 1,248 ft south and 231 ft northeast of LZ Cardinal and LZ Hawk, respectively. Five surveys conducted by CDFW at Leavitt Lake area (within TA-11) between 2001 and 2011 did not detect any SNYLF. Therefore, the Leavitt Lake population is considered to be extirpated. The Chango Lake population (within TA-6) and Wolf Creek Lake population (within TA-8) are routinely monitored by CDFW and are considered extant (CDFW 2014b). A newly discovered population was found in 2016 in a small lake at the headwaters of Silver Creek. This location is within TA-6 and lies between LZ Loon and LZ Bunting. Observed frogs along upper Silver Creek have likely dispersed from this location.

Critical habitat for the SNYLF was designated in August 2016 (USFWS 2016c). In the final rule, the USFWS evaluated and considered the following Primary Constituent Elements (PCEs) to be the elements of physical or biological features that are essential to the conservation of the SNYLF. These elements were evaluated for areas that are currently occupied by SNYLF and are therefore required to sustain this species' life history. These include the following:

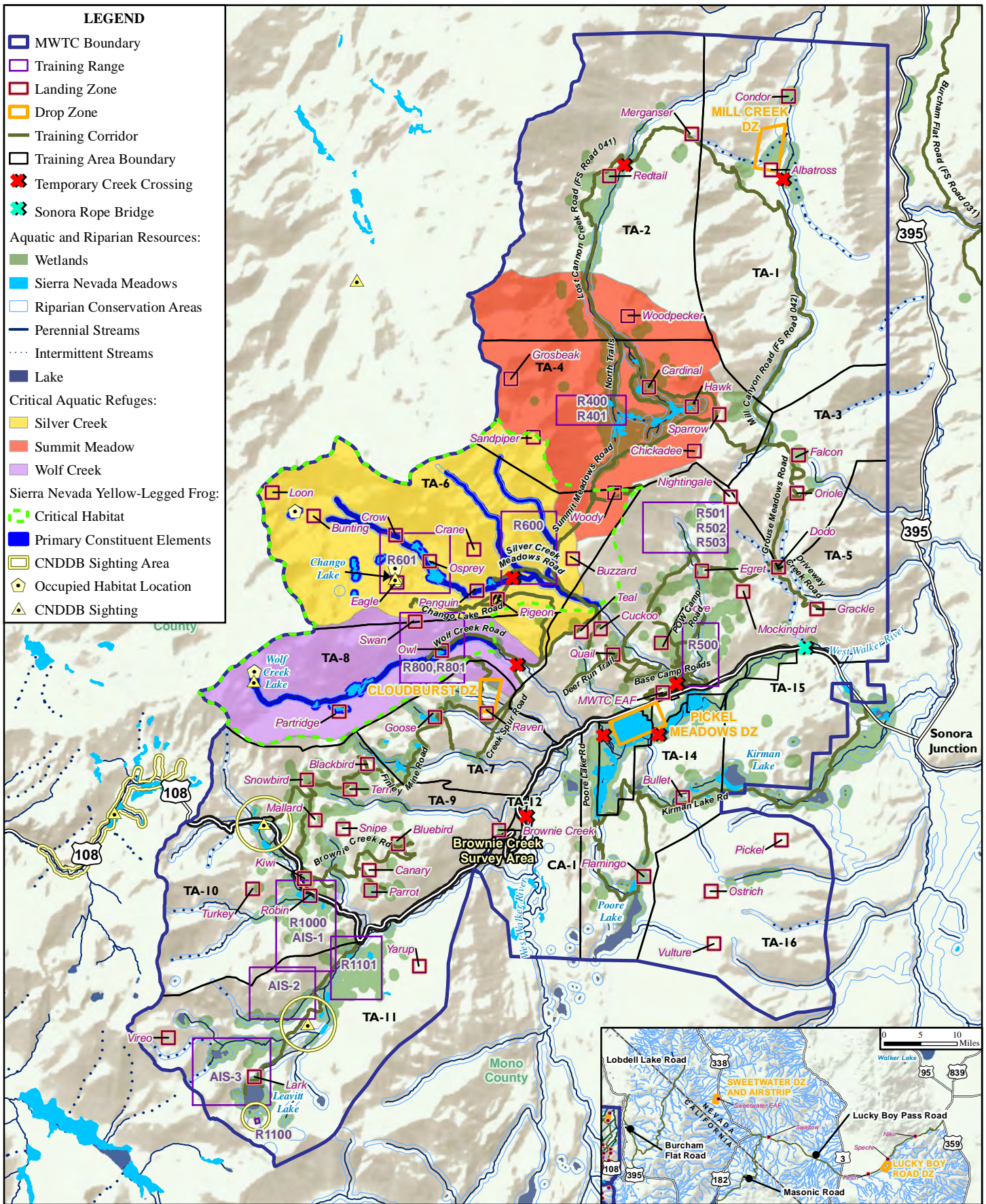


Figure 3.3-5
Sierra Nevada Yellow-Legged Frog in the Project Area



1. Aquatic habitat for breeding and rearing (lakes, streams, rivers, tarns, perennial creeks, or permanent plunge pools within intermittent creeks). The habitat must be of sufficient depth to not freeze during the winter (no less than 5.6 ft but generally greater than 8.2 ft; maintain a natural flow pattern; be free of fish or other introduced predators; and maintain water during entire tadpole growth phase (minimum of 2 years).
2. Aquatic nonbreeding habitat (including overwintering habitat).
3. Upland areas adjacent to surrounding breeding and nonbreeding aquatic habitat. For stream habitats, this area extends 82 ft from bank or shoreline. For areas between proximate (within 984 ft) water bodies (typical of some high mountain lake habitats), the upland area extends from the bank or shoreline between such water bodies.

The total area of SNYLF designated critical habitat is 1,082,147 acres (USFWS 2016c). Of this total, approximately 1,420.8 acres (0.13%) that are part of Critical Habitat Unit 2, Subunit 2H (Wells Peak) are within the MCMWTC training area. Figure 3.3-5 shows the areas that are within a 25-m buffer of the aquatic habitat features that comprise PCEs, amounting to 1,420.8 acres within the project action area (see Table 3.3-6).

Yosemite Toad

The YT is federally listed as threatened under the ESA (USFWS 2014). The historical range of the YT in the Sierra Nevada extended from the Blue Lakes region north of Ebbetts Pass (Alpine County) to just south of Kaiser Pass in the Evolution Lake/Darwin Canyon area (Fresno County). Habitat historically spanned elevations from 4,790 to 11,910 ft (USFWS 2013a). The overall geographic extent for the current range of YT has not changed from the historic range.

The YT is found in meadow vegetation and patches of low willows, usually in relatively shallow, warm water areas in habitats surrounded by lodgepole or whitebark pine (Forest Service 2005a). Upland habitat utilized is sex and life-stage dependent. In general, YTs utilize areas within at least 2,800 ft of breeding sites for foraging and overwintering. Moist upland areas such as seeps and springheads are important summer non-breeding habitats for adult toads and for overwintering they use mammal burrows (predominantly rodent burrows), willow thickets, under boulders and logs, and underground (CDFW 2013b). The toad emerges from winter hibernation as soon as snowmelt forms pools. YTs move between aquatic breeding habitats, upland foraging sites, and overwintering areas and have been documented to move a maximum distance of 0.78 mile between wetland breeding areas and upland foraging areas (Liang 2013). A radio telemetry study conducted by Liang (2013) found that females moved significantly greater distances and had larger home ranges than did males. Adults also move between breeding areas but tend to breed at a single site. Breeding habitat includes the edges of wet meadows and slow-flowing streams. Breeding occurs from early May to July, depending on the elevation and amount of snowfall the previous winter, and lasts for 1-2 weeks. Females leave breeding sites as soon as egg-laying is complete, whereas males have been documented staying within breeding areas for weeks (Liang 2013). Eggs are deposited in gelatinous strings (containing 700 – 2,000 eggs per two strings) that are intertwined with vegetation and buried in silt. Eggs hatch within 3 to 15 days depending on ambient water temperatures and tadpoles metamorphose around 40-50 days following fertilization (USFWS 2013a).

Upland foraging habitat includes lush meadows with herbaceous vegetation, alpine-dwarf scrub, red fir, lodgepole pine, and subalpine conifer vegetation types (USFWS 2013b). They also feed in headwater springs (USFWS 2002). Adult YTs feed on a variety of insects, but a majority of the prey base is comprised of Hymenoptera such as ants, wasps, bees, sawflies, and horntails. Little is known about the YT tadpole

diet, but it is suspected that their diet is composed of microscopic algae, bacteria, and protozoans. Their life history suggests they are opportunistic feeders. YT tadpoles have also been observed feeding on the larvae of Pacific chorus frog and predaceous diving beetle (USFWS 2013b).

A majority of the current range of YT is within federal land. YTs have been found at 469 locations collectively on six National Forests. Past inventories to determine presence or absence did not result in a reliable dataset given that sampling was not always conducted when YT life-stages are typically detected. Historical surveys conducted in 1915 and 1919 at 40 sites along an 89-mile west-to-east transect across the Sierra Nevada, through Yosemite National Park, detected toads at 13 of the 40 sites. More thorough surveys in 1996 of 38 of these sites, as well as additional sites, found that YTs were now absent from 6 of the 13 sites that historically contained this species. In addition, those sites where YTs were documented had lower numbers than historically found (USFWS 2013a). Follow-up surveys by other biologists determined an approximate rangewide decline of 50% as compared to historical YT occurrence. YT populations are currently monitored by the Forest Service Sierra Nevada Amphibian Monitoring Program (see discussion above for SNYLF). Recent monitoring, compared to historical locations, has shown that YTs occur in only 12% of watersheds where they previously existed before 1990, while breeding was estimated to occur in only 22% of historically occupied watersheds (USFWS 2013a).

Habitat/Occurrence within the Project Areas. Populations have been documented in the Koenig Lake CAR at MCMWTC and other areas in TAs 9, 10, and 11. Breeding also occurs adjacent to TA-9 in TA-10, immediately northwest of the Highway 108/Finley Mine Road junction, in the Upper Sardine Meadows area. In the Koenig Lake CAR they have been found around Koenig Lake and immediately south and east of Leavitt Lake and just outside LZ Lark. A record for this species from 1974 is also noted east of the Koenig Lake CAR just outside the southeast corner of R1000-2. Chango Lake in the Silver Creek CAR were known to historically support populations of YTs. Wolf Creek Lake was also known to historically support a population of YTs, but none were found at these locations during a survey in 2001. The cause of their disappearance is unknown. The species has been documented in 2014 and 2015 outside an established CAR in the Sardine Meadows/Sardine Creek area (Forest Service 2016a) and there is a CNDDDB record within R1000-1, LZ Robin, and another record in the north of Range 1101 near Leavitt Creek (Forest Service 2005, CNDDDB 2015). Current occupied habitat and sightings for the YT, as provided by CNDDDB (2015), are shown in Figure 3.3-6. Sightings were primarily within TA-10 (LZ Kiwi and LZ Robin) (Naval Facilities Engineering Command Southwest [NAVFAC SW] 2009) and R1101, R1000 AIS-1, south of AIS-2, and within R1100 AIS-3 of TA-11. Occupied habitat locations were documented within R1000 AIS-1 in TA-10 and approximately 2,774 ft northeast of LZ Vireo and approximately 711 ft southeast of LZ Lark in TA-11. A new YT breeding pond in TA-9 at LZ Parrot was discovered during surveys in 2017 (Gulf South Research Corporation 2017).

Critical habitat for the YT was designated in August 2016 (USFWS 2016c). As described prior for SNYLF, the USFWS also evaluated and considered PCEs to be the elements of physical or biological features that are essential to the conservation of the YT species. These elements were evaluated for areas that are currently occupied by the YT and are therefore required to sustain this species' life history. They include the following:

1. Aquatic breeding habitat to include bodies of fresh water, including wet meadows, slow-moving streams, shallow ponds, spring systems, and that are typically inundated during snowmelt, holding water for a minimum of 5 weeks, and contain sufficient food for tadpole development.

2. Upland area habitat to consist of areas adjacent to or surrounding breeding habitat up to a distance of 0.78 mi, includes seeps, springheads, and provides sufficient cover, foraging habitat, prey resources, physical structure predator avoidance, overwintering refugia and dispersal corridors.

The total area of YT designated critical habitat is 750,926 acres (USFWS 2016c). Of this total, approximately 3,770.4 acres (0.50%) that are part of Critical Habitat Unit 2 (Leavitt Lake/Emigrant) are within the MCMWTC training area. Figure 3-3.6 shows the areas that are within a 0.78-mile buffer of known breeding habitat (breeding ponds) that comprise PCEs, amounting to approximately 3,704 acres within the project action area (Table 3.3-6).

There has been a range wide decline of YT populations by approximately 50% compared to historical occurrences (USFWS 2013a). Erosion, encroachment of invasive vegetation, and dewatering of meadows has led to meadow habitat loss and degradation of which meadows and pools are crucial to the YT for breeding, rearing, and adult survival. Further, loss of connectivity of these habitats from encroachment has caused isolation and population fragmentation (USFWS 2013a).

Webber's Ivesia

Webber's ivesia was listed as threatened under the ESA on 3 June 2014 (*Federal Register* Vol. 79, No. 106, June 3, 2014). It is a small perennial herb that grows on rock pavement soils in sparsely vegetated areas (Forest Service 2010c, 2010e), usually in sagebrush and montane woodlands, and is found from 4,500 to 6,000 ft (NatureServe 2016). It flowers from May-June (Forest Service 2010d). Webber's ivesia is present in the Carson Ranger District (Forest Service 2010d) and is known to occur in the northern Sierra Nevada Mountains and in Washoe and Douglas counties in Nevada (NatureServe 2016).

Habitat/Occurrence within the Project Areas. This species is not known to be present in the project area based on database records and project-specific surveys, and no critical habitat has been designated in the project area.

Whitebark Pine

In July 2011, in response to a petition to list whitebark pine as threatened or endangered under the ESA, the USFWS made a determination that listing is warranted, and added whitebark pine to the candidate species list. A proposed rule to list the species is expected in the near future. Threats to whitebark pine include mortality from white pine blister rust, mountain pine beetle, catastrophic fire and fire suppression, and environmental effects resulting from climate change. A recent review characterized the decline of whitebark pine as the most significant ongoing mortality episode in subalpine forests of North America and documented high mortality for the first time in recent years in the mountains of eastern California (Millar et al. 2012).

Whitebark pine is the dominant subalpine conifer throughout high elevations of the eastern Sierra Nevada Mountains, occurring from montane through subalpine elevations to the upper limit of treeline, which it often defines. It is a dominant or co-dominant tree species from approximately 8,000 to 10,000 ft, and extends in stunted "krummholz" form to tree line, typically at about 11,500 ft in this region (Millar et al. 2012).

Whitebark pine is an obligate mutualist of Clark's nutcracker, a bird species that feeds on the seeds of the pine. Whitebark pine has cones that are indehiscent, and therefore, nutcracker seed dispersal is required by whitebark pine for population-wide regeneration (Lorenz et al. 2008).

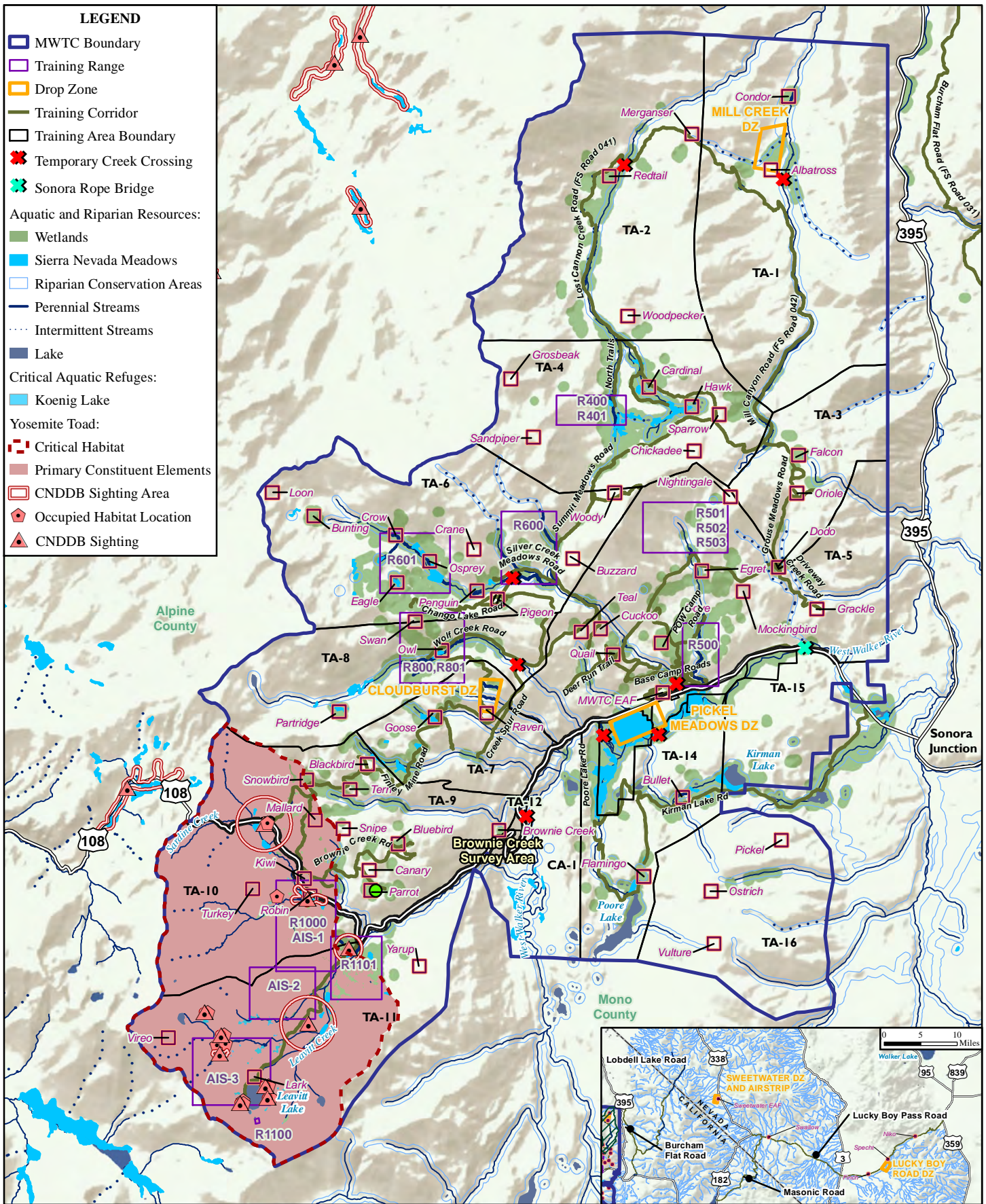
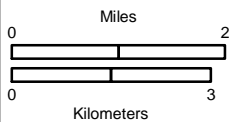


Figure 3.3-6
Yosemite Toad in the Project Area



Other Special Status Species

All other non-federally listed special status species with the potential to occur in the project area are discussed in Tables 3.3-4 and 3.3-5 and are shown on Figures 3.3-7 (plants) and 3.3-8 (wildlife). Acreages of habitat for other special status wildlife species in the project area are provided in Tables 3.3-7 and 3.3-8. Potential habitat does not necessarily infer occurrence (or lack thereof) of a given species in the project area. Full species descriptions are provided in the Specialist's Report (USMC and Forest Service 2016).

3.3.3 Approach to Analysis

The significance of potential impacts to biological resources is based on: (1) the importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource; (2) the proportion of the resource that would be affected relative to its occurrence in the region; (3) the sensitivity of the resource to proposed activities; and (4) the duration or ecological ramifications of the impact(s). Impacts to biological resources would be significant if species or habitats of concern were adversely affected over relatively large areas or if disturbances caused reductions in population size or distribution of a special-status species. This section analyzes the potential for direct and indirect impacts to biological resources from implementation of the Proposed Action.

Direct impacts are from the immediate result of project activities. Direct impacts may be either temporary (reversible) or permanent (irreversible).

Indirect impacts are caused by or result from project-related activities, but occur later in time and can extend beyond the immediate area.

Project effects have been evaluated based upon an understanding of the project area configuration and components and the proposed training activities. All project effects are described as they would occur in conjunction with design features listed in Sections 2.1.6 and 2.2.5, which would be adopted to avoid and/or minimize potential adverse effects to biological resources.

A general analysis of potential impacts to biological resources is presented below. Specific impacts are provided in Section 3.3.4. It is expected that the impacts presented in this analysis would occur throughout the span of the 40-year SUP, and would potentially be additive. However, per the design features in Section 2.2.5.15, training activities would be monitored and adaptively managed. Resource conditions would be evaluated on a year-to-year basis so that trends can be detected and adjustments made if it appears that conditions are degrading as a result of MCMWTC activities. The adaptive management of MCMWTC operations and training would be incorporated into the INRMP that is being prepared.

If monitoring indicates impacts to biological resources from training activities, additional mitigation measures may be applied as part of adaptive management. Therefore, it is expected that active monitoring and management over the course of the 40-year SUP would highly reduce any potential additive impacts to species and/or habitats.

3.3.3.1 Potential Impacts from Training Corridors, Roads, and Trails

Impacts to wildlife from use of training corridors, roads, and trails can be direct (e.g., mortality from collisions) or indirect (e.g., modification of everyday behavior from disturbances and fragmentation of habitat) (Taylor and Goldingay 2010). A GIS analysis of roads and trails in the project area indicates a "road density" of approximately 1.5 miles per square mile, which is the same as the average for all National Forests outside of wilderness areas (Coghlan and Sowa 1998). Neither alternative would increase the

density of roads on the Bridgeport Ranger District. The intensity of use by the MCMWTC is expected to remain within average recent use levels.

Wildlife often respond to vehicular and human disturbance with accelerated heart rates and metabolic function, resulting in energetic costs, impacts to behavior and fitness, and avoidance of otherwise suitable habitat (Taylor and Knight 2003). These responses can lead to increased vulnerability to predators, starvation, and reproductive failure. The roads and trails subject to use by the MCMWTC have been established for many years, such that wildlife communities have likely adjusted in response to the presence of open habitat and occasional traffic along these corridors, through the loss of species as well as individuals within species that are less tolerant of habitat alteration and disturbance. Some evidence suggests that the general pattern of reduced diversity and abundance of wildlife near roads may be due more to habitat alteration and traffic mortality than noise (Summers et al. 2011). In any case, continuing use of these transportation corridors under either alternative would not alter wildlife use of habitats in the vicinity.

Multiple roads intersect the PCE buffers of aquatic habitats within the critical habitats for SNYLF and YT (see Table 3.3-6), which could lead to direct mortality from vehicle collisions. The likelihoods of such impact to SNYLF and YT are described in Section 3.3.4.2. Additionally, vehicles would not drive through LCT-occupied creeks. Therefore, there is no potential for vehicle collisions to LCT.

Use of roads and trails can affect plant species composition by changing soil and habitat properties, increasing the dispersal of non-native and invasive plant species, and by altering biotic interactions and population dynamics (Avon et al. 2013). The use of existing roads and the continuing prohibition of off-road vehicle use – other than over-the-snow travel – reduces the potential effects of MCMWTC use of roads on vegetation and rare plants.

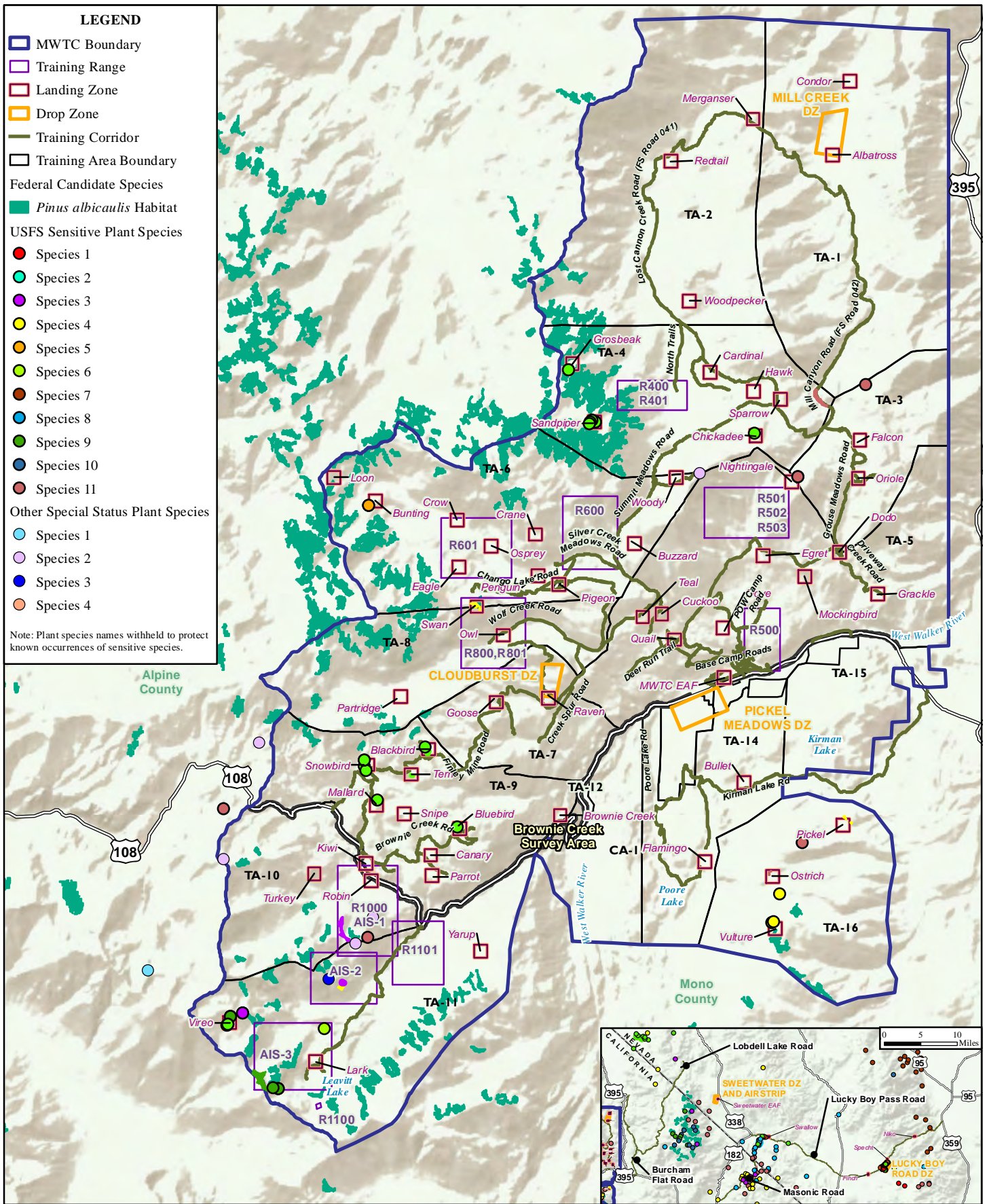


Figure 3.3-7
Special Status Plant Species in the Project Area

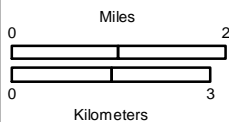


Table 3.3-7. Forest Service Sensitive Wildlife Species Habitat in the Project Area (Acres)

Project Area	Greater Sage-Grouse Bi-State Population	Greater Sage-Grouse 1/2-Mile Buffer of Known Lek Locations	Bald Eagle	Northern Goshawk	Northern Goshawk PACs	Flammulated Owl	California Spotted Owl	Great Gray Owl	Great Gray Owl PACs	Mountain Quail	White-Headed Woodpecker	Sensitive Bat Species	Pygmy Rabbit ¹
Training Corridors													
Burcham Flat Road	158.9	48.9	1.8	-	-	-	-	-	-	-	-	15.3	1.1
Kirman Lake Road	128.8	-	-	2.9	-	2.9	1.5	-	-	0.7	0.7	-	29.4
Lobdell Lake Road	392.2	-	-	-	-	18.5	-	-	-	-	-	-	26.1
Lucky Boy Pass Road	505.9	29.2	29.4	-	-	-	-	-	-	-	-	23.7	207.1
Masonic Road	212.5	-	-	-	-	0.6	-	-	-	-	-	130.1	61.2
All Other Roads	558.9	-	30.4	63.3	146.2	146.9	5.3	1.8	5.3	89.9	111.4	-	96.1
Subtotals	1,957.2	78.1	61.6	66.2	146.2	168.9	6.8	1.8	5.3	90.6	112.1	169.2	421.0
LZs													
Albatross	-	-	-	-	-	-	-	-	-	-	-	-	-
Blackbird	-	-	-	-	-	-	-	-	-	-	-	-	-
Bluebird	-	-	-	-	-	-	-	-	-	-	-	-	-
Brownie Creek	-	-	-	0.1	-	0.1	-	-	-	13.4	12.5	-	0.5
Bullet	20.0	-	-	-	-	-	-	-	-	-	-	-	-
Bunting	-	-	-	-	-	-	-	-	-	4.2	-	-	-
Buzzard	20.0	-	-	-	-	-	-	-	-	-	-	-	-
Canary	-	-	-	-	-	-	-	-	-	-	-	-	3.0
Cardinal	20.0	-	-	-	-	-	-	-	-	-	-	-	0.3
Chickadee	20.0	-	-	-	-	-	-	-	-	0.5	-	-	-
Condor	-	-	-	-	-	-	-	-	-	-	-	-	-
Crane	-	-	-	-	-	-	-	-	-	-	-	-	-
Crow	-	-	-	-	-	6.4	-	-	-	-	-	-	-
Cuckoo	-	-	-	-	-	-	-	-	-	0.3	-	-	-

Table 3.3-7. Forest Service Sensitive Wildlife Species Habitat in the Project Area (Acres)

Project Area	Greater Sage-Grouse Bi-State Population	Greater Sage-Grouse 1/2-Mile Buffer of Known Lek Locations	Bald Eagle	Northern Goshawk	Northern Goshawk PACs	Flammulated Owl	California Spotted Owl	Great Gray Owl	Great Gray Owl PACs	Mountain Quail	White-Headed Woodpecker	Sensitive Bat Species	Pygmy Rabbit ¹
Dodo	20.0-	-	-	-	-	0.9	-	-	-	3.0	-	-	-
Dove	20.0	-	-	-	-	-	-	-	-	-	-	-	1.2
Eagle	-	-	-	-	-	-	-	-	-	-	-	-	-
Egret	20.0	-	-	2.4	-	2.4	-	-	-	-	-	-	-
Falcon	20.0	-	-	-	-	-	-	-	-	-	-	-	6.9
Finch	20.0	20.0	-	-	-	-	-	-	-	-	-	-	0.5
Flamingo	-	-	-	-	-	-	-	-	-	-	-	-	12.3
Goose	-	-	-	-	-	-	-	-	-	-	-	-	-
Grackle	20.0	-	-	-	-	-	-	-	-	-	-	-	-
Grosbeak	-	-	-	-	-	-	-	-	-	3.5	-	-	-
Hawk	20.0	-	-	-	-	-	-	-	-	-	-	-	-
Kiwi	-	-	-	-	-	-	-	-	17.8	-	-	-	12.9
Lark	-	-	-	0.2	-	-	-	-	-	1.4	-	-	-
Loon	-	-	-	-	-	-	-	-	-	0.8	-	-	-
Mallard	-	-	-	-	-	-	-	-	-	-	-	-	-
Merganser	-	-	-	-	-	-	-	-	-	-	-	-	2.8
Mockingbird	20.0	-	-	-	-	-	-	-	-	-	-	-	-
MCMWTC EAF	1.4	-	0.4	-	-	-	-	-	-	-	-	-	-
Nightingale	20.0	-	-	-	-	-	-	-	-	-	-	-	-
Niko	-	-	-	-	-	-	-	-	-	-	-	-	2.9
Oriole	20.0	-	-	-	-	-	-	-	-	-	-	-	2.0
Osprey	-	-	-	-	-	2.2	-	-	-	2.2	-	-	-
Ostrich	20.0	-	-	-	-	-	-	-	-	-	-	-	5.4
Owl	-	-	-	-	17.3	0.9	-	2.5	-	-	-	-	0.1
Parrot	-	-	-	-	-	-	-	-	-	-	-	-	2.5
Partridge	-	-	-	-	-	-	-	-	-	-	-	-	-
Penguin	-	-	-	1.0	18.8	1.0	-	-	-	6.9	-	-	-
Pickle	20.0	-	-	-	-	-	-	-	-	-	-	-	-
Pigeon	-	-	-	-	8.8	-	-	-	-	-	-	-	-
Quail	-	-	-	0.7	-	-	-	-	-	5.3	-	-	0.3
Raven	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3.3-7. Forest Service Sensitive Wildlife Species Habitat in the Project Area (Acres)

Project Area	Greater Sage-Grouse Bi-State Population	Greater Sage-Grouse ½-Mile Buffer of Known Lek Locations	Bald Eagle	Northern Goshawk	Northern Goshawk PACs	Flammulated Owl	California Spotted Owl	Great Gray Owl	Great Gray Owl PACs	Mountain Quail	White-Headed Woodpecker	Sensitive Bat Species	Pygmy Rabbit ¹
Red Tail	19.9	-	-	-	-	-	-	-	-	-	-	-	4.8
Robin	-	-	-	-	-	-	-	-	20.0	-	-	-	5.7
Sandpiper	-	-	-	-	-	-	-	-	-	3.8	-	-	-
Snipe	-	-	-	-	-	-	-	-	-	-	-	-	-
Snowbird	-	-	-	-	-	-	-	-	-	-	-	-	-
Sparrow	20.0	-	-	-	-	-	-	-	-	-	-	-	8.4
Specht	20.0	-	-	-	-	-	-	-	-	-	-	-	1.8
Swallow	20.0	-	-	-	-	-	-	-	-	-	-	-	-
Swan	-	-	-	-	-	-	-	-	-	3.7	-	-	-
Sweetwater	20.0	20.0	-	-	-	-	-	-	-	-	-	-	-
Teal	-	-	-	0.1	-	0.1	-	-	-	2.7	-	-	0.1
Tern	-	-	-	-	-	-	-	-	-	-	-	-	-
Turkey	-	-	-	-	-	-	-	-	-	-	-	-	-
Vireo	-	-	-	-	-	-	-	-	-	-	-	-	-
Vulture	20.0	-	-	-	-	-	-	-	-	3.3	-	-	-
Woodpecker	20.0	-	-	-	-	-	-	-	-	-	-	-	6.9
Woody	19.7	-	-	-	-	-	-	-	-	-	-	-	-
Yarup	-	-	-	-	-	-	-	-	-	0.8	-	-	-
Subtotals	501.1	40.0	0.4	4.4	44.9	14.0	0	2.5	37.8	62.0	12.5	0	84.5
DZs													
Cloudburst	-	-	-	-	-	0.2	-	-	-	0.2	0.2	-	15.4
Lucky Boy	565.4	-	-	-	-	-	-	-	-	-	-	-	491.1
Mill Creek	8.8	-	-	-	-	-	-	-	-	-	-	-	16.4
Pickel Meadow	152.7	-	63.0	-	-	-	-	-	-	-	-	-	0.9
Sweetwater	281.6	281.6	-	-	-	-	-	-	-	-	-	-	-
Subtotals	1,008.6	281.6	63.0	0	0	0.2	0	0	0	0.2	0.2	0	523.8
Ranges													
AIS-2	-	-	-	-	-	-	-	-	-	12.2	-	-	-
AIS-3	-	-	-	4.7	-	-	-	-	-	99.8	-	-	-
R1000 AIS-1	-	-	-	-	-	-	-	-	148.0	35.5	-	-	23.9
R1100	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3.3-7. Forest Service Sensitive Wildlife Species Habitat in the Project Area (Acres)

Project Area	Greater Sage-Grouse Bi-State Population	Greater Sage-Grouse 1/2-Mile Buffer of Known Lek Locations	Bald Eagle	Northern Goshawk	Northern Goshawk PACs	Flammulated Owl	California Spotted Owl	Great Gray Owl	Great Gray Owl PACs	Mountain Quail	White-Headed Woodpecker	Sensitive Bat Species	Pygmy Rabbit ¹
R1101	-	-	-	5.1	-	20.9	-	-	-	4.4	-	-	2.1
R400	130.2	-	-	-	-	-	-	-	-	59.1	-	-	1.6
R500	237.3	-	12.7	-	-	-	-	-	-	0.4	-	-	2.5
R501 R502 R503	503.1	-	-	3.6	-	9.3	-	-	-	25.1	8.7	-	26.8
R600	2.9	-	-	-	-	3.1	-	-	-	12.2	-	-	2.5
R601	-	-	-	8.5	60.4	21.2	-	-	-	29.1	-	-	-
R800 R801	-	-	-	4.4	56.5	17.3	-	9.8	-	37.0	-	-	0.6
Subtotals	873.6	0	12.7	26.2	116.9	71.8	0	9.8	148.0	314.9	8.7	0	60.0
Other Training Areas													
CA 1	189	-	-	82	-	98	-	-	161	472	508	-	83
Pickel Meadow State Land	536	-	235	-	-	-	-	-	-	2	2	-	30
TA-1	756	-	108	396	122	1,096	179	-	-	1,182	2,041	-	36
TA-2	3,564	-	-	219	197	517	26	-	-	565	449	-	87
TA-3	1,963	-	-	72	1	260	6	-	-	123	192	-	126
TA-4	1,976	-	-	78	4	139	-	2	-	891	3	-	39
TA-5	4,430	-	466	162	-	268	3	-	-	680	478	-	168
TA-6	490	-	-	39	175	63	-	-	-	1,247	-	-	14
TA-7	-	-	-	124	-	177	-	-	-	259	147	-	35
TA-8	-	-	-	16	67	96	-	-	-	437	97	-	20
TA-9	-	-	-	47	-	92	-	-	2	447	144	-	57
TA-10	-	-	-	13	-	-	-	-	3	111	-	-	18
TA-11	-	-	-	34	-	144	94	-	-	439	125	-	11
TA-12	-	-	-	-	-	1	-	-	-	38	32	-	8
TA-13	135	-	123	-	-	-	-	-	-	-	-	-	2
TA-14	1,516	-	255	36	-	42	-	-	38	169	156	-	324
TA-15	1,659	-	265	26	-	18	-	-	-	167	127	-	129
TA-16	3,399	-	-	62	-	152	46	-	-	205	92	-	10
Subtotals	20,614	0	1,452	1,407	567	3,162	354	2	43	7,435	4,594	0	1,196

PROJECT AREA TOTALS (NO-ACTION)	3,948.3	399.7	76.1	96.8	308.0	236.4	6.8	14.1	191.1	467.7	133.5	169.2	1,063.2
PROJECT AREA TOTALS (PROPOSED ACTION)	4,340.5	399.7	76.1	96.8	308.0	254.9	6.8	14.1	191.1	467.7	133.5	169.2	1,089.3

Notes: ¹Pygmy rabbit has no known presence in the project area and is not likely to occur; reported acreages represent potential habitat only and do not necessarily infer occurrence of the species.

DZ = Drop Zone; LZ = Landing Zone

Table 3.3-8. Management Indicator and Species of Interest Habitat in the Project Area (Acres)

<i>Project Area</i>	<i>Hairy Woodpecker</i>	<i>Williamson's Sapsucker</i>	<i>Yellow Warbler</i>	<i>Yellow-Rumped Warbler</i>	<i>Mule Deer</i>	<i>American Marten</i>	<i>Willow Flycatcher</i>	<i>Pronghorn</i>	<i>American Pika</i>
Training Corridors									
Burcham Flat Road	-	-	-	-	-	-	-	-	5
Kirman Lake Road	2	1	-	1	6	2	5	-	1
Lobdell Lake Road	17	17	-	-	34	8	-	-	6
Lucky Boy Pass Road	-	-	5	-	10	-	-	70	21
Masonic Road	1	1	-	-	6	-	-	-	6
All Other Roads	143	35	6	63	90	174	18	-	15
Subtotals	163	54	11	64	146	184	23	70	54
LZs									
Albatross	-	-	-	-	-	-	-	-	-
Blackbird	-	-	-	-	<1	-	<1	-	<1
Bluebird	-	-	-	-	-	-	-	-	-
Brownie Creek	13	-	-	-	-	<1	-	-	-
Bullet	-	-	-	-	-	-	-	-	-
Bunting	-	-	4	-	-	2	4	-	<1
Buzzard	-	-	-	-	-	-	-	-	-
Canary	-	-	-	-	-	-	-	-	-
Cardinal	-	-	-	-	-	-	-	-	-
Chickadee	-	-	-	-	-	2	-	-	-
Condor	-	-	-	-	-	-	-	-	-
Crane	-	-	-	-	-	-	-	-	-
Crow	-	-	-	-	1	18	1	-	-
Cuckoo	-	-	-	<1	4	-	-	-	-
Dodo	-	-	-	-	-	-	-	-	-
Dove	-	-	-	-	1	-	-	-	-
Eagle	-	-	-	-	-	-	-	-	-
Egret	-	-	-	-	-	-	-	-	-
Falcon	-	-	-	-	-	-	-	-	-
Finch	-	-	-	-	-	-	-	-	-
Flamingo	-	-	-	-	-	-	-	-	-
Goose	-	-	-	-	8	-	8	-	-
Grackle	-	-	-	-	-	-	-	-	-
Grosbeak	-	-	-	-	-	-	-	-	<1
Hawk	-	-	-	-	3	1	-	-	-
Kiwi	-	-	-	-	-	-	-	-	-
Lark	-	-	-	-	-	-	-	-	-
Loon	-	-	-	-	-	-	-	-	-
Mallard	-	-	-	-	-	-	-	-	-
Merganser	-	-	-	-	-	-	-	-	-
Mockingbird	-	-	-	-	-	-	-	-	-
MCMWTC EAF	-	-	-	-	-	-	-	-	1
Nightingale	-	-	-	-	-	-	-	-	-
Niko	-	-	-	-	-	-	-	-	-
Oriole	-	-	-	-	-	-	-	-	-
Osprey	-	-	-	-	2	2	2	-	-
Ostrich	-	-	-	-	-	-	-	-	-
Owl	-	3	-	-	5	4	5	-	-

Table 3.3-8. Management Indicator and Species of Interest Habitat in the Project Area (Acres)

<i>Project Area</i>	<i>Hairy Woodpecker</i>	<i>Williamson's Sapsucker</i>	<i>Yellow Warbler</i>	<i>Yellow-Rumped Warbler</i>	<i>Mule Deer</i>	<i>American Marten</i>	<i>Willow Flycatcher</i>	<i>Pronghorn</i>	<i>American Pika</i>
Parrot	-	-	-	-	5	-	5	-	-
Partridge	-	-	-	-	<1	-	<1	-	-
Penguin	-	-	-	-	-	3	-	-	-
Pickle	-	-	-	-	-	-	-	-	-
Pigeon	-	-	-	-	-	3	-	-	-
Quail	-	-	-	-	-	-	-	-	-
Raven	-	-	-	-	-	-	-	-	-
Red Tail	-	-	-	-	-	-	-	-	-
Robin	-	-	-	-	7	-	7	-	-
Sandpiper	-	-	-	-	-	-	-	-	<1
Snipe	-	-	-	-	-	-	-	-	-
Snowbird	-	-	-	-	-	-	-	-	-
Sparrow	-	-	-	-	-	1	-	-	-
Specht	-	-	-	-	-	-	-	-	<1
Swallow	-	-	-	-	-	-	-	-	-
Swan	-	-	-	-	-	-	-	-	-
Sweetwater	-	-	-	-	-	-	-	-	-
Teal	<1	<1	-	-	<1	-	-	-	-
Tern ³	-	-	-	-	-	-	-	-	-
Turkey	-	-	-	-	-	-	-	-	-
Vireo	-	-	-	-	-	-	-	-	2
Vulture	-	-	-	-	-	-	-	-	5
Woodpecker	-	-	-	-	-	-	-	-	-
Woody	-	-	-	-	-	-	-	-	-
Yarup	-	-	-	-	-	2	-	-	-
Subtotals	13	3	4	18	40	42	27	0	16
DZs									
Cloudburst	<1	-	-	-	-	-	-	-	-
Lucky Boy	-	-	-	-	-	-	-	-	<1
Mill Cree	-	-	<1	-	-	-	<1	-	1
Pickel Meadow	-	-	-	-	73	-	73	-	-
Sweetwater	-	-	-	-	-	-	-	-	-
Subtotals	<1	0	<1	0	73	0	73	0	1
Ranges									
AIS-2	-	-	7	-	1	36	9	-	251
AIS-3	10	-	10	-	10	-	20	-	321
R1000 AIS-1	-	-	9	-	13	130	22	-	93
R1100	-	-	-	-	-	-	-	-	2
R1101	5	17	3	-	8	101	3	-	3
R400	-	-	-	-	22	3	13	-	35
R500	-	-	-	<1	46	-	-	-	-
R501 R502 R503	12	4	-	17	51	-	-	-	2
R600	-	-	-	-	75	28	3	-	-
R601	1	1	5	-	43	161	29	-	1
R800 R801	38	14	-	-	17	134	5	-	-
Subtotals	66	36	27	17	285	557	95	0	457
Other Training Areas									
CA 1	512	3	34	471	110	86	127	-	89
Pickel Meadow State Land	2	-	-	2	121	-	121	-	26

Table 3.3-8. Management Indicator and Species of Interest Habitat in the Project Area (Acres)

<i>Project Area</i>	<i>Hairy Woodpecker</i>	<i>Williamson's Sapsucker</i>	<i>Yellow Warbler</i>	<i>Yellow-Rumped Warbler</i>	<i>Mule Deer</i>	<i>American Marten</i>	<i>Willow Flycatcher</i>	<i>Pronghorn</i>	<i>American Pika</i>
TA-1	2,068	28	329	1,158	58	1,058	27	-	48
TA-2	634	185	92	192	525	423	44	-	221
TA-3	265	73	75	42	240	127	28	-	49
TA-4	66	93	5	2	261	506	82	-	311
TA-5	555	77	22	552	489	176	25	-	29
TA-6	40	40	86	-	152	349	165	-	910
TA-7	237	91	11	166	208	173	33	-	3
TA-8	103	1	56	19	84	371	133	-	484
TA-9	160	17	27	147	134	224	84	-	341
TA-10	-	-	46	-	34	154	73	-	1,116
TA-11	195	91	128	12	43	490	63	-	1,908
TA-12	32	-	-	38	5	-	5	-	-
TA-13	-	-	-	-	13	-	13	-	-
TA-14	192	36	-	158	167	-	81	-	30
TA-15	145	18	-	175	71	8	11	-	15
TA-16	131	39	95	11	151	206	26	-	220
Subtotals	5,336	791	1,006	3,145	2,866	4,351	1,140	0	5,798
PROJECT AREA TOTALS (NO-ACTION)	5,561	867	1,048	3,244	3,376	5,126	1,358	70	6,320
PROJECT AREA TOTALS (PROPOSED ACTION)	5,578	884	1,048	3,244	3,410	5,134	1,358	70	6,326

Notes: DZ = Drop Zone; LZ = Landing Zone

Table 3.3-9. Summary of Potential Impacts from Training Events on Biological Resources

<i>Training Event</i>	<i>Training Areas</i>	<i>Training Corridors</i>	<i>Personnel</i>	<i>Duration and/or Tempo</i>	<i>Potential Impacts on Biological Resources (Described in)</i>
Mountain Exercise	All TAs ¹	LBP, Mas, Kir, Bur, Lob	600-1,200 (in groups of up to 200); limit of 60 in TA-10, TA-11	22 days 6 events/year	Sections 3.3.3.1, 3.3.3.4, and 3.3.3.5
Large Scale Exercise (Javelin Thrust)	TAs 2-16 ¹	LBP, Mas, Kir, Bur, Lob	Up to 1,200 (in groups of up to 200); limit of 60 in TA-10, TA-11	14 days 1 event/year	Sections 3.3.3.1, 3.3.3.4, and 3.3.3.5
Summer Mountain Leaders Course	TAs 1-9 and 12-16	none	22 to 45	36 days 2 events/year	Sections 3.3.3.1 and 3.3.3.5
Winter Mountain Leaders Course	All TAs ¹	none	22 to 45	36 days 2 events/year	Sections 3.3.3.1 and 3.3.3.5
Mountain Scout Sniper Course	All TAs ¹	none	8 to 24	17 days 4 events/year	Sections 3.3.3.1, 3.3.3.2, 3.3.3.3, and 3.3.3.5
Mountain Medical Course	All TAs ¹	none	10 to 40	12 days 3 events/year	Sections 3.3.3.1 and 3.3.3.5
Cold Weather Medical Course	All TAs ¹	none	10 to 50	12 days 3 events/year	Sections 3.3.3.1 and 3.3.3.5
Animal Packer Course	TAs 1-9 and 11-16 ¹	none	12 to 48	12 days 4 events/year	Sections 3.3.3.1 and 3.3.3.5
Mountain Operations Staff Planning Course	TAs 1, 2, 4, 6, 7, and 13	none	15 to 40	8 days 1 event/year	Sections 3.3.3.1 and 3.3.3.5
Mountain Survival Course	TAs 1-6 and 10-11 ¹	none	12 to 44	20 days 2 events/year	Sections 3.3.3.1 and 3.3.3.5
Mountain Command, Control and Communications Course	All TAs ¹	none	28 to 50	15 days 6 events/year	Sections 3.3.3.1 and 3.3.3.5
Assault Climbers Course	TAs 1-9 and 12-16	none	16 to 45	21 days 4 events/year	Sections 3.3.3.1 and 3.3.3.5
Scout Skier Course	All TAs ¹	none	16 to 45	17 days 2 events/year	Sections 3.3.3.1, 3.3.3.2, and 3.3.3.5
Mountain Engineer Course	TAs 1-9 and 12-16 (summer) All TAs ¹ (winter)	none	20 to 35	25 days 2 events/year (summer) 1 event/year (winter)	Sections 3.3.3.1, 3.3.3.2, and 3.3.3.5
Special Forces Training	All TAs ¹	LBP, Mas, Kir, Bur, Lob	Variable	Variable	Sections 3.3.3.1, 3.3.3.2, 3.3.3.3, 3.3.3.4, and 3.3.3.5
Coalition Forces Training	All TAs ¹	LBP, Mas, Kir, Bur, Lob	Up to 120	10 days multiple events/year	Sections 3.3.3.1, 3.3.3.2, 3.3.3.3, and 3.3.3.5
High Altitude Aircraft Training	TA-6 and the Sweetwater Airstrip	Aircraft land on LZs	Variable	Variable	Sections 3.3.3.1 and 3.3.3.4

Table 3.3-9. Summary of Potential Impacts from Training Events on Biological Resources

<i>Training Event</i>	<i>Training Areas</i>	<i>Training Corridors</i>	<i>Personnel</i>	<i>Duration and/or Tempo</i>	<i>Potential Impacts on Biological Resources (Described in)</i>
Training Support – MCMWTC Infrastructure	All TAs ¹	LBP, Mas, Kir, Bur, Lob	Variable	Variable	Sections 3.3.3.1 and 3.3.3.5
Horsemanship and Animal Packing	TAs 1-9 and TAs-12-16	none	8 to 14	16 days 4 events/year	Sections 3.3.3.1 and 3.3.3.5
Joint Assault Bridge ²	Specific areas along West Walker River, Silver Creek, Mill Creek, Wolf Creek, and Lost Cannon Creek	none	40	1 day 1 event/year	Sections 3.3.3.1 and 3.3.3.5
Medium Girder Bridge ²	Specific areas along West Walker River, Silver Creek, Mill Creek, Wolf Creek, and Lost Cannon Creek	none	40	1 day 2 events/year	Sections 3.3.3.1 and 3.3.3.5
Expeditionary Vehicle Convoy Training ²	All TAs ¹	LBP, Mas, Kir, Bur, Lob	Less than 20	Variable	Sections 3.3.3.1 and 3.3.3.5

Notes: ¹All training in TAs 10-11 is winter use only, with 2 ft or more of snowpack required, and limited to one group of 60 individuals or less within TA-10 and one group of 60 individuals or less in TA-11.

²Event would only occur under the Proposed Action.

Bur = Burcham Flat Road; Kir = Kirman Lake Road; LBP = Lucky Boy Pass; Lob = Lobdell Lake Road; Mas = Masonic Road; MCMWTC = Marine Corps Mountain Warfare Training Center; TA = Training Area.

3.3.3.2 Potential Impacts from Over-Snow and Winter Activities

Use of snowmobiles during winter would have similar impacts on wildlife as other vehicular use. Wildlife would be subject to noise and visual disturbance that could cause stress, elevated energy expenditures, and changes in habitat use. Snowmobiles can also impact vegetation through direct injury and compaction of snow that can affect later growth. In addition, snow compaction from snowmobile use has been shown to alter habitat quality in the subnivean (below snow) zone (Keddy et al. 1979), which is important habitat for some small mammals and amphibians during winter. Compaction from snowmobiles can alter temperatures below the snow, kill and/or injure small animals below the snow, and alter below snow populations (Jarvinen and Schmid 1971, Keddy et al. 1979). However, such effects are largely associated with intensive snowmobile use. Under both project alternatives, over-the-snow use of snowmobiles would be geographically and temporally spaced, and with design features in place to limit the number of troops involved in training exercises at one time, impacts associated with snowmobile use would be minimized.

Avalanche initiation under both alternatives would potentially cause and/or increase snow compaction, destruction and/or alteration of vegetation, and erosion. However, all avalanche initiation sites are in areas where avalanches tend to naturally occur otherwise; this would minimize potential impacts. In addition, no avalanche initiation is done within habitats of known sensitive species. Ice breaching would not cause snow compaction; it breaks the layer of ice above a body of water. Furthermore, ice breaching is not permitted where sensitive species may occur underneath, thereby minimizing potential impacts to those species.

3.3.3.3 Potential Impacts from Live-Fire Ranges

Use of live-fire ranges produces visual and auditory disturbances that may impact wildlife species in the immediate vicinity of ranges, possibly causing wildlife to flush or leave the area. There is a minimal chance that wildlife (primarily bird species) could be incidentally injured or killed by direct hit from gunfire; however, live-firing would be done within discreet areas and would be directed at targets, reducing the likelihood of directly impacting wildlife. Soil and vegetation would be subject to small areas of disturbance by rounds and target maintenance. Neither alternative would involve new live-fire ranges or the use of qualitatively different types of weaponry or ordnance than have been historically used. The same target areas and firing points that have been previously established would be used under either alternative. The target areas are backed by terrain, i.e., a hillside, limiting the area of disturbance and the distance rounds can travel.

3.3.3.4 Potential Impacts from Landing Zones and Drop Zones

Use of LZs and DZs would cause noise and visual disturbance to wildlife. Impacts to wildlife from aircraft noise and visual stressors can include: a startle reflex that induces running or flight, increased expenditure of energy, decreased time and energy spent on life functions such as feeding and mating, increased likelihood of predation, and interruption of breeding or nursing behavior (Efroymsen et al. 2000, Larkin 1996).

Noises that are close, loud, and sudden and that are combined with a visual stimulus produce the most intense reactions in animals (Bowles et al. 1999). Rotary-wing aircraft, such as helicopters or MV-22s (in rotary-wing mode), generally induce the startle effect more frequently than fixed-wing aircraft (Frid 2003). Based on the weight of evidence from observation and experimental studies, as well as approaches to managing the disturbance of sensitive wildlife populations, a reasonable maximum threshold distance for biologically important disturbance by rotary-wing aircraft is approximately 1/2 mile (~800 m).

While some bird and mammal species appear to habituate (become accustomed to and react less strongly over time) to repetitive noises better than other species (Conomy et al. 1998, Krausman et al. 1996), the likelihood of habituation by different wildlife species on the Bridgeport Ranger District with respect to rotary-wing aircraft activity is not predictable. Qualitatively, habituation may be expected to occur after some threshold frequency of exposure is reached, but that threshold of exposure is unknown. In addition, the opposite response, i.e., the sensitization of individuals, such that they react more strongly to a recurring stimulus, and ultimately leave the area, can also occur. Intrinsic difference in tolerance among individuals and species, with or without changes in individual behavioral reactions over time, will tend to drive changes in wildlife populations exposed to a recurring stimulus through immigration and emigration. The end result is that wildlife individuals and populations exposed to a regularly recurring stimulus are expected to exhibit an increasing tolerance (lowered reactions) to that stimulus, but this cannot be construed as indicating that no impact has occurred (Bejder et al. 2009).

Based on the previous paragraph, wildlife in the vicinity of LZs and DZs that have been frequently and regularly used are not expected to react strongly to aircraft operations, whereas wildlife individuals and populations without the same history of exposure are expected to react strongly. To further analyze the potential disturbance effects of LZ/DZ operations on wildlife requires consideration of the distance at which effects may occur.

Use of LZs for rotary-wing aircraft training would result in the temporary disturbance of loose surface debris and soil caused by downdraft and outwash from moving rotors (collectively known as rotor wash) in the vicinity of take-offs, landings, and near-surface hovering, potentially resulting in an indirect impact

to vegetation and soils. Rotor wash forces are relative to the engine power settings and the aircraft's proximity to the ground.

Rotor wash from the MV-22 would be greater than from other aircraft at a given height above the ground. Wind velocities have been measured at approximately 104 miles per hour directly below MV-22s when hovering at 100 ft AGL (Marine Corps Installations West 2013). However, rotor wash wind velocities decline significantly with distance from the aircraft. MV-22 rotor wash wind speeds peak at 92 miles per hour within 25 ft of the aircraft at 60 degrees and 300 degrees relative to the nose of the aircraft. Beyond 156 ft, wind speeds reflect consistent deceleration but extend to approximately 400 ft at between 5 and 23 miles per hour depending on the angle (Marine Corps Installations West 2013). Therefore, at distances at and beyond approximately 400 ft, wind speeds generated from MV-22 use would not be beyond naturally occurring wind speeds.

All potential landing points were investigated to determine the potential for damage to sensitive biological and cultural resources resulting from MV-22 use. In particular, rotor downwash and resulting wind speeds generated by MV-22s are more than twice as strong as those generated by CH-46 or CH-53 helicopters (Marine Corps Installations West 2013). Observations of habitat damage in MV-22 landing zones ranged from windblown vegetation to broken branches in trees and shrubs to soil scouring and potential secondary effects of blown dust (Marine Corps Installations West 2013). MV-22 rotor wash wind speeds peak at 92 miles per hour within 25 ft (8 m), but diminish to less than 60 miles per hour at approximately 200 ft (60 m). To minimize impacts on vegetation as well as to the aircraft and pilot's ability to see the ground, MV-22s would not land in areas of dense vegetation, as is regular practice at other military installations (Marine Corps Installations West 2013).

Other potential effects of MV-22 landings include noise disturbance of wildlife and elevated fire risk due to the exhaust heat of the nacelles. Side-by-side comparisons with CH-53s suggested imperceptible differences in noise and the related potential for wildlife disturbance (Marine Corps Installations West 2013). The available evidence indicates a very low likelihood of ignition from MV-22s, and this risk is further reduced because operators would not land in locations and under conditions where a wildfire could be started (Marine Corps Installations West 2013). Additionally, when the MV-22 landing sequence is initiated and the nacelles rotate to make a vertical landing, the exhaust deflectors are automatically engaged to disperse heat from the nacelles.

Under normal operations with engine exhaust deflectors operating, the exhaust of the MV-22 should not heat the ground to a temperature high enough to support combustion of plant-based materials such as dry grasses (Marine Corps Installations West 2013; USMC and Forest Service 2013). The aircraft operates with the exhaust deflectors on at all times when on the ground. The exhaust deflectors activate as soon as there is weight on the main landing gear wheels. Likewise, with exhaust deflectors activating upon landing, there would be little risk for significant levels of snow melt below the aircraft during landings and take-offs.

Although available data indicate the unlikelihood of ignition of fires from engine exhaust gases and radiative heating, surface temperatures could be high enough to dry out and damage growing vegetation and, during winter use, to melt a small amount of snow on the surface. Animals that burrow under the snow, such as small mammals and Yosemite toad, would potentially be exposed to snow removal impacts during landings. Monitoring and adaptive management design features in Section 2.2.5.15 would require monitoring and offsetting any such impacts. Any effect would be localized underneath the engine nacelles. Based on the insulating properties of soil, temperatures would be expected to diminish rapidly with depth and very small changes in temperature would be expected at the depth where most roots and underground structures such as bulbs or corms would be located (USMC and Forest Service 2013). Similarly, transfer of

heat laterally from the point of heating would be very slow. Any effect from the exhaust gases would therefore be localized underneath the engine nacelles (USMC and Forest Service 2013).

At take-off and landing sites, rotor wash underneath rotary aircraft, especially MV-22s, can be expected to damage or remove upright-branching vegetation, blow away loose snow and topsoil, and flushing of wildlife in the immediate vicinity (Marine Corps Installations West 2013). Effects related to rotor wash and noise from rotary-wing aircraft would diminish with distance from the source. Exposure to elevated noise levels would generally be localized around the actual LZs/DZs where landings, take-offs, and low-level hovering would occur but diminish further away from the sites.

For sensitive biological resources, the protective buffers specified in the existing and proposed design features as applied to MV-22 activities would decrease the risk of impacts to habitat or individuals of sensitive species. Where MV-22 landings are proposed within protective buffers, given the potential for damage to vegetation (sagebrush in particular), an additional design feature (Section 2.2.5.2) is proposed that would prohibit landings in such areas unless there is at least two feet of snowpack.

3.3.3.5 Potential Impacts from Training Exercises

In addition to the use of aircraft and vehicles (including snowmobiles) and live-fire ranges as discussed previously, training exercises include groups of approximately 8-200 people moving across country on foot and in some cases using pack animals; the use of blank ammunition and smoke charges in simulated engagements; and establishing temporary bivouacs, COCs, and RHUs. Hence, training exercises entail a level of ground disturbance as well as noise and visual impacts. However, design features in Section 2.2.5.3 would prohibit ground disturbing activities (e.g., digging, vegetation removal), bivouacking, or activities involving groups larger than 25 individuals within 100 m of LCT occupied streams, and lakes, meadows, marsh areas, or wetlands occupied by YT and/or SNYLF or within critical habitat, except for temporary placement of bridges for JAB and MGB exercises and group stream crossings at hardened areas (where the stream is bridged or culverted). Additionally, a new design feature specifying MCMWTC procedures for trash cleanup is provided in Section 2.2.5.14. With implementation of this design feature, potential impacts to sensitive and special status animal species from accidental trash disposal and trash cleanup activities would be reduced or avoided.

Training exercises would have similar impacts to those activities and project components described above in Sections 3.3.3.1, 3.3.3.2, 3.3.3.3, and 3.3.3.4. Wildlife responses to human presence are highly varied; however, nearly all species will avoid human presence and/or alter their behavior because of human-induced visual or auditory disturbance (Gill et al. 2001, Li et al. 2011). Wildlife behavioral and physiological responses to human presence are similar to those described in Section 3.3.3.1.

Even in the absence of behavioral changes, human presence may evoke a physiological stress response in wildlife species, with elevated stress levels affecting metabolism, immune response, reproduction and/or survival (Braunisch et al. 2011, Li et al. 2011). As both physiological and behavioral responses entail extra energetic costs, disturbance in temperate environments can have greater impacts in winter, when most wildlife species face an energetic bottleneck (Braunisch et al. 2011).

Other than over-the-snow use of snowmobiles during winter, no off-road vehicle use would be permitted under both alternatives; however, foot traffic associated with military training can impact plant communities and topsoil by causing compaction, decreased infiltration, and decreased plant biomass and litter (Whitcotton et al. 2000). Such impacts can lead to increased soil erosion, diminished plant growth, destruction or alteration of animal and aquatic habitats, and decreased water quality. In addition, foot traffic can cause direct trampling of at-risk and special status plant species. Potential impacts to wildlife from foot

traffic include direct destruction of nests and/or burrows (ground nesting birds, small mammals, reptiles, and invertebrates) and alteration of habitat. However, training exercises under both alternatives would be geographically and temporally spaced, and with design features in place to limit the number of troops involved in training exercises at one time and protect special status plant species, impacts associated with foot traffic would be minimized.

In addition to human foot traffic, the Animal Packer Course and Horsemanship and Animal Packing Training exercises would also impact vegetation and habitats. Impacts from horses and pack animals are similar to those from human foot traffic and include soil compaction and erosion, loss of organic litter, loss of ground cover vegetation, erosion, and the potential spread of weeds and pathogens into natural vegetation (Pickering et al. 2010). However, horses and pack animals usually have a greater impact on soils and vegetation than human foot traffic, because of the greater weight of the animals and from animal grazing on vegetation. Animal Packer Course and Horsemanship and Animal Packing Training exercises would not occur within sensitive habitats, would be temporally and spatially dispersed, and impacts would be similar to ongoing training and public use of the area by pack animals and grazing livestock.

3.3.4 Environmental Consequences

3.3.4.1 No-Action Alternative

Under the No-Action Alternative, MCMWTC activities would continue as authorized under the five SUPs for the foreseeable future. The administrative procedures, terms, and conditions of the SUPs would continue as they are currently written.

Plant Communities

The overlap of various plant communities by MCMWTC use areas is quantified in Table 3.3-2.

Vehicle maneuvering can affect plant species composition; however, the use of existing roads and the prohibition of off-road vehicle use – other than over-the-snow travel – reduce the potential effects on plant community structure and composition.

Soil and vegetation are currently subject to small areas of disturbance by rounds and target maintenance. The No-Action Alternative would be a continuation of the current use of live-fire ranges and suite of weapons and artillery. The same target areas and firing points that have been previously established would be used. The target areas are backed by terrain (i.e., a hillside) limiting the area of disturbance and the distance rounds can travel.

At take-off and landing sites, rotor wash underneath rotary aircraft can be expected to damage or remove upright-branching vegetation and to blow away topsoil. Effects related to rotor wash from rotary-wing aircraft would diminish with distance from the source and these aircraft are not landed in densely vegetated areas.

Impacts to plant communities under the No-Action Alternative, a continuation of current USMC training practices at the MCMWTC, would be occasional, dispersed, and would not noticeably alter community structure or composition. Given the total area of each plant community within the Bridgeport Ranger District, the area subject to MCMWTC training activities (Table 3.3-2) would be minimal. That fact, coupled with the ongoing requirements of the existing SUPs to inspect for maneuver damage and to repair or declare as off-limits any areas that are impacted, indicates that the No-Action Alternative would not have significant impacts on plant communities.

Invasive Plants

Training exercises have the potential to introduce and spread invasive species among all TAs and training corridors. The spread of invasive plant species is a severe threat throughout the western U.S. due to degradation of habitat and potential wildfire issues (Brooks et al. 2004).

Existing permit restrictions require that all vehicles be power-washed before use and that certified weed-free animal feed be used for pack animals to prevent the spread of invasive plants through animal droppings. These measures would be continued under the No-Action Alternative.

With implementation of these measures, the potential to introduce invasive species is considered to be low. Therefore, impacts from invasive plants would not be significant.

Aquatic Habitats

Design features in Section 2.1.6 protect aquatic habitats from any significant impacts. Current design features provide ample protection to all aquatic habitats, including CARs and RCAs. Potential impacts to aquatic habitats would include sporadic foot traffic and vehicular crossings at specified, recurring locations along Forest Service roads and trails. Under the No-Action Alternative, the nine goals of the AMS (refer to Section 3.3.2.3) for the management of watershed processes and functions, habitats, attributes, and populations within the SNFPA (Forest Service 2004a) would not be impacted. Therefore, impacts to aquatic habitats would be less than significant.

Wildlife

Impacts to all wildlife species would be similar to the potential impacts discussed in Section 3.3.3 and to those that would occur to special status species as discussed in the following section. The USMC currently trains and operates at the MCMWTC under pre-established design features that were developed in conjunction with the Forest Service and that are based on applicable terms and conditions and avoidance and minimization measures from previous coordination with the USFWS to avoid and/or minimize impacts to wildlife species. Therefore, the No-Action Alternative, a continuation of current USMC training practices at the MCWMTTC, could impact individuals but would not impact the viability of populations and would have less than significant impacts on wildlife.

Special Status Species

Federally Listed Species

Sierra Nevada Bighorn Sheep

The Sierra Nevada bighorn sheep is not known or likely to occur in the project area. Therefore, the No-Action Alternative would have no effect on the species or its management on the Bridgeport Ranger District.

Sierra Nevada Red Fox, Sierra Nevada DPS

Potential impacts to the Sierra Nevada red fox, Sierra Nevada DPS from training activities are discussed below. Specific training impacts to the Sierra Nevada red fox are evaluated for: (1) Use of Roads and Trails; (2) Use of LZs/DZs; (3) Live Fire Ranges; and (4) General Human Presence. Design features for impact minimization and avoidance are also discussed below.

USE OF ROADS AND TRAILS. Impacts to the Sierra Nevada red fox would be similar to those described in Section 3.3.3.1. Potential impacts to Sierra Nevada red fox could be direct (e.g., mortality from collisions, noise and visual disturbance) and indirect (e.g., modification of everyday behavior from disturbances and

fragmentation of habitat). However, roads and trails in the project area are currently used for training and by the public for recreation, and the No-Action Alternative would not increase the density of roads on the Bridgeport Ranger District. The intensity of use by the MCMWTC is expected to remain within average recent use levels. In addition, no off-road driving would occur, and because of the relatively slow speeds of vehicles on dirt training roads, the likelihood of a training vehicle hitting a Sierra Nevada red fox is negligible.

Sierra Nevada red foxes would respond to vehicular and human disturbance much like other mammalian species with accelerated heart rates and metabolic function, resulting in energetic costs, impacts to behavior and fitness, and avoidance of otherwise suitable habitat (Taylor and Knight 2003). As described in Section 3.3.3.1, the roads and trails subject to use by the MCMWTC have been established for many years, such that wildlife have likely adjusted in response to the presence of open habitat and occasional traffic along these corridors. In any case, continuing use of these transportation corridors would not alter Sierra Nevada red fox use of habitats in the vicinity.

Use of roads and trails could potentially impact Sierra Nevada red fox habitat by changing soil and habitat properties, increasing the dispersal of non-native and invasive plant species, and by altering biotic interactions and population dynamics (Avon et al. 2013). However, the use of existing roads and the continuing prohibition of off-road vehicle use – other than over-the-snow travel – reduces the potential effects of MCMWTC use of roads on Sierra Nevada red fox habitat.

USE OF LZS/DZS. Use of LZs and DZs would potentially cause noise and visual disturbance to Sierra Nevada red foxes as described in Section 3.3.3.4. While some mammal species appear to habituate (become accustomed to and react less strongly over time) to repetitive noises better than other species (Conomy et al. 1998, Krausman et al. 1996), the likelihood of habituation by Sierra Nevada red foxes on the Bridgeport Ranger District with respect to rotary-wing aircraft activity is not predictable. As described in Section 3.3.3.4, Sierra Nevada red foxes in the vicinity of LZs and DZs that have been frequently and regularly used are not expected to react as strongly to aircraft operations, whereas individuals without the same history of exposure are expected to react strongly.

As discussed in Section 3.3.3.4, use of LZs for rotary-wing aircraft training would result in the temporary disturbance of loose surface debris, soil, and/or snow caused by downdraft and outwash from moving rotors (collectively known as rotor wash) in the vicinity of take-offs, landings, and near-surface hovering, potentially resulting in an indirect impact to vegetation and soils. However, all LZs at MCMWTC are currently used for training purposes and the effects would be localized within the landing points of the LZs.

Design features (Section 2.1.6) would limit use of any LZ within 100 m of a Sierra Nevada red fox den site during the LOP.

LIVE-FIRE RANGES. Use of live-fire ranges could produce visual and auditory disturbances that may impact Sierra Nevada red foxes in the immediate vicinity of ranges, possibly causing individuals to flush or leave the area. However, it is expected that any Sierra Nevada red foxes that might be temporarily flushed from areas during live-fire would return upon completion of training activities. Live-firing is conducted within discreet areas and is directed at targets. Therefore, the likelihood of individual Sierra Nevada red foxes being directly harmed or killed by live-fire is negligible.

GENERAL HUMAN PRESENCE. Wildlife responses to human presence are highly varied; however, nearly all species will avoid human presence and/or alter their behavior because of human-induced visual or auditory disturbance (Gill et al. 2001, Li et al. 2011). The Sierra Nevada red fox is a secretive and furtive animal that would naturally avoid human presence, unless it becomes habituated to human food. Design

features in Section 2.1.6 would require that all troops use mammal-proof canisters for food storage and that all waste be removed from training areas.

Other than over-the-snow use of snowmobiles during winter, no off-road vehicle use would be permitted; however, foot traffic associated with military training can impact plant communities and topsoil by causing compaction, decreased infiltration, and decreased plant biomass and litter (Whitcotton et al. 2000). Potential impacts to Sierra Nevada red fox habitat from foot traffic would be similar to those discussed in Section 3.3.3.5. Training exercises would be geographically and temporally spaced, and with design features in place to limit the number of troops involved in training exercises at one time, impacts associated with foot traffic would be minimized.

CONCLUSION. Under the No-Action Alternative, approximately 11,289 acres of potential Sierra Nevada red fox habitat would be exposed to MCMWTC training activities (ground and air) (see Table 3.3-6).

The Sierra Nevada red fox has been recently documented by the Forest Service and during project-specific surveys within MCMWTC south of Highway 108. USMC training already occurs in these areas and no new areas would be exposed to training impacts. Individual Sierra Nevada red foxes could be exposed to the potential impacts discussed in Sections 3.3.3.1 through 3.3.3.5. To minimize impacts, existing permit stipulations require measures to prevent habituation to human food, education for marines on the species and requirements for food storage, and no activities from 1 January to 30 June within 100 m of den sites. With these measures, the No-Action Alternative would have less than significant impacts on the Sierra Nevada red fox, Sierra Nevada DPS.

North American Wolverine

The wolverine is not known or likely to occur in the project area. Therefore, the No-Action Alternative would have no effect on the species or its management on the Bridgeport Ranger District.

Lahontan Cutthroat Trout

Potential impacts to LCT from training activities are discussed below. Specific training impacts to LCT under the No-Action Alternative are evaluated for: (1) Use of Roads and Trails; (2) Use of LZs/DZs; (3) Live-Fire Ranges; and (4) General Human Presence. Design features for impact minimization and avoidance are also discussed below.

USE OF ROADS AND TRAILS. Potential impacts to LCT under both alternatives include disruption of spawning activities, crushing of LCT eggs or fry, and degradation of habitat. Foot traffic through occupied streams during the spawning season (April to July) can affect active spawning activity. Further, foot traffic through spawning areas can destroy redds (spawning nests that are built by LCT in the gravel of streams) either directly or indirectly by way of loss of riparian vegetation along stream banks and/or by increasing sedimentation.

Potential impacts to occupied LCT streams could be from fuel releases or hazardous or waste material releases from motor transport vehicles. However, live stream crossings are not permitted within LCT-occupied streams and design features in place restrict any ground disturbing activities within 100 m of occupied LCT streams. This design feature would reduce potential erosion or possible hazardous waste material from entering occupied streams.

USE OF LZS/DZS. Occupied stream segments occur in LZs Condor, Crow, Osprey, Owl, and Penguin, as well as the Pickel Meadow DZ (see Table 3.3-6). However, rotary-wing and tilt-rotor aircraft would not land in streams and design features would restrict disturbance activities, including the landing of aircraft,

within 100 m of LCT-occupied streams, thereby reducing potential impacts associated with downdraft (LCT flight from noise or vibrations) from aircraft.

LIVE-FIRE RANGES. LCT-occupied streams intersect ranges 600, 601, and 800/801 (see Table 3.3-6). Potential impacts could occur by way of munitions materials expelled into creeks. However, there is a requirement to collect and remove discarded munitions materials from the ranges following training events and, therefore, maintaining existing conditions of the ground surface (including shorelines and creek beds) that may inadvertently receive dispelled munitions debris during live-fire training. Continued implementation of this practice under the No-Action Alternative would reduce habitat degradation impacts. Firing points and targets are in designated locations that have been reviewed and approved by the Forest Service and have been traditionally used for training. In addition, activities involving groups larger than 25 individuals, including use of explosives, live demo, and small arms would not occur within 100 m of occupied habitats. During live-fire range use, personnel may cross streams to set up targets or access firing points. During these times, if LCT are present they could be displaced from their habitat.

GENERAL HUMAN PRESENCE. Training activities would involve multi-day mountain and winter over-land travel by foot by groups of 8 individuals and up to as many as 200 individuals. Groups of less than 25 individuals would be allowed to conduct activities that are not concentrated or ground disturbing within 100 m of LCT habitat. Impacts to LCT occupied creeks and those containing potential habitat could result from personnel walking through the shallow areas of these creeks and potentially degrading LCT habitat. Although the number of creek crossings annually by groups is variable (approximate representative size of 6 events per year, average of 800 personnel per event), the crossings would be temporally and spatially dispersed such that recurring impacts would not be significant. In addition, personnel foot-traffic could increase erosion along and adjacent to stream banks, thereby impacting LCT habitat.

By implementing the following design features: 1) no wading or walking up and downstream within the stream channel in LCT occupied streams; 2) stream crossings would be restricted to one location for small groups (less than 25 personnel) and larger groups would only cross occupied streams at bridges and existing roads and trails; and, 3) activities involving groups larger than 25 individuals, bivouacking, or ground disturbing activities would be restricted within 100 m of occupied LCT streams, except for group stream crossings at hardened areas that are bridged or culverted, direct impacts to LCT would be reduced or avoided. However, foot traffic from small group crossings would potentially impact stream habitats and/or spawning activities in occupied streams.

Although there is a small group stream crossing limitation (less than 25 personnel), during exercises involving up to 200 personnel, personnel can be divided into smaller groups to make stream crossings. Even though personnel will be temporally and spatially dispersed, up to 200 personnel can cross an occupied stream outside of hardened areas within the same day. It should be noted that during crossings, marines prefer to stay dry.

CONCLUSION. A small but unquantifiable number of LCT may be impacted during training operations, primarily from disruption of spawning activities, crushing of LCT eggs or fry, and degradation of habitat on Mill, Silver and Wolf Creeks. Foot traffic from multiple small groups (less than 25 personnel) crossing occupied streams during the spawning season (April to July) can affect active spawning activity. Crossing of occupied streams can also displace LCT as fish avoid crossing personnel. Further, foot traffic through spawning areas can destroy redds (spawning nests that are built by LCT in the gravel of streams) either directly or indirectly by way of loss of riparian vegetation along stream banks and/or by increasing sedimentation. In addition, a small but unquantifiable number of LCT would likely experience harassment due to interference with normal life behaviors from training activity impacts. Groups of less than 25

individuals would be allowed to conduct training activities that are not ground disturbing (including bivouacking) within 100 m of LCT habitat. Although the number of LCT that would be impacted cannot be quantified, the implementation of design features (Section 2.1.6) would greatly reduce the potential to harm or harass the species. Therefore, the No-Action Alternative would have less than significant impacts on the LCT.

Sierra Nevada Yellow-Legged Frog

Potential impacts to SNYLF and/or critical habitat from training activities are discussed below. Specific training impacts to SNYLF under the No-Action Alternative are evaluated for: (1) Use of Roads and Trails; (2) Use of LZs/DZs; (3) Live-Fire Ranges; and (4) General Human Presence. Design features for impact minimization and avoidance are also discussed below.

USE OF ROADS AND TRAILS. Approximately 2.8 miles of minor roads on MCMWTC intersect the 25-m buffers of aquatic habitats within approximately 59 acres of SNYLF critical habitat (see Table 3.3-6). In addition, approximately 10.4 miles of minor roads intersect the 100-m buffers of aquatic habitats within approximately 232 acres of SNYLF CARs (see Table 3.3-6). Direct mortality of SNYLF could occur from vehicle collisions. Project area roads where SNYLF could be present nearby include Chango Lake Road, Cloudburst Creek Road, Finley Mine Road, Sierra Street, Ski Lift Connector, Ski Lift Road, Summit Meadows Road, and Wolf Creek Road. Current conservation measures dictate that for roads that pass through federal lands managed by Forest Service and DoD, vehicular and convoy training distances are limited to within 100 ft on each side of the road. Additionally, no driving is conducted within wetlands or meadows except for approved designated locations on Forest Service routes, which are subject to inspection during and following training events. These existing design measures would continue to be implemented under the No-Action Alternative and would continue to reduce the potential impact to SNYLF.

USE OF LZS/DZS. Approximately 126 acres of LZs overlap the 25-m buffers of aquatic habitats in SNYLF critical habitat (see Table 3.3-6). In addition, approximately 205 acres of LZs and DZs overlap the 100-m buffers of aquatic habitats in SNYLF CARs. Locations of known SNYLF occupied habitat primarily occur at Chango Lake (in TA-6) and Wolf Creek Lake (in TA-8). LZs that overlap aquatic, wetland, and meadow habitat occupied by SNYLF and/or occur in CARs or critical habitat can only be used for landings when there is at least 2 ft of snowpack.

Damage to habitat from aircraft could include chemical emissions from overflights, exhaust, and hydraulic fluid leakage from take-offs and landings.

Design features would restrict disturbance activities within 100 m of streams, lakes, ponds, and meadows within critical habitat and known SNYLF locations. Landings would not occur within 100 m buffers of aquatic habitats unless there is a minimum 2 ft of snowpack.

Equipment staging (e.g., tents, generators, vehicles on roads) associated with COCs and RHUs could temporarily degrade habitat; however, occupied breeding habitat would be off-limits to training during the breeding season (1 May to 30 July) and activities involving groups larger than 25 individuals would not occur within 100 m of occupied habitats and within 100 m of water bodies in critical habitat and CARs. Training activities that would occur within these TAs would continue to use the “leave no trace” principle as what is currently conducted under existing conditions. Therefore, long-term degradation of habitat from equipment staging and temporary housing would be avoided by removing all materials and equipment upon completion of the training event.

LIVE-FIRE RANGES. Ranges 600, 601, and 800/801 overlap SNYLF critical habitat for SNYLF (see Table 3.3-6). Increased noise from live-fire training and expelled debris on the ground can cause habitat

avoidance. Potential impacts to SNYLF from habitat avoidance include decreased food intake that could result in reduced reproductive fitness (Steidl and Powell 2006). SNYLF have high site fidelity, hence noise that causes them to flee the area can make them not only vulnerable to reduced fitness from leaving their primary foraging area, but also put them at risk of harm or mortality from predators or other training activities (i.e., foot or vehicle traffic). It is already common practice to collect and remove discarded munitions materials from the ranges following training events to maintain existing conditions of the ground surface; as such, continued implementation of this practice under the No-Action Alternative would reduce habitat degradation impacts. Firing points and targets are in designated locations that have been reviewed and approved by the Forest Service and have been traditionally used for training. They are not in aquatic habitats occupied by SNYLF. Further, groups larger than 25 individuals, as well as the use of explosives, live demo, and small arms, would not occur within 100 m of occupied habitats and within 100 m of water bodies in critical habitat and CARs.

GENERAL HUMAN PRESENCE. Foot traffic through creeks and wetlands can disturb SNYLF populations by way of causing harm or mortality, habitat avoidance, and habitat degradation. Impacts to SNYLF populations would be reduced or avoided by implementing the following design features: (1) no disturbance during breeding which occurs 1 May to 30 July; (2) no concentrated activities (groups larger than 25 individuals) in marshy areas or wetlands located in CARs - minimum 100 m from known SNYLF habitat; and (3) no concentrated or ground disturbing activities within 100 m of occupied habitats and within 100 m of water bodies in critical habitat.

SNYLF have been observed along Silver Creek. Impacts to SNYLF and SNYLF critical habitat in Silver Creek could result from personnel walking through the shallow areas of this creek and potentially degrading SNYLF habitat. Although the number of creek crossings annually by groups is variable (approximate representative size of 6 events per year, average of 800 personnel per event), the crossings would be temporally and spatially dispersed such that recurring impacts would not be significant. The LCT design feature that limits wading or walking up and downstream within the stream channel (in LCT occupied streams) will also limit impacts to SNYLF.

Although there is a small group stream crossing limitation (less than 25 personnel) during exercises involving up to 200 personnel, personnel can be divided into smaller groups to make stream crossings. Even though personnel would be temporally and spatially dispersed, up to 200 personnel can cross an occupied stream outside of hardened areas within the same day. It should be noted that during crossings, marines prefer to stay dry.

The total area of SNYLF designated critical habitat is 1,082,147 acres (USFWS 2016c). Of this total, approximately 9,191 acres (0.85%) that are part of Critical Habitat Unit 2, Subunit 2H (Wells Peak) are within the MCMWTC training area. Figure 3.3-5 shows the areas that are within a 25-m buffer of the aquatic habitat features that comprise PCEs, amounting to approximately 1,421 acres within the project action area, including 2.8 miles of roads (see Table 3.3-6).

Training activities could potentially cause temporary disturbances to the following PCEs as described above: (1) aquatic habitat for breeding and rearing; (2) aquatic nonbreeding habitat (including overwintering habitat); and (3) upland areas (within 82 ft from bank or shoreline for streams and within 984 ft between proximate water bodies) of adjacent breeding and nonbreeding aquatic habitat. However, implementation of current conservation measures and design features (Section 2.1.6) as described above would reduce or eliminate potential direct and indirect impacts to critical habitat.

CONCLUSION. As discussed above, a small but unquantifiable number of SNYLF may be injured or killed from vehicle collisions and stream crossings. In addition, a small but unquantifiable number of SNYLF

would likely experience harassment due to interference with normal life behaviors from training activities. Groups of less than 25 individuals would be allowed to conduct training activities that are not ground disturbing (including bivouacking) within 100 m of SNYLF habitat. SNYLF habitat would largely be protected under existing design features, but continued training would likely impart minor impacts on SNYLF habitat from foot traffic and stream crossings. Suitable habitat for SNYLF may be present in areas outside of designated critical habitat where design features do not apply. Although the number of SNYLF that would be impacted cannot be quantified, the implementation of current design features (Section 2.1.6) that protect CARs, occupied habitats, and breeding areas would greatly reduce the potential to harm or harass the species within known population areas and areas with designated critical habitat. Therefore, the No-Action Alternative would have less than significant impacts on the SNYLF.

No new areas are proposed for training use under the No-Action Alternative and continued use of current areas would not cause any material degradation of SNYLF critical habitat over existing conditions, or prevent recovery of the species. As such, the No-Action Alternative may affect, but is not likely to adversely affect SNYLF critical habitat.

Yosemite Toad

Potential impacts to YT and/or critical habitat from training activities are discussed below. Specific training impacts to YT under the No-Action Alternative are evaluated for: (1) Use of Roads and Trails; (2) Use of LZs/DZs; (3) Live-Fire Ranges; and (4) General Human Presence. Design features for impact avoidance are also discussed below.

USE OF ROADS AND TRAILS. Approximately 0.01 mile of minor roads on MCMWTC intersect known occupied breeding habitat within approximately 2.1 acres of YT critical habitat, and approximately 4.1 miles of minor roads intersect the 0.78-mile upland buffers of known occupied breeding habitat within approximately 88 acres of YT critical habitat (see Table 3.3-6). In addition, approximately 0.9 miles of minor roads intersect the 100-m buffers of aquatic habitats within approximately 17 acres of YT CARs (see Table 3.3-6). Direct mortality of YT could occur from vehicle collisions. Current conservation measures dictate that for roads that pass through federal lands managed by Forest Service and DoD, vehicular and convoy training distances are limited to within 100 ft on each side of the road. Additionally, no driving is conducted within wetlands or meadows except for approved designated locations on Forest Service routes, which are subject to inspection during and following training events. These existing design measures would continue to be implemented under the No-Action Alternative and would continue to reduce the potential impact to YTs.

Snow compaction from snowmobile use, foot traffic, and other training has been shown to alter habitat quality in the subnivean (below snow) zone (Keddy et al. 1979), which is important habitat for overwintering Yosemite toads. Compaction can alter temperatures below the snow, kill and/or injure small animals below the snow, and alter below snow populations (Jarvinen and Schmid 1971, Keddy et al. 1979). However, activities involving groups larger than 25 individuals or ground disturbing activities within 100 meters of streams, lakes, or meadows occupied by YT or within proposed or designated critical habitat are prohibited.

USE OF LZS/DZS. Approximately 5 acres of LZs overlap known occupied breeding habitats within YT critical habitat, and approximately 100 acres of LZs intersect the 0.78-mile upland buffers of known occupied breeding habitat within YT critical habitat (see Table 3.3-6). In addition, approximately 28 acres of LZs overlap the 100-m buffers of aquatic habitats in YT CARs.

Damage to habitat from aircraft could include chemical emissions from overflights, exhaust, and hydraulic fluid leakage from take-offs and landings. Design features would restrict disturbance activities within 100 m of streams, lakes, ponds, meadows, and wetlands within critical habitat and known locations of YT.

Equipment staging (e.g., tents, generators, vehicles on roads) associated with COCs and RHUs could temporarily degrade habitat; however, occupied breeding habitat would be off-limits to training during the breeding season (1 May to 30 July) and activities involving groups larger than 25 individuals would be not occur within 100 m of occupied habitats and within 100 m of water bodies in critical habitat and CARs. Training activities that would occur within these TAs would continue to use the “leave no trace” principle as what is currently conducted under existing conditions for the Koenig Lake CAR. Therefore, long-term degradation of habitat from equipment staging and temporary housing would be avoided by removing all materials and equipment upon completion of the training event.

LIVE-FIRE RANGES. Ranges AIS-2, AIS-3, 1000 AIS-1, 1100, and 1101 overlap YT critical habitat for YT (see Table 3.3-6). Potential impacts to YTs would be from noise and habitat disturbance from small arms use as well as live demo and explosive use during avalanche initiation training at the AIS ranges that contain occupied YT habitat. Noise and discarded munitions can cause habitat avoidance as well as degrade YT habitat. Implementation of the design feature for noise disturbance from May 1 to July 30 when breeding occurs, would reduce potential impacts. Noise is not expected to increase and would be similar to historic levels. It is already common practice to collect and remove discarded munitions materials from the ranges following training events to maintain existing conditions of the ground surface; as such, continued implementation of this practice would reduce habitat degradation impacts. Firing points and targets are in designated locations that have been reviewed and approved by the Forest Service and have been traditionally used for training. They are not in aquatic habitats occupied by YT. Further, groups larger than 25 individuals, as well as the use of explosives, live demo, and small arms, would not occur within 100 m of occupied habitats and within 100 m of water bodies in critical habitat and CARs.

GENERAL HUMAN PRESENCE. Noise and associated vibrations generated during training activities could potentially disturb overwintering YTs. However, due to the lack of further research into this type of disturbance, potential significance of this impact from training activities cannot be determined at this time.

YTs spend a majority of their life within upland habitats and thus are more exposed to direct impacts from training activities. However, no disturbance would occur in occupied habitat during the breeding season (1 May to 30 July), because training activities would not occur in known occupied YT habitat during the breeding season. Also, because YT overwinter in mammal burrows (predominantly rodent burrows), willow thickets, under boulders and logs, and underground, they would be out of direct contact with personnel and thus impacts from trampling are not likely to occur during winter use.

The total area of YT designated critical habitat is 750,926 acres (USFWS 2016c). Of this total, approximately 8,291 acres (1.1%) that are part of Critical Habitat Unit 2 (Leavitt Lake/Emigrant) are within the MCMWTC training area. Figure 3.3-6 shows the areas that are within a 0.78-mile buffer of known breeding habitat (breeding ponds) that comprise PCEs, amounting to approximately 3,703.5 acres within the project action area, including 4.1 miles of roads (see Table 3.3-6).

Noise disturbance from training activities would cause temporary disturbances to the following PCEs: (1) Aquatic breeding habitat to include bodies of fresh water, including wet meadows, slow-moving streams, shallow ponds, spring systems, and that are typically inundated during snowmelt, holding water for a minimum of 5 weeks, and contain sufficient food for tadpole development; and (2) Upland area habitat consisting of areas adjacent to or surrounding breeding habitat up to a distance of 0.78 mi, includes seeps, springheads, and provides sufficient cover, foraging habitat, prey resources, physical structure predator

avoidance, overwintering refugia and dispersal corridors. Required mitigation under the existing permits only allows RHUs on 2 ft of snowpack or more, does not allow RHUs within meadows or wetlands, and requires site monitoring and analysis for damage. These existing mitigation requirements would reduce impacts to YT and their habitat. In addition, the “Leave No Trace” backcountry principles would ensure no long-term impacts to critical habitat within training areas.

CONCLUSION. A small but unquantifiable number of YT may be injured, killed, and/or harassed during training operations, primarily from low likelihood of snow compaction from foot and vehicle traffic and noise from aircraft use and training exercises during winter training in TAs 10 and 11. Suitable habitat for YT may be present in areas outside of designated critical habitat where design features do not apply. Although the number of YTs that would be impacted cannot be quantified, the implementation of current design features (Section 2.1.6) that protect CARs, occupied habitats, and breeding areas would greatly reduce the potential to harm or harass the species within known population areas and areas with designated critical habitat. Therefore, the No-Action Alternative would have less than significant impacts on the YT.

No training activities or exercises that include overland foot travel would occur within 100 m of occupied YT habitat in TAs 9, 10, and 11, regardless of season. However, because the design feature only extends 100 m beyond occupied YT habitat, disturbance to YT critical habitat from training activities (e.g., more than 25 personnel, vehicle use) within 0.78 miles of YT breeding ponds is anticipated. However, because of the dispersed nature of training activities in upland areas of YT critical habitat, the No-Action Alternative would have less than significant impacts on YT critical habitat.

Webber's Ivesia

Webber's ivesia is not known or likely to occur in the project areas. Therefore, the No-Action Alternative would have no impact on the species or its management on the Bridgeport Ranger District.

Whitebark Pine

Whitebark pine is one of the dominant species of the subalpine conifer community; therefore, the acreage of that community provides a fair estimate of potential habitat for the species. For both alternatives, 416 acres of subalpine conifer vegetation would be subject to actions analyzed in this EA (see Table 3.3-2).

Under the No-Action Alternative, no whitebark pines would be cut or removed and there would be minimal activity in areas where this species is found. Therefore, there would be no anticipated direct impacts to this species. As discussed in Section 3.3.3.4, rotary-wing aircraft and certain training events increase the likelihood of fire ignition that could impact forest species. Fires occur naturally, although at low frequencies, in whitebark pine habitats due to lightning strikes, and stand regeneration depends upon small, patchy fires that are not too severe. The likelihood that a human-caused fire would spread to a significant extent in a stand of whitebark pine in the project area is very low because of discontinuous canopies and sparse understory fuels (Fryer 2002). As a result, it is not expected that activities under the current SUPs would have any negative effects related to fire.

Training activities could potentially affect the behavior of Clark's nutcrackers, thereby altering the seed dispersal of whitebark pine. However, since training activities are widely dispersed and temporary in subalpine woodlands, any displaced birds would be expected to return and resume foraging within a short time. As such, no effects on seed dispersal or future regeneration would be expected.

Therefore, the No-Action Alternative would have less than significant impacts on whitebark pine.

Other Special Status Species

All special status species potentially occurring in the project area are analyzed in detail in the Specialist's Report (USMC and Forest Service 2016). Impacts to special status species would be similar to the potential impacts discussed in Section 3.3.3. Other special status wildlife species habitats that would potentially be impacted by both alternatives are provided in Tables 3.3-10 and 3.3-11.

Table 3.3-10. Non-federally Listed Special Status Wildlife Species Determinations

<i>Species</i>	<i>No-Action Alternative</i>	<i>Proposed Action</i>
FOREST SERVICE SENSITIVE SPECIES		
Fisher west coast population (<i>Martes pennanti</i>)	No effect	No effect
Greater sage-grouse bi-state population (<i>Centrocercus urophasianus</i>)	Less than significant impacts	Less than significant impacts
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Less than significant impacts	Less than significant impacts
Peregrine falcon (<i>Falco peregrinus</i>)	No effect	No effect
Northern goshawk (<i>Accipiter gentilis</i>)	Less than significant impacts	Less than significant impacts
Flammulated owl (<i>Otus flammeolus</i>)	Less than significant impacts	Less than significant impacts
California spotted owl (<i>Strix occidentalis occidentalis</i>)	Less than significant impacts	Less than significant impacts
Great gray owl (<i>Strix nebulosa</i>)	No effect	No effect
Mountain quail (<i>Oreortyx pictus</i>)	Less than significant impacts	Less than significant impacts
White-headed woodpecker (<i>Picoides albolarvatus</i>)	Less than significant impacts	Less than significant impacts
Spotted bat (<i>Euderma maculatum</i>)	No effect	No effect
Townsend's big-eared bat (<i>Plecotus townsendii townsendii</i>)	Less than significant impacts	Less than significant impacts
Pygmy rabbit (<i>Brachylagus idahoensis</i>)	No effect	No effect
Desert bighorn sheep (<i>Ovis canadensis nelsoni</i>)	No effect	No effect
HTNF MANAGEMENT INDICATOR SPECIES		
Hairy woodpecker (<i>Picoides villosus</i>)	Less than significant impacts	Less than significant impacts
Williamson's sapsucker, (<i>Sphyrapicus thyroideus</i>)	Less than significant impacts	Less than significant impacts
Yellow warbler (<i>Dendroica petechia</i>)	Less than significant impacts	Less than significant impacts
Yellow-rumped warbler (<i>Dendroica coronata</i>)	Less than significant impacts	Less than significant impacts
Mule deer (<i>Odocoileus hemionus</i>)	Less than significant impacts	Less than significant impacts
American marten (<i>Martes americana</i>)	Less than significant impacts	Less than significant impacts
Benthic macroinvertebrates	Less than significant impacts	Less than significant impacts

Table 3.3-10. Non-federally Listed Special Status Wildlife Species Determinations

<i>Species</i>	<i>No-Action Alternative</i>	<i>Proposed Action</i>
FOREST SERVICE SPECIES OF INTEREST		
Willow flycatcher (<i>Empidonax traillii</i>)	Less than significant impacts	Less than significant impacts
Pronghorn (<i>Antilocapra americana</i>)	No effect	No effect
American pika (<i>Ochotona princeps</i>)	Less than significant impacts	Less than significant impacts
Mount Lyell salamander (<i>Hydromantes platycephalus</i>)	No effect	No effect

Notes: No effect = No impact on the species or its management on the Bridgeport Ranger District
 Less than significant impacts = May impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species
 HTNF = Humboldt-Toiyabe National Forest

Table 3.3-11. Non-federally Listed Special Status Plant Species Determinations

<i>Species</i>	<i>No-Action Alternative</i>	<i>Proposed Action</i>
FOREST SERVICE SENSITIVE SPECIES		
Long Valley milkvetch (<i>Astragalus johannis-howellii</i>)	Less than significant impacts	Less than significant impacts
Lavin's milkvetch (<i>Astragalus oophorus</i> var. <i>lavinii</i>)	Less than significant impacts	Less than significant impacts
Bodie Hills rockcress (<i>Boechera bodiensis</i>)	Less than significant impacts	Less than significant impacts
Tiehm's rockcress (<i>Boechera tiehmii</i>)	No effect	No effect
Upswept moonwort (<i>Botrychium ascendens</i>)	Less than significant impacts	Less than significant impacts
Dainty moonwort (<i>Botrychium crenulatum</i>)	Less than significant impacts	Less than significant impacts
Slender moonwort (<i>Botrychium lineare</i>)	Less than significant impacts	Less than significant impacts
Tunux moonwort (<i>Botrychium tunux</i>)	Less than significant impacts	Less than significant impacts
Tioga Pass sedge (<i>Carex tiogana</i>)	No effect	No effect
Bodie Hills draba (<i>Cusickiella quadricostata</i>)	Less than significant impacts	Less than significant impacts
Star draba (<i>Draba asterophora</i> var. <i>asterophora</i>)	Less than significant impacts	Less than significant impacts
Three-ranked hump moss (<i>Meesia triquetra</i>)	No effect	No effect
Shevock's rockmoss (<i>Orthotrichum shevockii</i>)	No effect	No effect
Spjut's bristle-moss (<i>Orthotrichum spjutii</i>)	No effect	No effect
Wassuk beardtongue (<i>Penstemon rubicundus</i>)	Less than significant impacts	Less than significant impacts

Table 3.3-11. Non-federally Listed Special Status Plant Species Determinations

<i>Species</i>	<i>No-Action Alternative</i>	<i>Proposed Action</i>
Mono phacelia (<i>Phacelia monoensis</i>)	No effect	No effect
Clustered popcorn flower (<i>Plagiobothrys glomeratus</i>)	No effect	No effect
Marsh's bluegrass (<i>Poa abbreviata</i> ssp. <i>marshii</i>)	No effect	No effect
White Mountain skypilot (<i>Polemonium chartaceum</i>)	Less than significant impacts	Less than significant impacts
Williams combleaf (<i>Polycytenium williamsiae</i>)	No effect	No effect
Mono ragwort (<i>Senecio pattersonensis</i>)	No effect	No effect
Masonic Mountain jewelflower (<i>Streptanthus oliganthus</i>)	Less than significant impacts	Less than significant impacts
OTHER SPECIAL STATUS PLANT SPECIES		
Subalpine cryptantha (<i>Cryptantha crymophila</i>)	Less than significant impacts	Less than significant impacts
Sweetwater cryptantha (<i>Cryptantha ursina</i> [pending])	Less than significant impacts	Less than significant impacts
Subalpine fireweed (<i>Epilobium howellii</i>)	No effect	No effect
Beatley buckwheat (<i>Eriogonum rosense</i> var. <i>beatleyae</i>)	No effect	No effect
Yellow goodmania (<i>Goodmania luteola</i>)	No effect	No effect
Long-petaled lewisia (<i>Lewisia longipetala</i>)	No effect	No effect
Nevada suncup (<i>Eremothera nevadensis</i>)	Less than significant impacts	Less than significant impacts
Alpine dustymaiden (<i>Chaenactis douglasii</i> var. <i>alpina</i>)	Less than significant impacts	Less than significant impacts
Sand cholla (<i>Grusonia pulchella</i>)	Less than significant impacts	Less than significant impacts

Notes: No effect = No impact on the species or its management on the Bridgeport Ranger District

Less than significant impacts = May impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species

Special status wildlife species would be subject to impacts from use of training corridors, roads, and trails (e.g., mortality from collisions, modification of behavior, and fragmentation of habitat), use of live-fire ranges and training activities (e.g., visual and auditory disturbances, incidental injury or death by direct hit from gunfire or aircraft, habitat modification or loss), and general human presence. Determinations for non-federally listed special status wildlife species analyzed in the Specialist's Report (USMC and Forest Service 2016) are provided in Table 3.3-10.

Special status plant species would potentially be subject to impacts from use of training corridors, roads, and trails (e.g., shifts in plant species composition and habitat properties, increased dispersal of non-native species, altered biotic interactions and population dynamics), use of live-fire ranges and training activities (e.g., small areas of disturbance by rounds and target maintenance, vegetation disturbance from LZ/DZ use), and trampling from foot-traffic. Determinations for non-federally listed special status plant species analyzed in the Specialist's Report (USMC and Forest Service 2016) are provided in Table 3.3-11.

Design features in Section 2.1.6, as well as current measures and restrictions in the 40-year SUP, provide protection to special status plant and wildlife species and their populations. As analyzed in the Specialist's Report (USMC and Forest Service 2016), although individuals of given special status species would potentially be impacted by the No-Action Alternative, no population of special status species would be adversely affected and impacts to special status species would be less than significant.

3.3.4.2 Proposed Action

Plant Communities

Impacts to plant communities from the Proposed Action would be similar to those from the No-Action Alternative.

Over the course of the 40-year SUP, impacts associated with use of LZs, including damage/removal of vegetation and topsoil disturbance, are likely to be greater under the Proposed Action, as downdraft (and outwash) from the MV-22 would be greater than from other aircraft at a given height above the ground. However, these effects would continue to be localized and would diminish with distance from landing/take-off sites. In addition, the exhaust of the MV-22 typically reaches higher temperatures than other rotary-wing aircraft. However, under normal operations with engine exhaust deflectors operating, the exhaust of the MV-22 should not heat the ground to a temperature high enough to support combustion of plant based materials such as dry grasses (USMC and Forest Service 2013). Although the Proposed Action would entail changes to the current use of training corridors, roads, and live-fire ranges, there would be no qualitative difference to how these training components are currently used. Implementation of design features in Section 2.2.5.2 would help to minimize and/or avoid impacts to plant communities by limiting where aircraft can land and by buffering and limiting activities in and around known rare plant populations. Additionally, measures to avoid impacts to aquatic habitats and off-road areas as stipulated in Sections 2.2.5.3 and 2.2.5.7 would help to minimize and/or avoid impacts to plant communities, similar to current design features approved under the AOP for the 40-year SUP. Therefore impacts to plant communities under the Proposed Action would be less than significant.

Invasive Plants

As with the No-Action Alternative, training exercises have the potential to introduce and spread invasive species among all training areas and training corridors. Existing permit restrictions require that all vehicles be power-washed before use and the use of certified weed-free animal feed for pack animals to prevent the spread of invasive plants through animal droppings. These measures would be continued under the Proposed Action.

To avoid introduction of new weeds, a weed management and abatement plan would be developed and implemented for the MCMWTC training areas. The initial emphasis would be on control and abatement measures in documented noxious weed occurrence areas and development of procedures to prevent spread of invasive species. The existing requirement for washing vehicles would be finalized in this plan through a rigorous, formalized, and written required procedure to ensure implementation and effectiveness. The plan would be consistent with the Forest Service noxious weed programs, the Regional Noxious Weed Strategy (Forest Service 2000), and any specific HTNF noxious weed procedures. The provisions of EO 13112 (*Invasive Species*) would, therefore, be met. With implementation of these measures under the Proposed Action, the potential to introduce invasive species is considered to be low. Therefore, impacts from invasive plants would not be significant.

Aquatic Habitats

Design features in Sections 2.2.5.3 and 2.2.5.7 would protect aquatic habitats from any significant impacts by limiting and/or prohibiting training, driving, and waste disposal in and around aquatic habitats. Over the course of the 40-year SUP, proposed design features would provide ample protection to all aquatic habitats, including CARs and RCAs. Potential impacts to aquatic habitats would include sporadic foot-traffic and vehicular crossings at specified, recurring locations along Forest Service roads and trails. Under the Proposed Action, the nine goals of the AMS (refer to Section 3.3.2.3) for the management of watershed processes and functions, habitats, attributes, and populations within the SNFPA (Forest Service 2004a) would not be impacted. Therefore, impacts to aquatic habitats would be less than significant.

Wildlife

As with the No-Action Alternative, impacts to all wildlife species under the Proposed Action would be similar to the potential impacts discussed in Section 3.3.3 and to those that would occur to special status species as discussed in the following section. Over the course of the 40-year SUP, training and operations at the MCMWTC would incorporate design features (Section 2.2.5) that were developed by the USMC and Forest Service and that are based on applicable terms and conditions and avoidance and minimization measures from previous coordination with the USFWS to avoid and/or minimize impacts to wildlife species. Specifically, design features in Section 2.2.5.1 that would provide protections to sensitive wildlife species such as buffers around breeding sites, LOPs, and nesting and breeding surveys, would also provide protections to non-sensitive wildlife species. Therefore, the Proposed Action could impact individuals, but would not impact the viability of populations and would have less than significant impacts on wildlife.

Special Status Species

Federally Listed Species

Sierra Nevada Bighorn Sheep

The Sierra Nevada bighorn sheep is not known or likely to occur in the project area. Therefore, the Proposed Action would have no effect on the species or its management on the Bridgeport Ranger District.

Sierra Nevada Red Fox, Sierra Nevada DPS

Potential impacts to the Sierra Nevada red fox, Sierra Nevada DPS from training activities are discussed below. Specific training impacts to the Sierra Nevada red fox are evaluated for: (1) Use of Roads and Trails; (2) Use of LZs/DZs; (3) Live Fire Ranges; and (4) General Human Presence. Proposed design features for impact minimization and avoidance are also discussed below.

USE OF ROADS AND TRAILS. Impacts to the Sierra Nevada red fox would be similar to those described in Section 3.3.3.1. Potential impacts to Sierra Nevada red fox could be direct (e.g., mortality from collisions, noise and visual disturbance) and indirect (e.g., modification of everyday behavior from disturbances and fragmentation of habitat). However, roads and trails in the project area are currently used for training and by the public for recreation, and the Proposed Action would not increase the density of roads on the Bridgeport Ranger District. The intensity of use by the MCMWTC is expected to remain within average recent use levels. In addition, no off-road driving would occur, and because of the relatively slow speeds of vehicles on dirt training roads, the likelihood of a training vehicle hitting a Sierra Nevada red fox is negligible.

Sierra Nevada red foxes would respond to vehicular and human disturbance much like other mammalian species with accelerated heart rates and metabolic function, resulting in energetic costs, impacts to behavior

and fitness, and avoidance of otherwise suitable habitat (Taylor and Knight 2003). As described in Section 3.3.3.1, the roads and trails subject to use by the MCMWTC have been established for many years, such that wildlife have likely adjusted in response to the presence of open habitat and occasional traffic along these corridors. In any case, continuing use of these transportation corridors would not alter Sierra Nevada red fox use of habitats in the vicinity.

Use of roads and trails could potentially impact Sierra Nevada red fox habitat by changing soil and habitat properties, increasing the dispersal of non-native and invasive plant species, and by altering biotic interactions and population dynamics (Avon et al. 2013). However, the use of existing roads and the continuing prohibition of off-road vehicle use – other than over-the-snow travel – reduces the potential effects of MCMWTC use of roads on Sierra Nevada red fox habitat.

USE OF LZS/DZS. Use of LZs and DZs would potentially cause noise and visual disturbance to Sierra Nevada red foxes as described in Section 3.3.3.4. While some mammal species appear to habituate (become accustomed to and react less strongly over time) to repetitive noises better than other species (Conomy et al. 1998, Krausman et al. 1996), the likelihood of habituation by Sierra Nevada red foxes on the Bridgeport Ranger District with respect to rotary-wing aircraft activity is not predictable. As described in Section 3.3.3.4, Sierra Nevada red foxes in the vicinity of LZs and DZs that have been frequently and regularly used are not expected to react as strongly to aircraft operations, whereas individuals without the same history of exposure are expected to react strongly.

As discussed in Section 3.3.3.4, use of LZs for rotary-wing and tilt-rotor aircraft training would result in the temporary disturbance of loose surface debris, soil, and/or snow caused by downdraft and outwash from moving rotors (collectively known as rotor wash) in the vicinity of take-offs, landings, and near-surface hovering, potentially resulting in an indirect impact to vegetation and soils. At take-off and landing sites, rotor wash underneath rotary aircraft, especially MV-22s, can be expected to damage or remove upright-branching vegetation, blow away topsoil and snow, and flush wildlife in the immediate vicinity (Marine Corps Installations West 2013). Effects related to rotor wash and noise from rotary-wing aircraft would diminish with distance from the source. Exposure to elevated noise levels would generally be localized around the actual LZs/DZs where landings, take-offs, and low-level hovering would occur but diminish further away from the sites. However, all LZs at MCMWTC are currently used for training purposes and the effects would be localized within the landing points of the LZs.

Design features in Section 2.2.5.1 would limit use of any LZ within 100 m of a Sierra Nevada red fox den site during the LOP. In addition, per the monitoring and adaptive management specified in the Proposed Action, if the forest carnivore specialist can extend the buffer distance if it is deemed necessary.

LIVE-FIRE RANGES. Use of live-fire ranges could produce visual and auditory disturbances that may impact Sierra Nevada red foxes in the immediate vicinity of ranges, possibly causing individuals to flush or leave the area. However, it is expected that any Sierra Nevada red foxes that might be temporarily flushed from areas during live-fire would return upon completion of training activities. Live-firing is conducted within discreet areas and is directed at targets. Therefore, the likelihood of individual Sierra Nevada red foxes being directly harmed or killed by live-fire is negligible.

GENERAL HUMAN PRESENCE. Wildlife responses to human presence are highly varied; however, nearly all species will avoid human presence and/or alter their behavior because of human-induced visual or auditory disturbance (Gill et al. 2001, Li et al. 2011). The Sierra Nevada red fox is a secretive and furtive animal that would naturally avoid human presence, unless it becomes habituated to human food. Design features in Section 2.2.5.1 would require that all troops use mammal-proof canisters for food storage and that all waste be removed from training areas.

Other than over-the-snow use of snowmobiles during winter, no off-road vehicle use would be permitted; however, foot traffic associated with military training can impact plant communities and topsoil by causing compaction, decreased infiltration, and decreased plant biomass and litter (Whitcotton et al. 2000). Potential impacts to Sierra Nevada red fox habitat from foot traffic would be similar to those discussed in Section 3.3.3.5. Training exercises would be geographically and temporally spaced, and with design features in place to limit the number of troops involved in training exercises at one time, impacts associated with foot traffic would be minimized.

CONCLUSION. Under the Proposed Action, approximately 11,289 acres of potential Sierra Nevada red fox habitat would be exposed to MCMWTC training activities (ground and air) (Table 3.3-6).

The Sierra Nevada red fox has been recently documented by the Forest Service and during project-specific surveys within MCMWTC south of Highway 108. USMC training already occurs in these areas and no new areas would be exposed to training impacts. Individual Sierra Nevada red foxes could be exposed to the potential impacts discussed in Sections 3.3.3.1 through 3.3.3.5. To minimize impacts, design features require measures to prevent habituation to human food, education for marines on the species and requirements for food storage, and no activities from January 1 to June 30 within 100 m of den sites.

Under the Proposed Action, MV-22 use would be authorized in areas that overlap the species' habitat. However, LZs and DZs that occur within the species' habitat are already used for rotary-wing aircraft training, and impacts to mammal species from the MV-22 would not be significantly different than those from other rotary-wing aircraft. Implementation of design features in Section 2.2.5.15 would provide a means to adapt when monitoring indicates the presence of species and undesirable impacts to those species. By employing the adaptive management approach described in Section 2.2.5.15, the USMC and Forest Service would be able to adjust actions related to specific exercises to continue to minimize and avoid adverse impacts to wildlife species. Surveys for and monitoring of potential impacts to the Sierra Nevada red fox would be conducted by a biologist using methods agreed upon by the USMC, Forest Service, and USFWS. If monitoring indicates that Sierra Nevada red fox are active/denning in areas where they could experience impacts from training activities, design features such as LOPs and den buffers would be implemented to reduce potential impacts (Section 2.2.5.1). If monitoring indicates impacts to the Sierra Nevada red fox from training activities, additional mitigation measures may be applied as part of adaptive management (Section 2.2.5.15). Therefore, the Proposed Action would have less than significant impacts on the Sierra Nevada red fox, Sierra Nevada DPS over the course of the 40-year SUP.

North American Wolverine

The wolverine is not known or likely to occur in the project area. Therefore, the Proposed Action would have no effect on the species or its management on the Bridgeport Ranger District.

Lahontan Cutthroat Trout

Potential impacts to LCT from training activities are discussed below. Specific training impacts to LCT under the Proposed Action are evaluated for: (1) Use of Roads and Trails; (2) Use of LZs/DZs; (3) Live-Fire Ranges; (4) General Human Presence; and (5) Temporary River/Stream Crossings. Proposed design features for impact minimization and avoidance are also discussed below.

Impacts to LCT from the Proposed Action would be nearly identical to those under the No-Action Alternative. Any differences are summarized below.

USE OF ROADS AND TRAILS.

Potential impacts to LCT include disruption of spawning activities, crushing of LCT eggs or fry, and degradation of habitat. Foot traffic through occupied streams during the spawning season (April to July) can affect active spawning activity. Further, foot traffic through spawning areas can destroy redds (spawning nests that are built by LCT in the gravel of streams) either directly or indirectly by way of loss of riparian vegetation along stream banks and/or by increasing sedimentation.

Potential impacts to occupied LCT streams could be from fuel releases or hazardous or waste material releases from motor transport vehicles. However, live stream crossings are not permitted within LCT-occupied streams and design features in place restrict any ground disturbing activities within 100 m of occupied LCT streams. This design feature would reduce potential erosion or possible hazardous waste material from entering occupied streams.

USE OF LZS/DZS. Under the Proposed Action, the same LZs and DZs would be utilized as under the No-Action Alternative. The primary difference is that, under the Proposed Action, MV-22 training would occur at certain LZs and DZs. Impacts associated with downdraft, such as increased disturbance of vegetation and topsoil that could potentially affect the turbidity of nearby streams would be greater from the MV-22 than from other rotary-wing aircraft. Occupied stream segments occur in LZs Condor, Crow, Osprey, Owl, and Penguin, as well as the Pickel Meadow DZ (see Table 3-2). However, rotary-wing and tilt-rotor aircraft would not land in streams and design features would restrict disturbance activities, including the landing of aircraft, within 100 m of LCT-occupied streams, thereby reducing potential impacts associated with downdraft (LCT flight from noise or vibrations) from aircraft..

LIVE-FIRE RANGES. Impacts to LCT from the use of live-fire ranges under the Proposed Action would be nearly identical to those under the No-Action Alternative.

GENERAL HUMAN PRESENCE.

Groups of less than 25 individuals would be allowed to conduct training activities that are not ground disturbing (including bivouacking) within 100 m of LCT habitat. Larger groups (25 or more personnel) would only be allowed to be within 100 m of LCT habitat for the temporary placement of bridges for JAB and MGB exercises, and group stream crossings at bridges and culverts. Impacts to LCT occupied creeks and those containing potential habitat could result from personnel walking through the shallow areas of these creeks and potentially degrading LCT habitat. Additionally, during the Sonora Rope Bridge crossing events, safety swimmers would be in the water to get the ropes across the river and for safety purposes. However, the swimmers would avoid walking up and downstream in the river channel. Although the number of creek crossings annually by groups is variable (approximate representative size of 6 events per year, average of 800 personnel per event), the crossings would be temporally and spatially dispersed such that recurring impacts would not be significant. In addition, personnel foot-traffic could increase erosion along and adjacent to stream banks, thereby impacting LCT habitat.

By implementing the following design features: 1) no wading or walking up and downstream within the stream channel in LCT occupied streams; 2) stream crossings would be restricted to one location for small groups (less than 25 personnel) and larger groups would only cross occupied streams at bridges and existing roads and trails; 3) activities involving groups larger than 25 individuals, bivouacking, or ground disturbing activities would be restricted within 100 m of occupied LCT streams, except for temporary placement of bridges for JAB and MGB exercises and group stream crossings at hardened areas that are bridged or culverted; 4) deployment of the MGB in Mill, Silver, and Wolf Creeks is limited to one (1) two-day event per stream every three years; and, 5) the MGB would not be deployed between 1 April to 30 July during LCT spawning activities, direct impacts to LCT would be reduced or avoided. However, even with the design features foot traffic from multiple small group crossings would potentially impact LCT and stream

habitats and/or spawning activities in occupied streams. Although design features associated with MGB deployment reduce the likelihood of impacts to LCT and LCT habitats (particularly during the spawning season), direct and indirect impacts will not completely be eliminated.

Although there is a small group stream crossing limitation (less than 25 personnel), during exercises involving up to 200 personnel, personnel can be divided into smaller groups to make stream crossings. Even though personnel would be temporally and spatially dispersed, up to 200 personnel can cross an occupied stream outside of hardened areas within the same day. During these times, if LCT are present they could be displaced from their habitat. If the event occurs during the spawning season, redds could be destroyed or potentially abandoned. It should be noted that during crossings, marines prefer to stay dry.

TEMPORARY RIVER/STREAM CROSSINGS. Temporary bridge (JAB and MGB) deployment over specific areas along West Walker River, Silver Creek, Mill Creek, Wolf Creek, and Lost Cannon Creek would allow for temporary creek crossings. LCT have been documented in Silver Creek, Mill Creek, and Wolf Creek, and CDFW stocks LCT in the West Walker River (CDFW 2014a). The JAB/MGB temporary river/stream crossings would entail one and two events per year, respectively, and include as many as 40 personnel. Deployment of the MGB in Mill, Silver, and Wolf Creeks is limited to one (1) two-day event per stream every three years, and the MGB would not be deployed between 1 April to 30 July during LCT spawning activities. JAB training would require no personnel to enter the water. Temporary assembly of the MGB would require a small number of personnel to move through the stream channel along the outer perimeter of the bridge for setup and disassembly of the bridge pieces. Additionally, during the Sonora Rope Bridge crossing events, safety swimmers would be in the water to get the ropes across the river and for safety purposes. During these times, if LCT are present they could be displaced from their habitat. Personnel in the water would cause increased sedimentation and turbidity, however, such impact would be brief and temporary. Additionally, deployment of the MGB in Mill, Silver, and Wolf Creeks would be limited to one (1) two-day event per stream every three years, and the MGB would not be deployed between 1 April to 30 July during LCT spawning activities. No direct impacts to LCT would occur from temporary bridge deployment and impacts to their habitat (i.e., increased sedimentation) would be brief and infrequent.

CONCLUSION. A small but unquantifiable number of LCT may be impacted during training operations, primarily from disruption of spawning activities, crushing of LCT eggs or fry, and degradation of habitat on Mill, Silver and Wolf Creeks. Foot traffic from multiple small groups (less than 25 personnel) crossing occupied streams during the spawning season (April to July) can affect active spawning activity; the MGB would not be deployed between 1 April to 30 July. Crossing of occupied streams can also displace LCT as fish avoid crossing personnel. Further, foot traffic through spawning areas can destroy redds (spawning nests that are built by LCT in the gravel of streams) either directly or indirectly by way of loss of riparian vegetation along stream banks and/or by increasing sedimentation. In addition, a small but unquantifiable number of LCT would likely experience harassment due to interference with normal life behaviors from training activity impacts. Groups of less than 25 individuals would be allowed to conduct training activities that are not ground disturbing (including bivouacking) within 100 m of LCT habitat. Although design feature limit impacts from MGB deployment, LCT could be displaced by personnel wading through occupied LCT habitat.

Although the number of LCT that would be impacted cannot be quantified, the implementation of LCT design features (Section 2.2.5.3) and monitoring and adaptive management design features (Section 2.2.5.15) would greatly reduce the potential to harm or harass the species. Therefore, the Proposed Action may affect, and is likely to adversely affect the LCT. A small but unquantifiable number of LCT may be impacted during training operations, primarily from small groups (less than 25 personnel) crossing occupied

streams. In addition, a small but unquantifiable number of LCT would likely experience harassment due to interference with normal life behaviors from training activity impacts. Although the number of LCT that would be impacted cannot be quantified, the implementation of design features (Section 2.2.5.15) would greatly reduce the potential to harm or harass the species. Therefore, the Proposed Action would have less than significant impacts on the LCT over the course of the 40-year SUP.

Sierra Nevada Yellow-Legged Frog

Potential impacts to SNYLF and/or critical habitat from training activities are discussed below. Specific training impacts to SNYLF under the Proposed Action are evaluated for: (1) Use of Roads and Trails; (2) Use of LZs/DZs; (3) Live-Fire Ranges; (4) General Human Presence; and (5) Temporary River/Stream Crossings. Proposed design features for impact minimization and avoidance are also discussed below.

Impacts to SNYLF from the Proposed Action would be similar to those under the No-Action Alternative. Any differences are summarized below.

USE OF ROADS AND TRAILS. Approximately 2.8 miles of minor roads on MCMWTC intersect the 25-m buffers of aquatic habitats within approximately 59 acres of SNYLF critical habitat (see Table 3.3-6). In addition, approximately 10.4 miles of minor roads intersect the 100-m buffers of aquatic habitats within approximately 232 acres of SNYLF CARs (see Table 3.3-6). Direct mortality of SNYLF could occur from vehicle collisions. Project area roads where SNYLF could be present nearby include Chango Lake Road, Cloudburst Creek Road, Finley Mine Road, Sierra Street, Ski Lift Connector, Ski Lift Road, Summit Meadows Road, and Wolf Creek Road. However, because SNYLF rarely occur more than a few feet from water (California Herps 2016, National Park Service 2016), there is low potential for vehicle collision. Silver Creek is occupied by LCT and a design feature is proposed to prohibit live stream crossings by motorized vehicles. This design feature benefits SNYLF by prohibiting vehicle stream crossings of Silver Creek in occupied and critical habitat. This would reduce the chance of mortality from vehicle collisions and impacts to critical habitat.

USE OF LZS/DZS. Approximately 126 acres of LZs overlap the 25-m buffers of aquatic habitats in SNYLF critical habitat (see Table 3.3-6). In addition, approximately 205 acres of LZs and DZs overlap the 100-m buffers of aquatic habitats in SNYLF CARs. Locations of known SNYLF occupied habitat primarily occur at Chango Lake (in TA-6) and Wolf Creek Lake (in TA-8) and upper Silver Creek. LZs that overlap aquatic, wetland, and meadow habitat occupied by SNYLF and/or occur in CARs or critical habitat can only be used for landings when there is at least 2 ft of snow pack.

MV-22 landings in SNYLF habitat when there is at least 2 ft of snowpack would potentially blow away loose snow and melt snow beneath the aircraft. However, exhaust deflectors would direct heat away from the ground below the aircraft upon landing, and SNYLF winter at the bottom of lakes, which would not be impacted by MV-22 landings. Additionally, given that MV-22 activities would not occur within 100 m of occupied water bodies and that downwash impacts decrease rapidly with distance from landings/take-offs, there would not be a substantial difference in the minor impacts that already occur.

Equipment staging (e.g., tents, generators, vehicles on roads) associated with COCs and RHUs would only be placed on existing disturbed ground such as recreational campsites, established parking areas, or LZs/DZs. COC and RHU activities would be conducted in accordance with all seasonal and habitat restrictions described in Section 2.2.5.3. As such, no ground disturbing activities would occur within 100 m of aquatic habitats in SNYLF critical habitat. Training activities that would occur within these TAs would continue to use the “leave no trace” principle as what is currently conducted under existing conditions. Therefore, long-term degradation of habitat from equipment staging and temporary housing

would be avoided by only conducting such activities on previously disturbed sites and removing all materials and equipment upon completion of the training event. Additionally, per design features in Section 2.2.5.15, such areas would be regularly inspected for signs of habitat degradation, and would periodically be off-limits to training if habitat recovery is warranted. Therefore, no impact to SNYLF habitat is expected to occur from use of COCs and RHUs.

LIVE-FIRE RANGES. Ranges 600, 601, and 800/801 overlap SNYLF critical habitat for SNYLF (see Table 3.3-6). Increased noise from live-fire training and expelled debris on the ground can cause habitat avoidance. Potential impacts to SNYLF from habitat avoidance include decreased food intake that could result in reduced reproductive fitness (Steidl and Powell 2006). SNYLF have high site fidelity, hence noise that causes them to flee the area can make them not only vulnerable to reduced fitness from leaving their primary foraging area, but also put them at risk of harm or mortality from predators or other training activities (i.e., foot or vehicle traffic). It is already common practice to collect and remove discarded munitions materials from the ranges following training events to maintain existing conditions of the ground surface; as such, continued implementation of this practice would reduce habitat degradation impacts. Firing points and targets are in designated locations that have been reviewed and approved by the Forest Service and have been traditionally used for training. They are not in aquatic habitats occupied by SNYLF. Further, groups larger than 25 individuals, as well as the use of explosives, live demo, and small arms, would not occur within 100 m of occupied habitats and within 100 m of water bodies in critical habitat and CARs. During live-fire range use, personnel may cross streams to set up targets or access firing points. During these times, if SNYLF are present they could be displaced from their habitat.

GENERAL HUMAN PRESENCE. Foot traffic through creeks and wetlands can disturb SNYLF populations by way of causing harm or mortality, habitat avoidance, and habitat degradation. Impacts to SNYLF populations would be reduced or avoided by implementing the following design features: (1) no training activities within occupied breeding habitat during the breeding season (1 May to 30 July); (2) no activities involving groups larger than 25 individuals, bivouacking, or ground disturbing activities (e.g., digging, vegetation removal) within 100 m of occupied habitats and within 100 m of water bodies in critical habitat and CARs, except for temporary placement of bridges for JAB and MGB exercises and group stream crossings at hardened areas (bridges and existing roads and trails); and (4) deployment of the MGB in Mill, Silver, and Wolf Creeks is limited to one (1) two-day event per stream every three years.

SNYLF have been observed along Silver Creek. Impacts to SNYLF and SNYLF critical habitat in Silver Creek could result from personnel walking through the shallow areas of this creek and potentially degrading SNYLF habitat. Although the number of creek crossings annually by groups is variable (approximate representative size of 6 events per year, average of 800 personnel per event), the crossings would be temporally and spatially dispersed such that recurring impacts would not be significant. The LCT design feature that limits wading or walking up and downstream within the stream channel (in LCT occupied streams) will also limit impacts to SNYLF.

Although there is a small group stream crossing limitation (less than 25 personnel) during exercises involving up to 200 personnel, personnel can be divided into smaller groups to make stream crossings. Even though personnel would be temporally and spatially dispersed, up to 200 personnel can cross an occupied stream outside of hardened areas within the same day. It should be noted that during crossings, marines prefer to stay dry.

TEMPORARY RIVER/STREAM CROSSINGS. Deployment of temporary bridges (JAB and MGB) for river or stream crossing could inadvertently crush SNYLF individuals that do not avoid the area or fail to avoid bridge deployment locations at the time of placement. However, this is unlikely, as individual frogs would

likely seek cover immediately following human presence. Human presence and noise would likely provoke SNYLF to flee the area or avoid it temporarily, but there is still a potential of direct harm or mortality. Due to the frequency of temporary bridge deployment associated with the river/stream crossing training under the Proposed Action (one JAB and two MGB training event per year), impacts to SNYLF or their habitat would be brief and infrequent. Additionally, deployment of the MGB in Silver Creek, which is in SNYLF critical habitat, is limited to one (1) two-day event every three years.

EFFECTS ON CRITICAL HABITAT. The total area of SNYLF designated critical habitat is 1,082,147 acres (USFWS 2016b). Of this total, approximately 1,420.8 acres (0.13%) that are part of Critical Habitat Unit 2, Subunit 2H (Wells Peak) are within the MCMWTC training area. Figure 3.3-5 shows the areas that are within a 25-m buffer of the aquatic habitat features that comprise PCEs, amounting to 1,420.8 acres within the project action area (see Table 3.3-6).

As described above, on-foot stream crossings by up to 25 individuals, deployment of the MGB in Silver Creek (for up to two days every three years), and training activities by groups of 25 or less individuals within 100 m of streams in critical habitat could potentially cause mild degradation of SNYLF critical habitat. Such activities would potentially impact the following PCEs: (1)(e)(iii) open gravel banks and rocks or other structures projecting above or just beneath the surface of the water for adult sunning posts in aquatic habitat for breeding and rearing; (2)(b) open gravel banks and rocks or other structures projecting above or just beneath the surface of the water for adult sunning posts in aquatic nonbreeding habitat (including overwintering habitat); and (3) upland areas (within 82 ft from bank or shoreline for streams and within 984 ft between proximate water bodies) of adjacent breeding and nonbreeding aquatic habitat. However, implementation of current conservation measures and proposed design features (Section 2.2.5.3) as described above would reduce or eliminate potential direct and indirect impacts to critical habitat.

Habitat monitoring and adaptive management as specified by the design features in Section 2.2.5.15, would greatly reduce the potential for any material degradation of SNYLF critical habitat. However, the potential for minor impacts to SNYLF critical habitat, as described above, cannot fully be avoided.

CONCLUSION. As discussed above, a small but unquantifiable number of SNYLF may be injured or killed during stream crossing events and during dispersed training with small groups (less than 25 personnel) in occupied habitats. In addition, a small but unquantifiable number of SNYLF would likely experience harassment due to interference with normal life behaviors from training activities. Groups of less than 25 individuals would be allowed to conduct training activities that are not ground disturbing (including bivouacking) within 100 m of SNYLF habitat. SNYLF habitat would largely be protected under proposed design features in Section 2.2.5.3, but foot traffic and stream crossings would likely impart minor impacts on SNYLF habitat. Suitable habitat for SNYLF may be present in areas outside of designated critical habitat where design features do not apply. Although the number of SNYLF that would be impacted cannot be quantified, the implementation of design features (Section 2.2.5.3) would greatly reduce the potential to harm or harass the species within known population areas and areas with designated critical habitat.

Stream crossings by up to 25 individuals, deployment of the MGB in Silver Creek (for up to two days every three years), and training activities by groups of 25 or less individuals within 100 m of streams in critical habitat could potentially cause mild degradation of SNYLF critical habitat. Such activities would potentially impact the following PCEs: (1)(e)(iii) open gravel banks and rocks or other structures projecting above or just beneath the surface of the water for adult sunning posts in aquatic habitat for breeding and rearing; (2)(b) open gravel banks and rocks or other structures projecting above or just beneath the surface of the water for adult sunning posts in aquatic nonbreeding habitat (including overwintering habitat); and (3) upland areas (within 82 ft from bank or shoreline for streams and within 984 ft between proximate water

bodies) of adjacent breeding and nonbreeding aquatic habitat. However, implementation of current conservation measures and proposed design features in Section 2.2.5.3 would reduce or eliminate potential direct and indirect impacts to critical habitat.

Habitat monitoring and adaptive management as specified by the design features in Section 2.2.5.15, would greatly reduce the potential for any material degradation of SNYLF critical habitat. Therefore, the Proposed Action would have less than significant impacts on the SNYLF over the course of the 40-year SUP.

Yosemite Toad

Potential impacts to YT and/or critical habitat from training activities are discussed below. Specific training impacts to YT under the Proposed Action are evaluated for: (1) Use of Roads and Trails; (2) Use of LZs/DZs; (3) Live-Fire Ranges; (4) General Human Presence; and (5) Temporary River/Stream Crossings. Proposed design features for impact avoidance are also discussed below.

Impacts to the YT from the Proposed Action would be similar to those under the No-Action Alternative. Any differences are summarized below.

USE OF ROADS AND TRAILS. Approximately 4.1 miles of minor roads on MCMWTC intersect the 0.78-mile buffers (upland habitat) of YT breeding ponds within approximately 88 acres of YT critical habitat (see Table 3.3-6). In addition, approximately 0.9 miles of minor roads intersect the 100-m buffers of aquatic habitats within approximately 17 acres of YT CARs (see Table 3.3-6). Direct mortality of YT could occur from vehicle collisions outside of TAs 10 and 11, where the 2-ft snow cover design feature does not apply. YTs utilize upland habitats for foraging and movement, and could potentially cross and/or occur in the vicinity of roads that are used for training. However, roads within the MCMWTC are open to public use and the amount of vehicle traffic associated with training exercises is not expected to have a greater impact on YTs than current public use. Additionally, no training activities would occur within occupied breeding habitats during the breeding season (1 May to 30 July), and no training activities or exercises, except for the use of existing public roads, that include overland foot travel would occur within 100 m of YT breeding habitat, regardless of season. A portion of Finley Mine Road (0.01 miles), at the boundary between TAs 9 and 10, intersects the 100-m buffer of YT critical habitat in TA-10. Any other use of Finley Mine Road within critical habitat that is not described in this document may require reinitiation of consultation or separate consultation with USFWS. Use of the road would be consistent with normal training operations and could entail 20-120 personnel passing through.

Snow compaction from snowmobile use, foot traffic, and other training has been shown to alter habitat quality in the subnivean (below snow) zone (Keddy et al. 1979), which is important habitat for overwintering YTs. Compaction can alter temperatures below the snow, kill and/or injure small animals below the snow, and alter below snow populations (Jarvinen and Schmid 1971, Keddy et al. 1979). However, training within TAs 10 and 11 would be dispersed and groups of more than 60 personnel would not be allowed. Design features in Section 2.2.5.3 would reduce the potential for snow compaction impacts to YT by prohibiting training in TAs 10 and 11 unless there is 2 ft of snow cover, thereby reducing the likelihood of effects.

USE OF LZs/DZs. Approximately 105 acres of LZs overlap YT breeding ponds and the 0.78-mile buffers around those breeding ponds (upland habitat) in critical habitat (see Table 3.3-6). In addition, approximately 28 acres of LZs overlap the 100-m buffers of aquatic habitats in YT CARs. Under the Proposed Action, MV-22 training would occur at certain LZs that overlap YT critical habitat. However, all of these LZs occur within TAs 10 and 11, which would only be used from 15 November to 15 April and only when there is at least 2 ft of snowpack. As described in Section 2.1.3, landings would only occur

within applicable buffers of sensitive resources provided there is a minimum 2 ft of snowpack. LZs in TA 9 that overlap YT critical habitat (Kiwi, Mallard, and Snowbird) would, therefore, only be used when there is a minimum 2-ft of snowpack.

MV-22 landings in YT habitat when there is at least 2 ft of snowpack would potentially blow away loose snow and melt snow beneath the aircraft. This could potentially expose wintering YTs, leaving them vulnerable to predation, energy loss and/or expenditure, and potentially harmful temperatures. However, exhaust deflectors would direct heat away from the ground below the aircraft upon landing, and it is expected that MV-22s would only blow away loose surface snow, and not expose burrowing YTs. As part of the Proposed Action, design features in 2.2.5.15 stipulate that such training activities would be closely monitored. If it appears that YTs are being impacted by landing of MV-22s, then new measures would be incorporated to reduce impacts to the species.

Design features would restrict disturbance activities within 100 m of streams, lakes, ponds, meadows, and wetlands within critical habitat and known locations of YT. Landings would not occur within 100 m buffers of aquatic habitats unless there is a minimum 2 ft of snowpack.

Equipment staging (e.g., tents, generators, vehicles on roads) associated with COCs and RHUs would only be placed on existing disturbed ground such as recreational campsites, established parking areas, or LZs/DZs. COC and RHU activities would be conducted in accordance with all seasonal and habitat restrictions described in Section 2.2.5.3. As such, no ground disturbing activities would occur within 100 m of aquatic habitats in YT critical habitat, except for RHU and COC establishment on previously disturbed ground at the Highway 108/Finley Mine Road junction. No training activities would occur within occupied breeding habitats during the breeding season (1 May to 30 July). Training activities would continue to use the “leave no trace” principle as what is currently conducted under existing conditions for the Koenig Lake CAR. Therefore, long-term degradation of habitat from equipment staging and temporary housing would be avoided by only conducting such activities on previously disturbed sites and removing all materials and equipment upon completion of the training event. Additionally, per design features in Section 2.2.5.15, such areas would be regularly inspected for signs of habitat degradation, and would periodically be off-limits to training if habitat recovery is warranted. As such, impacts to YT habitat would not be completely avoided, but would be minimized by monitoring and adaptive management of training activities.

LIVE-FIRE RANGES. Ranges AIS-3, 1000 AIS-1, and 1100 overlap YT critical habitat (see Table 3.3-6). Potential impacts to YTs would be from noise and habitat disturbance from small arms use as well as live demo and explosive use during avalanche initiation training at the AIS ranges that contain occupied YT habitat. Noise and discarded munitions can cause habitat avoidance as well as degrade YT habitat. Implementation of the design feature for noise disturbance from May 1 to July 30 when breeding occurs would reduce potential impacts. Noise is not expected to increase and would be similar to historic levels. It is already common practice to collect and remove discarded munitions materials from the ranges following training events to maintain existing conditions of the ground surface; as such, continued implementation of this practice under the Proposed Action would reduce habitat degradation impacts. Firing points and targets are in designated locations that have been reviewed and approved by the Forest Service and have been traditionally used for training. They are not in aquatic habitats occupied by YT. Further, groups larger than 25 individuals, as well as the use of explosives, live demo, and small arms, would not occur within 100 m of occupied habitats and within 100 m of water bodies in critical habitat and CARs.

GENERAL HUMAN PRESENCE. Impacts to YT from general human presence under the Proposed Action would be nearly identical to those under the No-Action Alternative. YTs spend a majority of their life

within upland habitats and thus are more exposed to direct impacts from training activities. However, no training activities would occur within occupied breeding habitats during the breeding season (1 May to 30 July), and no training activities or exercises, except for the use of existing public roads, that include overland foot travel would occur within 100 m of YT breeding habitat, regardless of season, except for RHU and COC establishment on previously disturbed ground at the Highway 108/Finley Mine Road junction. TAs 10 and 11 (Leavitt Lake SUP Area) would only be used from 15 November to 15 April, provided training activities remain on areas with 2 ft (or more) of snowpack and subject to the applicable measures in Section 2.2.5.3. Group size would continue to be limited to one group of 60 individuals or less within TA-10 and one group of 60 individuals or less in TA-11. RHUs and COCs would potentially be used within 0.78-mile PCE buffers in YT critical habitat, but would only be used with at least 2 ft of snowpack, except at the Highway 108/Finley Mine Road junction. However, COCs and RHUs would only be temporarily established in highly disturbed areas (recreational camping sites, parking lots, LZs). Impacts to YTs in the subnivean zone would be minimal. Also, because YT overwinter in mammal burrows (predominantly rodent burrows), willow thickets, under boulders and logs, and underground, they would be out of direct contact with personnel and thus impacts from trampling are not likely to occur during winter use.

The disposal of trash has been a chronic problem in the Upper Sardine Meadows breeding area in TA-10, immediately adjacent to TA-9. This may improve under the Proposed Action, as groups larger than 25 individuals would not be allowed within designated critical habitat, except for RHU and COC establishment on previously disturbed ground at the Highway 108/Finley Mine Road junction, and no activities are allowed at the breeding location during the breeding season. Additionally, a new design feature specifying MCMWTC procedures for trash cleanup is provided in Section 2.2.5.14.

TEMPORARY RIVER/STREAM CROSSINGS. The proposed new training events that include deployment of temporary bridges (JAB and MGB) for river or stream crossing would not occur within occupied YT habitat or within critical habitat. Therefore, no impacts to this species from these new training events would occur.

EFFECTS ON CRITICAL HABITAT. The total area of YT designated critical habitat is 750,926 acres (USFWS 2016b). Of this total, approximately 3,770.4 acres (0.50%) that are part of Critical Habitat Unit 2 (Leavitt Lake/Emigrant) are within the MCMWTC training area. Figure 3.3-6 shows the areas that are within a 0.78-mile buffer of known breeding habitat features (breeding ponds) that comprise PCEs, amounting to 3,770.4 acres within the project action area (Table 3.3-6).

As described above, effects to YT critical habitat from snow compaction during winter use of TAs 10 and 11 are expected to be minimal. Design features in Section 2.2.5.15 would require that areas within YT critical habitat be monitored for signs of habitat degradation, and such areas would periodically be off-limits to training if habitat recovery is warranted. Equipment staging (e.g., tents, generators, vehicles on roads) associated with COCs and RHUs would only be placed on existing disturbed ground such as recreational campsites, established parking areas, or LZs/DZs. COC and RHU activities would be conducted in accordance with all seasonal and habitat restrictions described in Section 2.2.5.3. As such, no ground disturbing activities would occur within 100 m of aquatic habitats in YT critical habitat, except for RHU and COC establishment on previously disturbed ground at the Highway 108/Finley Mine Road junction. Impacts to critical habitat in the vicinity of the Highway 108/Finley Mine Road junction would be monitored and adaptively managed as described in Section 2.2.5.15. Still, such activities would potentially impact PCE 2 (Upland area habitat consisting of areas adjacent to or surrounding breeding habitat up to a distance of 0.78 mile, includes seeps, springheads, and provides sufficient cover, foraging habitat, prey resources, physical structure predator avoidance, overwintering refugia and dispersal corridors). Required mitigation under the existing permits only allows RHUs on 2 ft of snowpack or more,

does not allow RHUs within meadows or wetlands, and requires site monitoring and analysis for damage. These existing mitigation requirements would reduce impacts to YT and their habitat. In addition, the “Leave No Trace” backcountry principles would ensure no long-term impacts to critical habitat within training areas.

Training activities in TAs 10 and 11 would only occur when there is 2 ft of snowpack, and no training activities or exercises (except for the use of existing public roads) that include overland foot travel would occur within 100 m of YT breeding habitat, except for RHU and COC establishment on previously disturbed ground at the Highway 108/Finley Mine Road junction, regardless of season. However, because the design feature only extends 100 m beyond occupied YT habitat and there is no 2 ft snow cover requirement in TA-9, disturbance to YT critical habitat from training activities (e.g., more than 25 personnel, vehicle use) within 0.78 miles of the YT breeding pond in TA-10, immediately adjacent to TA-9, is anticipated.

CONCLUSION. A small but unquantifiable number of YT may be injured, killed, and/or harassed during training operations, primarily from low likelihood of snow compaction from foot and vehicle traffic, noise from MV-22 use and training exercises, and snow removal from MV-22 landings during winter training in TAs 10 and 11. Suitable habitat for YT may be present in areas outside of designated critical habitat where design features do not apply. Although the number of YTs that would be impacted cannot be quantified, monitoring for the effectiveness of the design features and adapting to the conditions indicated by monitoring would greatly reduce the potential to harm or harass the species within designated critical habitat Sections 2.2.5.3 and 2.2.5.15). Additionally, no training activities would occur within occupied breeding habitats during the breeding season (1 May to 30 July), and no training activities or exercises, except for the use of existing public roads and RHU/COC establishment on previously disturbed ground at the Highway 108/Finley Mine Road junction, would occur within 100 m of YT breeding habitat in TAs 10 and 11, regardless of season.

Impacts to YT critical habitat from snow compaction during winter use of TAs 10 and 11 are expected to be minimal. Design features in Section 2.2.5.15 would require that areas within YT critical habitat be monitored for signs of habitat degradation, and such areas would periodically be off-limits to training if habitat recovery is warranted. Equipment staging (e.g., tents, generators, vehicles on roads) associated with COCs and RHUs would only be placed on existing disturbed ground such as recreational campsites, established parking areas, or LZs/DZs. COC and RHU activities would be conducted in accordance with all seasonal and habitat restrictions described in Section 2.2.5.3. As such, no ground disturbing activities would occur within 100 m of aquatic habitats in YT critical habitat, except for RHU and COC establishment on previously disturbed ground at the Highway 108/Finley Mine Road junction. Impacts to critical habitat in the vicinity of the Highway 108/Finley Mine Road junction would be monitored and adaptively managed as described in Section 2.2.5.15. Still, such activities would potentially impact PCE 2 (Upland area habitat consisting of areas adjacent to or surrounding breeding habitat up to a distance of 0.78 mile, includes seeps, springheads, and provides sufficient cover, foraging habitat, prey resources, physical structure predator avoidance, overwintering refugia and dispersal corridors). Required mitigation under the existing permits only allows RHUs on 2 ft of snow pack or more, does not allow RHUs within meadows or wetlands, and requires site monitoring and analysis for damage. These existing mitigation requirements would reduce impacts to YT and their habitat. In addition, the “Leave No Trace” backcountry principles would ensure no long-term impacts to critical habitat within training areas.

Training activities in TAs 10 and 11 would only occur when there is at least 2 ft of snowpack, and no training activities or exercises (except for the use of existing public roads) that include overland foot travel would occur within 100 m of YT breeding habitat, except for RHU and COC establishment on previously

disturbed ground at the Highway 108/Finley Mine Road junction, regardless of season. However, because the design feature only extends 100 m beyond occupied YT habitat and there is no 2 ft snow cover requirement in TA-9, disturbance to YT critical habitat from training activities (e.g., more than 25 personnel, vehicle use) within 0.78 miles of the YT breeding pond in TA-10, immediately adjacent to TA-9, is anticipated. However, implementation of design features in Section 2.2.5.15 would provide a means to adapt when monitoring indicates the presence of species and undesirable impacts to those species. By employing the adaptive management approach described in Section 2.2.5.15, the USMC and Forest Service would be able to adjust actions in the vicinity of the Highway 108/ Finley Mine Road junction to continue to minimize and avoid adverse impacts to YT critical habitat. Therefore, the Proposed Action would have less than significant impacts on the YT over the course of the 40-year SUP.

Webber's Ivesia

Webber's ivesia is not known or likely to occur in the project areas. Therefore, the Proposed Action would have no impact on the species or its management on the Bridgeport Ranger District.

Whitebark Pine

Whitebark pine is one of the dominant species of the subalpine conifer community; therefore, the acreage of that community provides a fair estimate of potential habitat for the species. For both alternatives, 416 acres of subalpine conifer vegetation would be subject to actions analyzed in this EA (see Table 3.3-2).

Under the Proposed Action, no whitebark pines would be cut or removed and there would be minimal activity in areas where this species is found. Therefore, there would be no anticipated direct impacts to this species. As discussed in Section 3.3.3.4, rotary-wing aircraft and certain training events increase the likelihood of fire ignition that could impact forest species. Fires occur naturally, although at low frequencies, in whitebark pine habitats due to lightning strikes, and stand regeneration depends upon small, patchy fires that are not too severe. The likelihood that a human-caused fire would spread to a significant extent in a stand of whitebark pine in the project area is very low because of discontinuous canopies and sparse understory fuels (Fryer 2002). As a result, it is not expected that the Proposed Action would have any negative effects on whitebark pine related to fire.

Training activities could potentially affect the behavior of Clark's nutcrackers, thereby altering the seed dispersal of whitebark pine. However, since training activities are widely dispersed and temporary in subalpine woodlands, any displaced birds would be expected to return and resume foraging within a short time. As such, no effects on seed dispersal or future regeneration would be expected.

Therefore, the Proposed Action would have less than significant impacts on whitebark pine over the course of the 40-year SUP.

Other Special Status Species

As with the No-Action Alternative, impacts to special status species would be similar to the potential impacts discussed in Section 3.3.3. Other special status wildlife species habitats that would potentially be impacted by both alternatives are provided in Tables 3.3-10 and 3.3-11.

Special status wildlife species would be subject to impacts from use of training corridors, roads, and trails (e.g., mortality from collisions, modification of behavior, and fragmentation of habitat), use of live-fire ranges and training activities (e.g., visual and auditory disturbances, incidental injury or death by direct hit from gunfire or aircraft, habitat modification or loss), and general human presence.

Special status plant species would potentially be subject to impacts from use of training corridors, roads, and trails (e.g., shifts in plant species composition and habitat properties, increased dispersal of non-native species, altered biotic interactions and population dynamics), use of live-fire ranges and training activities (e.g., small areas of disturbance by rounds, vegetation disturbance from LZ/DZ use), and trampling from foot-traffic.

Design features in Sections 2.2.5.1 and 2.2.5.2 would provide protection to special status plant and wildlife species and their populations. As analyzed in the Specialist's Report (USMC and Forest Service 2016), although individuals of given special status species would potentially be impacted by the Proposed Action, no population of special status species would be adversely affected and impacts to special status species would be less than significant.

3.3.5 Cumulative Effects

In addition to the direct and indirect environmental consequences already discussed, additional considerations required by NEPA include the potential cumulative effects of the Proposed Action. Potential cumulative effects could occur when the effects of the Proposed Action are combined with other past, present, and reasonably foreseeable projects (Appendix E).

Under either the Proposed Action or the No-Action Alternative, with the exception of the addition of the Lobdell Lake Road training corridor to the Proposed Action, the overall level of activity on the MCMWTC training area would not increase; activities would remain within historic "footprints"; and through coordination and discussion among the USMC, Forest Service, and USFWS, protection for biological resources would be improved in the future. Habitats and species' populations would be subject to (1) very localized and, for the most part, temporary impacts due to human presence that would be concentrated within areas that are previously developed, historically used, and are diffused throughout the training area; (2) ground disturbance (including light disturbance from off-road foot traffic), which is largely confined to existing disturbed areas; and (3) noise from small arms (including blank ammunition as well as live-fire ranges), vehicles, and aircraft.

USFWS' ESA-listings of SNYLF and YT and designations of critical habitat are in response to cumulative threats to these species and overlap the MCMWTC training area. The USMC and Forest Service have prepared a separate Biological Assessment for the purpose of section 7 ESA consultation with USFWS on the effects of the Proposed Action on these species, as well as the LCT. Although cumulative impacts may occur to these species from the Proposed Action and other activities, implementation of species-specific design features (Section 2.2.5.3) and monitoring and adaptive management design features (Section 2.2.5.15) assures that such impacts would be reduced as much as practicable.

Cumulative effects on biological resources from the Proposed Action were assessed when added to: (1) the existing environmental conditions as a proxy for the impacts of past actions (refer to Section 3.3.2); (2) the "MCMWTC Operations and Training Baseline Project" as described in Appendix E; and (3) other past, present, and reasonably foreseeable projects in the ROI. However, the existing SUPs and the proposed design features minimize the local impacts of training activities such that there is very little potential for an incremental degradation of biological resources that could accumulate throughout the ROI. The potential for cumulative impacts is further reduced by the development and implementation of a Preliminary Draft INRMP for the MCMWTC, by the incorporation into the SUPs of a Monitoring and Adaptive Management Program (Section 2.2.5.15), and the continuing management of non-military activities (grazing, road use, hiking, etc.) by the Bridgeport Ranger District in accordance with its responsibilities. Therefore, no

significant cumulative impacts would occur to biological resources with implementation of the Proposed Action along with past, present, and reasonably foreseeable projects in the ROI.

3.4 CULTURAL RESOURCES

3.4.1 Definition of Resource

Cultural resources include buildings, structures, sites, districts, and objects eligible for inclusion in or included in the NRHP; cultural items; Native American sacred sites; archaeological artifact collections; and archaeological resources (Navy 2001). Cultural resources can be divided into three major categories: archaeological resources, architectural resources, and traditional cultural resources.

- *Archaeological resources* are material remains of past human life that are capable of contributing to scientific or humanistic understanding of past human behavior, cultural adaptation, and related topics through the application of scientific or scholarly techniques. Archaeological resources can include village sites, temporary camps, lithic scatters (stone tools and chipped stone debris), roasting pits/hearths, milling features, rock art (both petroglyphs and pictographs), tree art (arborglyphs), rock features, and burials.
- *Architectural resources* include real properties, sites, buildings, structures, works of engineering, industrial facilities, fortifications, and landscapes.
- *Traditional cultural properties and resources* are tangible places or objects that are important in maintaining the cultural identity of a living community or group and can include archaeological sites, buildings, neighborhoods, prominent topographic features, habitats, plants, animals, and minerals.

Historic properties are cultural resources that meet one or more criteria for eligibility for inclusion in the NRHP. Under the National Historic Preservation Act (NHPA) of 1966 as amended, only significant cultural resources warrant consideration with regard to adverse impacts from a federal agency's Proposed Action. To be considered significant, archaeological or architectural resources must meet one or more criteria as defined in 36 CFR § 60.4 and 36 CFR § 800 for inclusion in the NRHP. Cultural resources may be considered eligible for listing if they possess integrity of location, design, setting, materials, workmanship, feeling, and association and meet one or more of the following criteria:

- Criterion A: associated with events that have made a significant contribution to the broad patterns of America's history;
- Criterion B: associated with the lives of persons significant to our past;
- Criterion C: embodies the distinctive characteristics of a type, period or method of construction, or represents the work of a master, or possesses high artistic value or represents a significant and distinguishable entity whose components may lack individual distinction; or
- Criterion D: has yielded or may be likely to yield information important in prehistory or history.

Resources generally must be more than 50 years old to be considered for protection under the NHPA. However, more recent structures associated with significant national events may warrant protection if they are "exceptionally significant" under Criterion G.

The NHPA establishes guidelines for the protection, enhancement, and preservation of any property that possesses significant archaeological, architectural, historical, or cultural characteristics. Section 106 of the NHPA mandates that federal agencies take into account the effect of their undertakings on properties

included in or eligible for inclusion in the NRHP. Section 110 mandates that each federal agency shall establish a preservation program for the identification, evaluation, and nomination to the NRHP, and the protection of historic properties on its land.

Several other federal laws and regulations have been established to manage cultural resources, including the Archaeological and Historic Preservation Act (1974), the Archaeological Resources Protection Act (1979), and the Native American Graves Protection and Repatriation Act (1990). In addition, coordination with federally recognized Native American tribes must occur in accordance with the American Indian Religious Freedom Act (1978); EO 13007, *Sacred Sites*; and EO 13175, *Consultation and Coordination with Indian Tribal Governments*. Cultural resources located within the jurisdiction of the MCMWTC are managed in accordance with these laws, regulations, and guidance documents, as well as DoD Instruction 4715.16 (Cultural Resources Management) and MCO P5090.2A, Change 3, Dated August 2013 (Environmental Compliance and Protection Manual).

The area of potential effects (APE) for cultural resources includes existing and proposed training areas that lie between Sonora Pass along SR 108 (Mono County, California) and the town of Hawthorne, Nevada (Mineral County). The main MCMWTC use areas and facilities, however, are located near Pickel Meadow, just east of Sonora Pass on SR 108 and west of U.S. Highway 395. East of U.S. Highway 395, survey locations included sections or the entirety of major, unimproved roads (Burcham Flat Road, Lobdell Lake Road, Masonic Road, Lucky Boy Pass Road), as well as blocks of non-road acreage.

3.4.2 Existing Conditions

3.4.2.1 Historic Context

Historic contexts available for the project area include general contexts for the prehistoric and historic periods, and specific contexts, including for mining properties (California Department of Transportation 2008).

Prehistoric Period Context

The region that includes the project area has been inhabited for approximately the past 11,000 years. In the western Great Basin, the earliest human occupations have been identified by the presence of projectile points similar to the well-known Clovis forms of the Great Plains which are fairly well-dated to between 12,000 and 10,000 years Before Present (B.P.) time.

As a whole, the project area is situated within the ethnographically documented cultural territories for the Northern Paiute, the Washoe, and the Central Sierra Me-wuk. The Sweetwater survey parcel, Lucky Boy Pass Road, and Lucky Boy survey parcel are all situated within Northern Paiute territory. If the Northern Paiute used the main MCMWTC use area, it was most likely the *Tovusidokado* subgroup whose territory is centered in Smith Valley to the east (Davis-King 2007, cited in MCMWTC and Forest Service 2013a, b). Recent research implies that the Washoe have an association with Little Antelope Valley (immediately north of the main use area), and probably Mill and Lost Cannon Creek drainages (within the main use area) as well. Some ethnographic works have suggested that the Me-Wuk have strong affiliations with the Sonora Pass and Leavitt Lake areas.

The Northern Paiute were a semi-nomadic group dependent on gathering, hunting, and fishing. Specific to the current project are ethnographic accounts that the Sweetwater Range was a source for a plant that was used as sacred medicine, and that the Pine Grove Hills were important to the Walker River Paiute Tribe as a place to hunt and worship. The Wassuk Range was used for gathering game, pine nuts, and firewood; several trails marked with petroglyphs are still used by the Northern Paiute in this area today. The Lucky

Boy area was also an important resource exploitation area, and pine nuts are still gathered in this area today. Plants and medicines along with deer, bighorn sheep, greater sage-grouse, and chukkars are exploited in the Lucky Boy Area.

Ethnographic information regarding Washoe settlement-subsistence patterns suggests that winter camps were located at lower elevations on valley bottoms and that the higher elevation valleys and surrounding hills were used in the late summer and fall (d'Azevedo 1986). Fishing occurred year-round along the Walker and Carson Rivers where spearing, netting, and angling (in the winter) through ice holes were common activities (Downs 1966). In the fall, groups would move from Lake Tahoe to the Pine Nut Hills for the annual pinyon harvest.

Though often organized into larger groups for communal subsistence activities, the Central Sierra Me-Wuk were primarily hunter-gatherers, moving about the landscape in families or as individuals in pursuit of seasonal foodstuffs not available in their village environs. Acorns were a staple food, particularly during more recent times, acquired from foothill groves of valley oak (*Quercus lobata*) in the late fall/early winter. As for fauna, mule deer was probably the most important Sierran mammal, while the black bear and grizzly bear were taken less frequently in communal hunts. Game bird and fish populations were also of local significance, such as the Valley Quail and the Mountain Quail. Local pigeons, jays, geese, ducks, and other local bird species were caught as well (Barrett and Gifford 1933). One of the most important cultural activities in the project area was, and still is, trade (Davis-King 2007, cited in MCMWTC and Forest Service 2013a, b). Numerous ethnographic accounts indicate that the Sierra Me-Wuk were involved in trade networks that moved material goods from eastern California (Great Basin groups) to central California and vice versa. Washoe and the Northern Paiute exchanged items regularly with several California groups, including the Central Sierra Me-Wuk.

Washoe and Northern Paiute lifeways were not severely affected by the non-Native incursion until after the discovery of the Comstock Lode in 1858. Within 2 years of the discovery of the Comstock Lode, 5,000 acres of land were under cultivation, and 10,000 head of cattle, sheep, horses, and hogs were grazing on the most productive gathering lands in Washoe country (Downs 1966). Ranching and mining activities had devastating effects on traditional settlement and subsistence practices.

In the 1870s, the establishment of the Pyramid Lake and Walker Lake Indian Reservations was undertaken in part as a settlement of the Pyramid Lake Indian War, a conflict between Northern Paiute and non-Native settlers in western Nevada in 1860 (Hattori et al. 1984). Displaced Native Americans were forced to alter their settlement and subsistence practices (Underhill 1941).

Historic Period Context

Jedediah Smith and members of his fur trapping party of 1826-1827 may have been the first Euro-Americans to pass through the Walker River and Walker Lake area. Before the mid-1850s, homesteading along the eastern slopes of the Sierra Nevada was limited to seasonal occupation and to the few hardy souls willing to face the heavy winters in extreme isolation and without access to supplies. The first recorded settler in Antelope Valley, Hod Raymond, drove his herd of stock into the area in the fall of 1859. Other settlers followed in his footsteps and gradually claimed the fertile lands available in the valley.

Large historic ranches in the study area and vicinity were located in southern Antelope Valley along the West Walker River, and along the East Walker River at the base of the Sweetwater Range and east toward Hawthorne. Two of the largest ranches were the Walker River Ranch in Mason Valley and the Rickey Ranch, which was a series of ranches situated in Antelope, Slinkard, and Bridgeport valleys (Kersten 1961). After several generations and multiple changes in ownership and facilities, many of these historic ranches

remain in operation. Higher elevations, such as those now occupied by the MCMWTC, were used extensively in the late-nineteenth century as seasonal grazing lands for both cattle and sheep; however, establishment of National Forests in the 1890s-1920s began a long program of regulating ranchers' seasonal ranges to prevent overgrazing and establish conservation programs on public lands.

Historic sheep herding in the western U.S., specifically the eastern Sierra Nevada, is synonymous with the Basque culture of the northern provinces of Spain. The first Basques to migrate to the American West arrived with the discovery of gold and silver in California, Nevada, Oregon, and Idaho. Most came from Argentina, Chile, and other South American countries to which they had initially emigrated and where the Basques were known by the 1830s as "the sheep ranchers of the Pampas" (Douglass and Lane 1985). The largest immigration of Basques into California, Nevada, and Idaho occurred between 1900 and 1920. While in camp or following their herds, Basque sheepherders often passed the time by carving the white bark of aspen trees, keeping track of time or their dwindling supplies; writing their thoughts, poetry, or political slogans on the trees; or creating more advanced artwork, often graphic depictions of sexual subjects and even self-portraiture. Some Basques became very skilled at marking the trees and could predict in advance how the tree would scar to illustrate their subjects in specific ways. Though aspens were largely the tree of choice, inscriptions have also been found on cottonwoods, pines, and alders. Recent inventories in Mill Creek Canyon and Grouse Meadows, within the confines of the MCMWTC, report a dense concentration of tree carvings created by Basque herders, dating from 1889 through the 1940s.

Gold and silver mining booms also brought settlers to the area. Some were eager to stake a mining claim and others came to pursue opportunities in agriculture and ranching. The Lucky Boy Mine is located in Mineral County approximately 5 miles south of Hawthorne, Nevada. It is near the center of a mining district of the same name, and is sometimes included in the larger Hawthorne mining district encompassing Lucky Boy, Pamlico, and Ashby districts. The Lucky Boy Mine reached its "boom year" in 1908, when it produced \$800,000 in silver ore with smaller quantities of gold, lead, and copper. In the 1950s and 1960s, the Lucky Boy was redeveloped for extraction of various mineral ores, particularly antimony, a crystalline material used as a hardening agent in metal alloys. The Lucky Boy is still considered a viable gold and silver mine, and is presently owned by the American-based Lucky Boy Silver Corporation.

The Masonic Mining District is situated in northern Mono County at 8,000 ft elevation, about 12 miles northeast of Bridgeport. The town, mill, and central mine sites are located along a 2-mile stretch of Masonic Gulch traversed by Masonic Road, which runs between Bridgeport (south) and the East Walker River (north). The peak of mining activity at Masonic occurred between 1906 and 1911, during which time the district was considered the premiere ore producer on the California-Nevada border. Public buildings were quickly erected in Masonic Gulch with daily stage and mail service. However, mine production crashed as quickly as it had boomed, and by 1912 most of Masonic was abandoned with only a few residents remaining in the gulch. At present, prospecting (core drilling), and some redevelopment of old claims and mines are occurring in the Masonic District. The mining camp remains in Masonic Gulch and at the Chemung Mine have been popular as "ghost towns" for many years, receiving much attention from both visitors and from artifact collectors, the latter causing considerable damage to archaeological deposits and structural remains.

Other mines in the APE include the Pittsburg-Liberty Mine along the Masonic Creek drainage; the Serita (Sarita) Mine at the northern end of Masonic Gulch; the Chemung Mine Group (west of Masonic Gulch); Mount Grant (west of Walker Lake); the Patterson District (in the Sweetwater Range, approximately 15 miles north of Bridgeport); the Ramona (Borealis) District (along the western slope of the Wassuk Range); the Wellington (Risue) District (in Risue Canyon); and the West Walker District (above the West Walker River and southwest of Coleville).

Before non-Natives entered the Great Basin, Native Americans maintained a network of trade routes and foot trails for traveling between seasonal resource procurement areas. Like most trails, these foot paths followed the banks of rivers and creeks and formed beelines between springs and seeps across dry deserts. In the early nineteenth century, fur traders adopted these trails at their convenience, followed by a slow trickle of pioneers making the long trek overland to Oregon and California. Without the discovery of gold in California followed by the silver strikes on the Comstock, however, it is difficult to assess how long it may have taken to establish a complete network of transportation corridors throughout the Great Basin. Because of these mineral discoveries, road-building “happened” almost overnight and in conjunction with other rapid developments that together provided the foundation of western economy and spirit. Similar to roads and other methods of transportation, homesteading and ranching developed in the project region largely in response to the movement of populations between successive gold/silver strikes and their resulting boom towns. The Walker River-Sonora Road was first traveled in 1852 but was largely abandoned by 1856 due to its extremely high elevations and precipitous descents. In the early 1960s, the Stanislaus National Forest conducted a cultural resources investigation of the trail route from the crest of the Sierra Nevada west to Pinecrest. While few certain traces of the road itself were found, several emigrant graves were located, along with blazed and marked trees and emigrant period artifacts.

The Walker River-Sonora Route is also a southern branch of the California National Historic Trail (CNHT), an overland emigrant wagon road system recognized by Congress for its heritage value and recreational potential (National Park Service 1999, cited in MCMWTC and Forest Service 2013a). Portions of the CNHT, Walker River-Sonora Route identified by the NPS as having a high potential for recreational and interpretive development, and that are within or in the vicinity of the HTNF, include Little Lost Canyon, Upper Leavitt Meadow, Browder Flat, the approach to Fremont Lake, and Upper Little Emigrant Valley (National Park Service 1999, cited in MCMWTC and Forest Service 2013a). All segments of the CNHT on USFS lands are also designated as Priority Heritage Assets for management purposes.

NRHP Recommendation

NRHP-eligible road segments and associated sites on the 1850s Walker River-Sonora Road meet Criterion A due to their association with trans-Sierra crossings and overland migration during the Gold Rush period (MCMWTC and Forest Service 2013a). Segments with physical and/or archaeological remains may also meet NRHP Criterion D, for their potential to address important research questions related to historic wagon travel and immigration. The Walker River-Sonora Road is not directly associated with any significant person or persons (Criterion B), nor does it embody the distinctive characteristics of any engineering style or construction method (Criterion C) (MCMWTC and Forest Service 2013a).

Site P26-6615 is a portion of the Walker River-Sonora Road (also known as Walker River Trail, Sonora Pass Road, Clark-Skidmore Wagon Road, Fort Churchill-Sonora Wagon Road) along Lost Cannon Road in the main MCMWTC use area. P26-6615 constitutes the few remaining traces of the Walker River-Sonora Road that are still visible and recognizable in the project area. This segment of P26-6615 is located along Lost Cannon Creek just north of Summit Meadow, and is visible as a narrow, unimproved two-track dirt road with trail blaze markers on several trees. Though this segment is not a “pristine” abandoned wagon trail and is occasionally used by motorized vehicles, the road is unimproved and retains its essential route (location), morphology, and integrity of feeling and association as a historic emigrant trail. This segment contributes to the overall historical significance of P26-6615 and appears eligible for listing in the NRHP under Criteria A and D, as stated above (MCMWTC and Forest Service 2013a).

3.4.2.2 Archaeological Resources

Prehistoric sites within the project area occur in a wide variety of landscape settings, from high elevation lakeshores to lowland flats and within subalpine tundra, mixed conifer, pinyon-juniper, riparian, and sagebrush vegetation communities. Most are simple lithic scatters dominated by obsidian flaking debris, but small habitations, lithic quarries, and pinyon camps are also common in the study sample. Bedrock milling features and ground stone tools occur at habitation sites, although associated artifact assemblages are not necessarily much more complex or diverse than those at larger lithic scatters. Diagnostic artifacts are relatively scarce and consist mainly of various projectile points.

Historic sites include mostly arborglyphs, refuse deposits, mining infrastructure, and roads. Nearly all of the arborglyphs occur in aspen groves within upland zones in the eastern Sierra, while refuse deposits and roads are more widely distributed. Historic roads occur in the MCMWTC main use area and along Lucky Boy Pass Road, the former area containing more significant ones (routes across the Sierran crest) and the latter having many ancillary ones connecting to settlements in western Nevada. Mining sites are largely split between Masonic Road and Risue Road, ranching sites divided between Kirman Road and the Sweetwater Survey Parcel.

In general, the physical integrity of an archaeological site can be considered “good” in the absence of undue natural erosion or heavy disturbances from animal or human activity. However, it is clear that nearly every archaeological site has suffered considerably from cattle grazing and traffic, and from surface erosion. Many sites have also been impacted by historic settlement and modern recreational uses. Many ground surfaces appear to be quite active and susceptible to erosion. Cattle traffic is also regular in certain parts of the project area, adding impacts from trampling to the surfaces of many archaeological sites, damaging artifacts, and widely dispersing once more spatially discrete assemblages. Human traffic has been relatively light by comparison, introducing damage to sites mainly through the construction of roads and fences. Impacts from Marine Corps training activities and modern recreational uses have also been fairly minor, although illicit surface collecting has certainly reduced the integrity of sites in areas more often visited by the public.

Given all this, most of the current survey sites are considered to have “good” to “fair” physical integrity and, accordingly, have reduced data potential. Despite having varied and, in some cases, substantial assemblages of surface artifacts, they lack the necessary context to preserve spatial and chronological relationships. This means that the presence of diagnostic artifacts, while useful in estimating a general age range for a particular site, does not allow for the identification of discrete horizontal components or infer the ages of site features.

Most prehistoric sites identified during this project are short-term camps with limited, homogenous artifact assemblages. Cumulative impacts from erosion, cattle trampling, historic land-use, vehicle traffic, and modern visitation have damaged and dispersed surface artifacts at many locations, leaving them in either fair or poor condition. Few sites contain diagnostic artifacts, and most archaeological sites cannot be confidently dated. All of these factors have combined to reduce the data potential of many prehistoric sites.

Historic sites have essentially suffered the same fate. Although their constituents are not as homogenous and redundant as those at prehistoric sites, they have also been adversely affected by erosion, cattle trampling, vehicle traffic, wildfires, and modern visitation. Most features at historic sites are in an advanced state of decay, and few refuse deposits have any integrity left due to cattle traffic and illicit artifact collection. Archival documentation does exist for a few historic sites, however, adding something positive to the data potential for each one.

Before fieldwork was performed, a records search was conducted at the Eastern Information Center, the Nevada State Museum, the Forest Service Bishop Field Office, and online at the Nevada Cultural Resources Information System. This effort included a detailed search of previously recorded sites and archaeological studies within the entire MCMWTC main use area; however, only a 1-mile radius around Lobdell Lake Road, Burcham Flat Road, Masonic Road, Risue Road, Sweetwater DZ, Lucky Boy Pass Road, and Lucky Boy DZ was reviewed. Historic maps and other archival resources were also consulted before and during the field effort.

Results of the search provided information for over 650 previously recorded archaeological resources and identified more than 200 previous archaeological studies (survey and/or excavation) within or in the vicinity of the survey parcels and roads. Specific to the current survey effort are 163 sites and isolates located within current range, DZ, LZ, and linear survey areas (MCMWTC and Forest Service 2013a, b). It should be noted that several of the previously recorded “sites” are actually isolated artifacts collected in the 1970s; therefore, no trace of these resources is expected to remain. The majority of the previously recorded sites and isolates represent lithic scatters or isolated debris from tool manufacturing; however, habitation sites, arboglyphs, refuse deposits, and historic road segments have also been recorded in the area.

Between 2009 and 2015, archaeological surveys were performed encompassing approximately 13,000 acres in California (within Mono County) and 2,800 acres in Nevada used in current and future training activities at MCMWTC (MCMWTC and Forest Service 2013a, b; Stevens 2014; Stevens and King 2014; and Stevens and Lenzi 2015). These surveys were conducted to identify and document cultural resources that may pose constraints to proposed future USMC training with aircraft, vehicles, weapons systems, ordnance, and equipment during exercises. Following guidelines set forth in Section 106 of the NHPA and its implementing regulations (36 CFR 800), and using criteria defined in 36 CFR 60.4, preliminary assessments of NRHP eligibility were developed for each cultural resource identified during the investigation.

The cultural surveys were coordinated with personnel from MCMWTC and the HTNF to accomplish archaeological inventories on California and Nevada lands. In California, roughly 13,000 acres were surveyed, associated with proposed LZs, DZs, ranges, existing transportation routes, and future transportation routes/trails. The vast majority of the acreage is managed by the Forest Service; some lands owned by the State of California, DoD, and private interests were also inventoried. In Nevada, approximately 2,800 acres associated with proposed DZs, three proposed LZs, and existing transportation routes were surveyed. The vast majority of the acreage is managed by the Forest Service; however, 179 acres of private, BLM, and DoD lands were also inventoried.

Table 3.4-1 summarizes the cultural resource surveys that cover the APE for this project.

Table 3.4-2 shows the number of identified sites within California and Nevada that have been determined by the HTNF to be eligible or not eligible for inclusion in the NRHP, or have yet to be determined.

Most of the sites recommended not eligible are prehistoric lithic scatters, lithic quarries, refuse deposits, and various mining and ranching sites, a utility line, and a few other kinds of sites. The HTNF has determined that all sites recommended as not eligible for listing in the NRHP by MCMWTC and Forest Service (2013a, b), Stevens (2014), Stevens and King (2014), and Stevens and Lenzi (2015) are not NRHP-eligible under any of the criteria.

Although analyzed for eligibility under all four Criteria, NRHP-eligible prehistoric archaeological sites were found to be eligible only under Criterion D, for their potential to reveal important information about the prehistory or history of the area. The site components recommended eligible are mostly lithic scatters, habitations, and arboglyphs (tree carvings). Others include pinyon camps, mining sites, transportation

sites, and lithic quarries, as well as the Masonic Town site and a few other historic resources. Certain roads (e.g., segments of the CNHT along Walker-Sonora Road, Dickenson's Toll Road, Carson to Aurora Road) are eligible for inclusion.

In addition to the sites identified within the surveys listed in Table 3.4-1, 19 recently recorded sites were relocated (MCMWTC and Forest Service 2013a, b). The sites that have been left unevaluated for NRHP eligibility are pending additional archival research and/or further archaeological examination.

Table 3.4-1. Cultural Resource Surveys within the MCMWTC APE

<i>Location(s)</i>	<i>Land Ownership</i>	<i>USDA Survey Report Number</i>	<i>Report Title</i>	<i>Author(s) and Year</i>	<i>Outcome / Recommendation</i>
ASM Affiliates was contracted to survey roughly 7,963 acres associated with proposed LZs, DZs, ranges, existing transportation routes, and future transportation routes/trails, while SAIC was contracted to survey 1,000 acres within 50 proposed LZs.	USFS, DoD, State of California, and privately owned	R2009041701936	A Cultural Resources Survey Report for Enhancement of Operations and Training Proficiency at Marine Corps Mountain Warfare Training Center, Mono County, California	Dayna Giambastiani, Mark A. Giambastiani, Kari S. Sprengeler, Leslie Fryman, and Krisstin I. Sibley, July 2013	All in all, totals of 196 archaeological sites and 223 isolated finds were identified and recorded by ASM and SAIC combined. In addition, 12 recently recorded sites were relocated by ASM. Of the 196 located sites, 95 are prehistoric, 73 historic, and 27 are multi-component, and one is of indeterminate age.
ASM Affiliates surveyed 2,752 acres associated with proposed DZs and existing transportation routes, while SAIC surveyed 60 acres within three proposed LZs.	USFS	R2009041701936	A Cultural Resources Survey Report for Enhancement of Operations and Training Proficiency at Marine Corps Mountain Warfare Training Center, Douglas County, Lyon County, and Mineral County, Nevada	Dayna Giambastiani, Mark A. Giambastiani, Kari S. Sprengeler, Leslie Fryman, and Krisstin I. Sibley, July 2013	All in all, totals of 189 archaeological sites and 256 isolated finds were identified and recorded by ASM and SAIC combined. Of the 189 sites, seven are recently recorded sites relocated by ASM. Of the 189 located sites, 127 are prehistoric, 34 historic, and 28 are multi-component.
Lithic scatter sites within the MCMWTC training areas	USFS	R2013041702271	Limited Testing of 32 Archaeological Sites on the Marine Corps Mountain Warfare Training Center near Bridgeport, Mono County, California	Nathan Stevens, November 2014	Three sites are recommended eligible for the NRHP, 22 are recommended ineligible, and further study is suggested for 7 sites to support an eligibility recommendation.

Table 3.4-1. Cultural Resource Surveys within the MCMWTC APE

<i>Location(s)</i>	<i>Land Ownership</i>	<i>USDA Survey Report Number</i>	<i>Report Title</i>	<i>Author(s) and Year</i>	<i>Outcome / Recommendation</i>
Pickel Meadow and Lost Cannon Peak areas	USFS	R2013041 702302	Archaeological Survey of 3,000 Acres on the Marine Corps Mountain Warfare Training Center near Bridgeport, Mono County, California	Nathan Stevens and Jerome King, December 2014	A total of 80 archaeological sites and 108 isolates were located. Of the archaeological sites, 67 are newly recorded sites, 12 are updates to previously recorded sites, and 1 was recently updated and left unchanged. Prehistoric sites were the most common, followed by multi-component, and historic-era sites. Of the isolates, 92 are prehistoric and 16 are historic-era.
307 acres in the vicinity of Silver and Wolf Creeks, and 694 acres in the Leavitt Lake area	USFS	R2014041 702391	Archaeological Survey of 1,000 Acres on the Marine Corps Mountain Warfare Training Center near Bridgeport, Mono County, California	Nathan Stevens and Mike Lenzi, July 2015	A total of 12 archaeological sites and 22 isolates were located. Of the archaeological sites, 10 are newly recorded, 1 is an update to a previously recorded prehistoric site, and 1 is a previously recorded historic-era site that was not updated. Most of the sites are prehistoric (n=9), but 2 are historic-era and 1 is a multicomponent site. Of the isolates, 20 are prehistoric and 2 are historic-era.
Sites within the MCMWTC training areas	USFS	R2014041 702392	Test of 21 Archaeological Sites on the Marine Corps Mountain Warfare Training Center near Bridgeport, Mono County, California	Nathan Stevens, Mike Lenzi, and Vickie Clay, November 2015	Overall, 16 sites are recommended eligible for listing in the NRHP, and 5 are recommended ineligible.

Notes: DoD = Department of Defense; DZ = Drop Zone; LZ = Landing Zone; MCMWTC = Marine Corps Mountain Warfare Training Center; NRHP = National Register of Historic Places; USDA = United States Department of Agriculture; USFS = United States Forest Service

Table 3.4-2. Summary of NRHP Eligibility Recommendations by State

<i>Recommended Eligibility Status</i>	<i>Number of Sites California</i>	<i>Number of Sites Nevada</i>
Eligible	53	58
Contributing	1	0
Non-Contributing	2	0
Not Eligible	117	132
Unevaluated	42	1

3.4.2.3 Architectural Resources

The earliest buildings at the MCMWTC Base Camp date to 1951. With regard to MCMWTC properties, there were two phases of building construction; the first phase was from 1951 to 1954, and the second was from 1982 to 1989. A few older buildings have been renovated since 1989.

In 1998 the Base Camp at MCMWTC Pickel Meadows contained a total of 36 buildings categorized by four property types: administrative, residential, support, and storage. The majority (22 properties) were built in the mid-1980s and do not meet the 50-year consideration threshold for NRHP eligibility. In addition, none of the buildings appear to meet NRHP Criteria Consideration G for exceptionally-significant properties that are less than 50 years of age.

There are eight buildings/structures at Base Camp that were constructed before the 1980s: Buildings 1000, 1019, 1999, 2000, 2001, 5011, 6000, and 6010. Most of these date to the initial 1951 to 1954 phase of construction, although a wastewater treatment facility dates to 1964. All eight of these buildings had either already been renovated or were in the process of being altered with new materials and additions in keeping with the 1980s construction. All eight of the buildings were recommended as ineligible for inclusion in the NRHP by ASM Affiliates due to their lack of historic significance and integrity. These conditions have not changed since 1998-2000 and recent surveys found no cause to re-evaluate any of the eight buildings (MCMWTC and Forest Service 2013a, b).

3.4.2.4 Traditional Cultural Properties

Traditional cultural properties are physical properties or places that are eligible for inclusion in the NRHP based on associations with the cultural practices, traditions, beliefs, lifeways, arts, crafts, or social institutions of a living community (National Park Service 2012). Traditional cultural properties are rooted in a traditional community's history and are important in maintaining the continuing cultural identity of the community. The cultural resource surveys performed for this proposed project (see Table 3.4-1) did not evaluate traditional cultural properties for inclusion in the NRHP, but traditional cultural properties can be identified through the tribal consultation process.

3.4.2.5 Paleontological Resources

Paleontology is the study of life that existed before the era of modern humans. Paleontological resources include fossils and other records of ancient vertebrates, invertebrates, plants, and other life forms. Paleontological resources were not considered in the cultural resource surveys performed for this proposed project (see Table 3.4-1) as they were not considered to be potentially impacted by the proposed project activities.

3.4.2.6 Section 106 Consultation

After initiating consultation in 2011, the Forest Service has responded to tribal requests to share the main body of the MCMWTC and Forest Service reports (2013a, b) from the Washoe Tribe, Bridgeport Indian Colony, Walker River Paiute Tribe, and the Yerington Paiute Tribe. The USMC has shared information

directly with representatives from the Miwok Tribe. Additionally, the USMC and the Forest Service have mailed project maps to the tribes. Representatives from the MCMWTC and the Forest Service have attended tribal council meetings. If tribes provide additional information regarding archaeological sites in the project area that might affect their NRHP-eligibility status, the Forest Service (HTNF) will consult further with the California and Nevada SHPOs regarding that potential historic property. If further probing, testing, or excavation is planned, HTNF will consult with tribes before California SHPO consultation is initiated. The HTNF will also consult further with the California SHPO if Traditional Cultural Properties or sacred locations are identified.

A consultation letter was sent to the Nevada SHPO regarding the sites within that respective state, along with the survey results and avoidance measures to be implemented. The Nevada SHPO responded on 4 December 2014, stating that they concur with the Forest Service's determined APE for the project. The Nevada SHPO also concurred with the Forest Service's determination that 33 properties and 113 cultural resources within Nevada are eligible for inclusion in the NRHP. Finally, the Nevada SHPO concurred that "the proposed undertaking will not pose an adverse effect to the identified historic properties." This SHPO concurrence letter is part of the project record and is included in Appendix C.

A consultation letter was sent to the California SHPO regarding the sites within that respective state, along with the survey results and avoidance measures to be implemented. The California SHPO responded on 14 October 2016 with the recommendation that a Programmatic Agreement with the USMC be developed to govern the management of historic properties on those portions of the HTNF affected by the Proposed Action. Following a consultation meeting among the Forest Service, USMC, SHPO, and the Office of Historic Preservation staff on 20 June 2017, the Forest Service agreed to reduce the duration of the permit issued from a length of forty (40) years to a length of five (5) years, during which time a Programmatic Agreement will be developed. The California SHPO concurred with the Forest Service's determination of properties and cultural resources within California that are eligible for inclusion in the NRHP. Finally, the California SHPO stated that "I do not object to your finding of no adverse effect to historic properties." This SHPO concurrence letter is part of the project record and is included in Appendix C.

3.4.3 Approach to Analysis

The impacts analysis for cultural resources was undertaken with respect to the cultural sites identified in the 2009-2015 surveys discussed in Section 3.4.2, *Existing Conditions*. The only cultural resources evaluated for potential impacts were archaeological resources. Architectural resources and paleontological resources were not evaluated because there are no proposed project activities (building construction, significant amounts of digging or earth movement, etc.) under this project that would be reasonably expected to affect these resources. Traditional cultural properties were not evaluated because none were identified through the cultural resource survey process; however, if any traditional cultural properties are discovered through the tribal consultation process, they will be evaluated for any potential impacts as a result of this proposed project.

Significant impacts to cultural resources would occur if the adverse effect, as a result of implementation of the Proposed Action or continuation of the No-Action Alternative, could not be resolved following consultation and consideration of appropriate measures to avoid, minimize, or mitigate the effect on the integrity of the location, design, setting, materials, workmanship, feeling, or association of sites eligible for listing in the NRHP (as required by the NHPA). All project activities would comply with the applicable forest-wide standards and guidelines as described in the *Toiyabe National Forest Land and Resource Management Plan* and amendments (Forest Service 1986, 2001, 2004a). Standards and guidelines specific to cultural resources can be found in the cultural resources section of the Plan. Prehistoric components

were evaluated mainly with respect to their perceived ability to provide useful information regarding the research themes of Chronology, Subsistence, Pinyon Exploitation, and Toolstone Use. Historic components were evaluated for their ability to offer data concerning historic mining, ranching, or transportation.

3.4.4 Environmental Consequences

3.4.4.1 No-Action Alternative

Cultural resources within the training areas covered by the 40-year SUP and four temporary permits would continue to be subject to the permits' restrictions. Any previously unknown cultural resources discovered during training activities would be reported to the MCMWTC Environmental Office and the Forest Service. Curation of recovered artifacts would be in a manner consistent with 36 CFR 79 (Curation of Federally-Owned and Administered Archaeological Collections). NRHP-eligible resources are off-limits to military training activities and would be plainly described or physically protected as agreed to by both the MCMWTC and the Forest Service. Protected sites would be monitored for maneuver damage during annual training land inspection events. The MCMWTC would bear responsibility for site restoration should training impact a protected site. If ever necessary, site restoration would occur in consultation and coordination with the Forest Service and the applicable cultural resource or tribal agencies. In addition to the specific permit restrictions, activities within the HTNF are subject to cultural resource goals regarding the inventorying, evaluation, and protection of cultural resources (Forest Service 1986).

Therefore, due to the permit restrictions in effect within the training areas approved under the 40-year SUP and four existing temporary SUPs, direct and indirect impacts to cultural resources would be less than significant under the No-Action Alternative.

3.4.4.2 Proposed Action

There would be no adverse impacts under the Proposed Action. Cultural resources would be avoided and undisturbed during military training activities by altering the position of training locations and by limiting the physical impacts introduced by proposed training activities. As needed to avoid impacts to cultural resources, various DZs and LZs were relocated and training activities were limited to certain sections along travel routes.

Under the Proposed Action, fixed-wing aircraft (e.g., CH-53E and CH-46) would be replaced by tilt-rotor aircraft (MV-22). Rotor wash (downdraft and outwash forces) from an MV-22 aircraft during landing, take-offs, and hovering immediately above the ground would be greater than from the CH-53E and CH-46 (Marine Corps Installation West 2009). MV-22 rotor wash may disturb cultural artifacts lying on the soil surface in the immediate vicinity of the hovering aircraft, although the extent of this disturbance would depend on local soil characteristics, presence of vegetation, and size/weight of artifacts. MV-22 training operations that could cause ground disturbance would occur at previously established landing areas at MCMWTC, and within LZs as described in Section 2.2.1. Therefore, cultural resources would be protected by applying a 350-ft buffer to prevent MV-22 use around cultural sites, or by requiring that at least 24 inches of snowpack be present at the landing site, to protect the soil from rotor wash disturbance.

A protective setback of 350 ft has been established to protect cultural resources from MV-22 rotor wash at other Marine Corps installations (Marine Corps Installations West 2013) and has been applied to the analysis of landing points proposed for use by MV-22s at the MCMWTC. At this distance, rotor wash wind speeds from the MV-22 are diminished to approximately 40 miles per hour (approximately 44 miles per hour at 328 ft), and the potential for impacts to cultural deposits on the surface is considered negligible

(Marine Corps Installations West 2013). As for sensitive biological resources, it is proposed that MV-22 landings be allowed within cultural resource buffers only when there is at least 2 ft of snowpack.

Design Features listed in Section 2.2.5.6 would be implemented to protect cultural resources under the Proposed Action by requiring site protection and procedures for site discovery. Archaeological sites that are unevaluated, or sites that are discovered during the proposed military training activities, would be treated as eligible sites until they can be adequately and thoroughly evaluated for potential inclusion in the NRHP.

In addition, regarding convoy training on Lucky Boy Pass and Masonic Road, permit conditions require that all cultural sites are to be avoided. If ongoing cultural surveys detect a sensitive resource, additional mitigation measures to avoid impacts may be applied.

All cultural sites that are eligible for or potentially eligible for inclusion in the NRHP would be off-limits to training activities per consultation with the California and Nevada SHPOs and as required by design features in Section 2.2.5.6. No ground disturbing activities are allowed within any identified archaeological sites, but foot traffic is permitted within those sites that are not considered as eligible for inclusion in the NRHP.

Preparation of an Integrated Cultural Resources Management Plan (ICRMP) for MCMWTC began in late 2015, and was to be completed by summer of 2016. Through consultation with the California and Nevada SHPOs and implementation of the design features in Section 2.2.5.6, direct and indirect impacts to cultural resources would be less than significant under the Proposed Action.

3.4.5 Cumulative Effects

In addition to the direct and indirect environmental consequences already discussed, additional considerations required by NEPA include the potential cumulative effects of the Proposed Action. Potential cumulative effects could occur when the effects of the Proposed Action are combined with other past, present, and reasonably foreseeable projects (Appendix E). As detailed in Appendix E, the ROI for cumulative impact analysis is dependent upon the specific resource being analyzed. The ROI for cultural resources would be the project APE, which includes existing and proposed training areas that lie between Sonora Pass along SR 108 (Mono County, California) and the town of Hawthorne, Nevada (Mineral County).

The assumed combined past cumulative effects to cultural resources are contained within Section 3.4.2, *Existing Conditions*, and Section 3.4.4.1, *No-Action Alternative*. As discussed in Section 3.4.2.2, nearly every archaeological site has been impacted from past activities within the APE, particularly from cattle grazing. Other activities such as past recreational uses and development that causes surface erosion have impacted archaeological sites. Impacts from past Marine Corps training activities have been fairly minor, although illicit surface collecting has certainly reduced the integrity of sites in areas more often visited by the public. Archaeological site evaluations by site probing and testing have minor effects on archaeological sites. However, these minor, direct effects are offset by the data that is obtained. Cumulative effects include the financial costs of long-term artifact curation and potential effects on relationships between government agencies and the local Native American tribes. Artifact collections and their management by all agencies are held in perpetuity.

Cumulative effects from the Proposed Action were assessed when added to: (1) the existing environmental conditions as a proxy for the impacts of past actions as described above; (2) the “MCMWTC Operations and Training Baseline Project” as described in Appendix E; and (3) other past, present, and reasonably

foreseeable projects in the ROI. However, there would be less than significant impacts to cultural resources from the execution of the Proposed Action, due to implementation of design features in the SUPs and consultation with the California and Nevada SHPOs. Implementation of design features in Section 2.2.5.6 under the Proposed Action would include no training on known sites in, or potentially eligible for inclusion in, the NRHP and would require evaluation for eligibility of any new sites discovered during operations. Other projects within the APE that have the potential for significant impacts to cultural resources have undergone, or would be required to undergo, Section 106 review and would be mitigated, as required. Therefore, less than significant cumulative impacts would occur to cultural resources with implementation of the Proposed Action along with past, present, and reasonably foreseeable projects in the APE.

3.5 PUBLIC HEALTH AND SAFETY

3.5.1 Definition of Resource

Health and safety issues addressed in this EA include: risks of public exposure to military operations, hazardous materials and wastes; disproportionate health or environmental risks to children; and emergency response capacity. Risks related to military operations may be related to ground training and munitions-related hazards. Ground safety issues may be related to vehicle and infantry maneuvers, munitions use, range maintenance activities, traffic safety, and other military activities.

The terms “*hazardous materials*” and “*hazardous waste*” refer to substances defined as hazardous by the Comprehensive Environmental Response, Compensation, and Liability Act and the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA). In general, *hazardous materials* include substances that, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may present substantial danger to public health or the environment when released into the environment. *Hazardous wastes* are regulated under RCRA and defined as any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes that either exhibit one or more of the hazardous characteristics of ignitability, corrosivity, toxicity, or reactivity, or are listed as a hazardous waste under 40 CFR Part 261. Hazardous materials and wastes are also regulated by local, state, and federal laws and regulations, and other requirements and agreements, including management plans that are specific to MCMWTC.

Children are considered sensitive receptors in terms of exposure to environmental hazards and health/safety risks. EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, addresses the potential for children to be disproportionately exposed to such hazards and safety risks.

Key sources of information on existing conditions relative to public safety and hazardous materials/wastes include the *Range Environmental Vulnerability Assessment* (MCICOM 2012); the *MCMWTC Range Complex Management Plan* (MCMWTC 2011); and *Training Center Order (TCO) 3550.1C, the Standard Operating Procedures (SOP) for MCMWTC Range and Training Area Operations* (USMC 2010).

3.5.2 Existing Conditions

Several MCOs and TCOs are in effect to regulate, minimize, and prevent public health and safety impacts in the MCMWTC training areas. These orders and directives include, but are not limited to:

- MCO 5100.29A, Marine Corps Safety Program
- MCO 3570.1B, Range Safety
- MCO 8020.10A, Marine Corps Ammunition Management and Explosives Safety Policy Manual
- MCO 5090.2B, Environmental Compliance and Protection Manual

- TCO 4000.1, MCMWTC SOP For Support of Unit Operations Training
- TCO 3550.1C, MCMWTC Range Regulations
- TCO P3710.1E, Air Operations Manual, MCMWTC
- TCO 5090.3, Environmental Compliance Protection SOP Manual

The MCMWTC training areas and training corridors are located away from population centers (the closest being the towns of Bridgeport and Walker). However, except for Base Camp, there is open access to the training areas and corridors, and they are accessible to the general public via dirt roads and/or trails. Ranges and training areas of the MCMWTC are located entirely on lands managed by the Forest Service. As a result, training activities are generally limited to non-live-fire events, except for live ammunition used at the small arms ranges and demolition explosives used for avalanche initiation and control (MCMWTC 2011).

The primary safety issues addressed in this EA are fire safety, safety associated with access to the sites and corridors used for USMC training at the MCMWTC, use of hazardous materials, and generation of hazardous wastes. Specific training activities with the potential to cause public health and safety conflicts include avalanche initiation sites and small arms ranges.

3.5.2.1 Avalanche Initiation Sites

At the AISs, demolition materials such as TNT or Composition C-4, are used to initiate avalanches for training activities for demonstrating safe ways to avoid avalanches and for search and rescue training in avalanche situations. The demolition materials can also be used to dislodge accumulated snow to prevent unwanted avalanches (MCICOM 2012). The three AISs are located within TA-10 (AIS-1) and TA-11 (AIS-2 and AIS-3), as shown on Figure 2.1-1 in Chapter 2. Both TA-10 and TA-11 are within the Bridgeport Winter Recreation Area (BWRA). The three avalanche initiation ranges may only be used during the winter months (15 November through 15 April) under the existing Leavitt Lake SUP (BRI571).

Before an avalanche is initiated, the Range Safety Officer ensures that a visual and physical sweep of the area is conducted and no potential hazards are present. Road guards are placed on the nearby Forest Service roads to halt traffic and to observe the surrounding area for skiers and snowmobilers coming into the area. Temporary live-fire perimeter signs are placed along the exterior boundary of the SDZ. When the training exercise is complete, the training unit is responsible for filling in all holes and conducting a thorough range sweep before leaving the area. The Range Safety Officer ensures that all unexploded charge locations are identified, plotted on a map, and reported to the MCMWTC Range Control for Explosives Ordnance Disposal Cleanup (USMC 2010).

3.5.2.2 Small Arms Ranges

There are 13 small arms ranges located within TAs 4, 5, 6, 8, 10, and 11 (refer to Figure 2.1-1). The ranges support small arms live-fire training. Ranges 1000, 1100, and 1101 are authorized for winter use only, from 15 November through 15 April under the existing Leavitt Lake SUP (BRI571). Except for Range 500, there are no permanent firing lines, firing positions, or target locations on any of the small arms ranges (MCMWTC 2011). On the other ranges, the firing positions and target locations are unidentifiable except when they are being used for training. When training activities are completed, all targets and all range debris (e.g., shell casings, speed loaders, ammunition boxes) are removed from the range (MCMWTC 2011).

The SOP for MCMWTC Range and Training Area Operations (TCO 3550.1C) requires that all ordnance impacts are observed to ensure that projectiles land within the prescribed impact area (USMC 2010). Any rounds accidentally fired off-range during training activities must be immediately reported to MCMWTC

Range Control. If a munition is not promptly retrieved or rendered safe, then it becomes a solid and hazardous waste and is treated, recovered, or monitored as such (USMC 2010). The use of military munitions, other than small-arms, small detonation charges, and blanks and pyrotechnics, is prohibited at MCMWTC by Forest Service rules.

3.5.2.3 Fire Safety

Fires, both natural and human caused, are a relevant factor in the environment of the HTNF. Fire potential and risk are very high throughout much of this area, which generally has the vegetation, fuel loading, and fire occurrence that create a high risk of burning large acreages of NFS land and posing a high threat to private property.

The fire regime affects ecological resources, air quality, and hydrology, in addition to human safety; however, for the purposes of this EA, fire is addressed here in the Public Health and Safety section. Housing and other developments within the urban/wildland interface have increased the risk and consequences of wildfire (Forest Service 2005b). Fire prevention and suppression efforts are designed to protect human life and property, but the exclusion of fire has had consequences on the natural environment. The extent, distribution, and connectivity of old forest stands have been impacted by the absence of fire and historic logging. The exclusion of natural fire has resulted in denser timber stands, higher fuel loadings, and the invasion of non-fire resistant species, all of which have increased the risk of large fires and threats to cultural resources, wildlife, water quality, scenic quality, and facilities.

The MCMWTC prepared a Wildland Fire Management Plan (MCMWTC 2015d) to help guide wildland fire management so appropriate measures are taken in wildfire situations to enhance and maintain the installation goals of military training and natural resources management. The Management Plan is only applicable to the DoD-owned land within the MCMWTC training area boundaries. However, the plan promotes interagency cooperation with the Forest Service and other relevant land management agencies.

3.5.2.4 Hazardous Materials and Wastes

The MCMWTC operates on a “leave no trace” and “pack in, pack out” practice for the training areas. There is to be no burying, dumping, or otherwise disposing of trash, rubbish, or garbage except at established receptacles, and no burying, dumping, or otherwise disposing of any type of explosive material, pyrotechnic, chemical, ammunition, or any type of hazardous waste (USMC 2010). A new design feature specifying MCMWTC procedures for trash cleanup is provided in Section 2.2.5.14.

Hazardous materials (e.g., paint, petroleum, oil, and lubricants, etc.) used while training are stored in approved, closed, leak-proof containers. All hazardous materials are clearly marked, identifying the contents of the container. Per the SOPs for Range Training Areas, all spills must be reported immediately to Range Control to expedite waste clean-up and disposal. A Spill Response Kit shall be properly maintained and utilized when spills of hazardous materials such as oil, fuel, or chemicals from any vehicle, machinery, or container are reported (USMC 2010). Hazardous wastes are removed daily from the training areas (USMC 2010).

3.5.3 Approach to Analysis

This section evaluates potential impacts to public health and safety as a result of implementation of the No-Action Alternative or the Proposed Action. Significant impacts would occur if implementation of the Proposed Action or the No-Action Alternative would fail to mitigate increased safety and health risks to the public and/or military personnel.

3.5.4 Environmental Consequences

3.5.4.1 No-Action Alternative

Under the No-Action Alternative, training activities would be limited to the vehicles, weapons systems, engineer systems, aircraft, ordnance, and equipment currently utilized by the USMC and other military agencies as authorized in the 40-year SUP and the four existing temporary SUPs. The design features approved under the AOP for the 40-year SUP and the four existing temporary SUPs would continue to apply (see Section 2.1.6). In addition, the safety programs, orders, and directives listed in Section 3.5.2 would continue to apply and contribute to maintaining health and safety. The potential for health and safety issues would also remain unchanged from current conditions.

Avalanche Initiation Sites and Small Arms Ranges

Under the No-Action Alternative, the same areas would continue to be used for demolition-initiated avalanches and live-fire ranges as described under existing conditions in Section 3.5.2.1. The same MCOs and TCOs would continue to be in effect to regulate, minimize, and prevent public health and safety impacts in the MCMWTC training areas. In addition, the design features in the existing 40-year SUP and temporary SUPs require safety measures such as posting signage outside of live-fire areas and avoid live firing on weekends and holidays when more recreational users are likely to be present in the area. Before an avalanche is initiated at an AIS, the area would be cleared of any public users and visitors would be prevented from entering the area until the snow has stabilized. Therefore, use of AISs and small arms ranges would have an adverse and direct but temporary impact on civilians in the area while the training is occurring. The adverse impact would cease when the training has ceased and MCMWTC range operators have cleared the areas for public use again.

Fire Safety

With regard to fire safety and wildfire prevention, the 40-year SUP contains design features intended to reduce or prevent public safety impacts from wildfires related to avalanche initiation and small arms range usage. The Forest Service may restrict explosives or ammunition usage when fire danger conditions require it or when there is a conflict with public use. Blanks, live-fire (on appropriate Ranges), and non-incendiary pyrotechnics (such as those used for simulated IED explosions) may be used year-round. All explosives would be stored in a secure manner, in compliance with applicable laws and ordinances.

In the event of a fire unexpectedly resulting from other training activities or equipment, pre-suppression and range monitoring activities reduce the likelihood of fire growth and impacts to other forest uses. Specific pre-suppression activities to manage fires include monitoring of local fire danger and weather conditions. In the event of a wildland fire on any range, impact, or training area, the Range Safety Officers are required to immediately notify Range Control by the most expeditious means possible, noting the exact location and extent of the fire. Range Control then instructs the Range Safety Officers as to what action to take before the arrival of the Fire Department. The Range Control Officer then monitors all range and training area fires as they occur, and assists the Base Fire Chief to safeguard property and personnel (Marine Corps Installations West 2009).

The MCMWTC and the Forest Service would coordinate their efforts in fire management activities in the form of a Cooperative Fire Agreement between the two fire agencies. Fire management activities include, but are not limited to the detection and suppression of wildfires in and adjacent to each agency's area of responsibility.

The risk of wildfire is an ever-present concern in the region due to the local climate and vegetation types. If a wildfire was ignited, there could be the potential for direct impacts to the public that would have to leave the area (or be prevented from entering the area) until the fire was suppressed. However, potential direct adverse impacts to the public from actual wildfires ignited by MCMWTC training events would be very infrequent and risks are minimal because of the constant and continual monitoring efforts by MCMWTC range operators and personnel in the field to prevent and extinguish fires, and due to the coordinated efforts by MCMWTC, the Forest Service, and other local land management agencies and emergency responders to prevent and suppress wildfires in the region.

Hazardous Materials

Under the No-Action Alternative, the MCOs and TCOs in effect to regulate, minimize, and prevent public health and safety impacts from hazardous materials would continue to be implemented and followed. The MCMWTC Safety Manager performs professional safety duties in accordance with MCOs and other directives. The complete hazardous materials protection measures are contained within the AOP, 40-year SUP, and four existing temporary SUPs (refer to Appendix A). Under the existing permits, the MCMWTC would ensure that signs are posted in all areas that contain hazardous materials and unexploded ordnance; would require that all hazardous material storage and removal be handled in coordination with the MCMWTC Environmental Office; would require that all waste products be disposed of in an environmentally approved manner; and all spills would be reported immediately to the appropriate MCMWTC and Forest Service offices and personnel. MCMWTC personnel would mark, document, and remove all unexploded ordnance, discarded munitions materials, blanks, live rounds, and military munitions/explosives of concern, including TNT and primers used in avalanche initiation.

With continued adherence to existing MCOs and TCOs, SOPs, and permit design features, the risk of impact to public health and safety from existing and ongoing training activities at MCMWTC would be minimal and unlikely to occur. Therefore, direct and indirect impacts to public health and safety would be less than significant under the No-Action Alternative. In addition, there would be no disproportionate risks to the health and safety of children under the Proposed Action.

3.5.4.2 Proposed Action

Under the Proposed Action, the regulations, orders, and permit requirements in place to protect public health and safety under the No-Action Alternative would continue to apply. The complete list of measures contained within the 40-year SUP and the four existing temporary SUPs can be found in Section 2.1.6.

Avalanche Initiation Sites and Small Arms Ranges

Under the Proposed Action, the same areas would continue to be used for demolition-initiated avalanches and live-fire ranges as described under the No-Action Alternative. The same MCOs and TCOs would continue to be in effect to regulate, minimize, and prevent public health and safety impacts in the MCMWTC training areas. Therefore, use of AISs and small arms ranges would have an adverse and direct but temporary impact on civilians in the area while the training is occurring. The adverse impact would cease when the training has ceased and the range area is cleared for public use again.

Fire Safety

Just as under the No-Action Alternative, the 40-year SUP contains design features intended to reduce or prevent public safety impacts from wildfires related to avalanche initiation and small arms range usage. The Forest Service may restrict explosives or ammunition usage when fire danger conditions require it or when there is a conflict with public use. Blanks, live-fire (on appropriate Ranges), and non-incendiary

pyrotechnics (such as those used for simulated IED explosions) may be used year-round. All explosives would be stored in a secure manner, in compliance with applicable laws and ordinances.

Pre-suppression and range monitoring activities would reduce the likelihood of fire growth and impacts to other forest uses. The MCMWTC and the Forest Service would coordinate their efforts in fire management activities in the form of a Cooperative Fire Agreement between the two fire agencies.

With specific regard to the MV-22 aircraft, the potential for wildfire ignition is considered to be low and unlikely to occur under normal operating conditions with implementation of flight safety and Range and Training Area SOPs. These SOPs would minimize the potential for fire ignition during routine training operations (Marine Corps Installations West 2013). Most MV-22 landing operations would have the aircraft on the ground for no more than 3 minutes, and would typically occur in LZs that are already disturbed, or that have sparse vegetation. Furthermore, MV-22 aircrews are able to throttle back to reduce power and heat exhaust when needed (Marine Corps Installations West 2013). Finally, MV-22 pilots have the capability to make real-time decisions to ensure safe landing operations, so they would not choose to land in conditions that may pose a high fire risk due to hazardous local weather or unexpected dry vegetation conditions.

The potential risk of wildfire directly due to MCMWTC training activities or equipment would be approximately as infrequent, with minimal risk, under the Proposed Action as under the No-Action Alternative. If a wildfire was ignited, there could be the potential for direct impacts to the public that would have to leave the area (or be prevented from entering the area) until the fire was suppressed.

Hazardous Materials and Wastes

Under the Proposed Action, the MCOs and TCOs in effect to regulate, minimize, and prevent public health and safety impacts from hazardous materials would continue to be implemented and followed. With continued adherence to existing MCOs and TCOs, SOPs, and design features for trash cleanup in Section 2.2.5.14, the risk of impact to public health and safety from existing and ongoing training activities at MCMWTC would be minimal and unlikely to occur. Therefore, direct and indirect impacts to public health and safety would be less than significant under the Proposed Action.

Therefore, with implementation of design features, compliance with range operating procedures, MCOs, and TCOs, direct and indirect impacts to public health and safety would be less than significant under the Proposed Action. In addition, there would be no disproportionate risks to the health and safety of children under the Proposed Action.

3.5.5 Cumulative Effects

In addition to the direct and indirect environmental consequences already discussed, additional considerations required by NEPA include the potential cumulative effects of the Proposed Action. Potential cumulative effects could occur when the effects of the Proposed Action are combined with other past, present, and reasonably foreseeable projects (Appendix E). As detailed in Appendix E, the ROI for cumulative impact analysis is dependent upon the specific resource being analyzed. The ROI for public health and safety resources includes the publicly accessible areas within and adjacent to the MCMWTC boundaries and the training corridors. Cumulative effects from the Proposed Action were assessed when added to: (1) the existing environmental conditions as a proxy for the impacts of past actions (refer to Section 3.5.2); (2) the “MCMWTC Operations and Training Baseline Project” as described in Appendix E; and (3) other past, present, and reasonably foreseeable projects in the ROI.

There would be less than significant impacts to public health and safety resources from the execution of the Proposed Action, due to implementation of design features as discussed in Section 3.5.4.2. The training activities would be carried out in accordance with applicable design features, MCOs, and TCOs to regulate, minimize, and prevent public health and safety impacts. All of the training areas are located away from population centers and are designed to restrict or limit impacts to recreational users. Past, present, and future training activities are similarly required to comply with the established public health and safety requirements, thereby avoiding or minimizing potential cumulative effects. Therefore, less than significant cumulative impacts would occur to public health and safety with implementation of the Proposed Action along with past, present, and reasonably foreseeable projects in the ROI.

3.6 AIR QUALITY

3.6.1 Definition of Resource

Ambient air quality refers to the atmospheric concentration of a specific compound that occurs at a particular geographic location. The ambient air quality levels measured at a particular location are determined by the interactions of emissions, meteorology, and chemistry. When discussing air quality, it is important to consider the types, amounts, and locations of pollutants emitted into the atmosphere. Meteorological factors that affect air quality include wind and precipitation patterns that can affect the distribution, dilution, and removal of pollutant emissions from the atmosphere. Furthermore, chemical reactions in the atmosphere can transform pollutant emissions into other chemical substances. Ambient air quality data are generally reported as a mass per unit volume (e.g., micrograms per cubic meter [$\mu\text{g}/\text{m}^3$] of air) or as a volume fraction (e.g., parts per million [ppm] by volume).

Air quality is defined by ambient air concentrations of specific pollutants determined by the U.S. Environmental Protection Agency (USEPA) to be of concern with respect to the health and welfare of the general public. Pollutant emissions typically refer to the amount of pollutants or pollutant precursors introduced into the atmosphere by a source or group of sources. Pollutant emissions contribute to the ambient air concentrations of criteria pollutants, either by directly affecting the pollutant concentrations measured in the ambient air or by interacting in the atmosphere to form criteria pollutants. Primary pollutants, such as carbon monoxide (CO), sulfur dioxide (SO₂), lead (Pb), and some particulates, are emitted directly into the atmosphere from emission sources.

Secondary pollutants, such as ozone (O₃), nitrogen dioxide (NO₂), and some particulates, are formed through atmospheric chemical reactions that are influenced by meteorology, ultraviolet light, and other atmospheric processes. Suspended particulate matter less than or equal to 10 microns in size (PM₁₀) and less than or equal to 2.5 microns in size (PM_{2.5}) are generated as primary pollutants by various mechanical processes (for example, abrasion, erosion, mixing, or atomization) or combustion processes. However, PM₁₀ and PM_{2.5} can also be formed as secondary pollutants through chemical reactions or by gaseous pollutants that condense into fine aerosols. In general, emissions that are considered “precursors” to secondary pollutants in the atmosphere (such as volatile organic compounds [VOCs] and oxides of nitrogen [NO_x], which are considered precursors for O₃), are the pollutants for which emissions are evaluated to control the level of O₃ in the ambient air.

The ROI for this discussion can vary according to pollutant. For pollutants that do not undergo a chemical reaction after being emitted from a source (i.e., direct emissions), the ROI is generally restricted to a region in the immediate vicinity of the activity. These pollutants include CO, SO₂, and directly-emitted PM₁₀ and PM_{2.5}. For pollutants that undergo chemical reactions and interact within the atmosphere to form secondary pollutants, such as O₃ and its precursors NO_x and VOCs, and precursors of PM₁₀ and PM_{2.5}, the ROI is a

larger regional area. The chemical transformations and interactions that create O₃ and secondary PM₁₀ and PM_{2.5} can take hours to occur; therefore, the precursor pollutants may be emitted some distance from the impact area depending on weather conditions.

Mixing height is another factor used in defining the ROI for various pollutants. The mixing height is the upper vertical limit of the volume of air in which emissions may affect air quality. Emissions released *above* the mixing height are typically restricted from affecting ground-level ambient air quality in the region, while emissions of pollutants released *below* the mixing height may affect ground-level concentrations. The portion of the atmosphere that is completely mixed begins at ground level and may extend up to heights of a few thousand feet. Mixing height varies from region to region based on daily temperature changes, amount of sunlight, and other climatic factors. The USEPA has defined a default mixing height as 3,000 ft AGL; however, a more refined mixing height may be used based on regional parameters.

The ROI includes the Great Basin Valley Air Basin, in which the MCMWTC is located. The Great Basin Valley Air Basin includes three California counties: Alpine, Mono, and Inyo. The ROI also includes Lyon County, Nevada, where the Sweetwater Airstrip is located, and Mineral County, Nevada, where Lucky Boy Pass Road is located.

3.6.2 Existing Conditions

3.6.2.1 Regulatory Setting

Ambient Air Quality Standards

As part of the Clean Air Act (CAA), the USEPA has established criteria for seven major pollutants of concern, called “criteria pollutants.” These criteria pollutants include CO, SO₂, NO₂, O₃, PM₁₀, PM_{2.5}, and Pb. The criteria set for these pollutants, called the National Ambient Air Quality Standards (NAAQS), represent maximum levels of background pollution that are considered safe, with an adequate margin of safety to protect the public health and welfare. Based on measured ambient criteria pollutant data, the USEPA designates areas in the U.S. as having air quality better than (attainment) or worse than (nonattainment) the NAAQS.

The CAA also established a national goal of preventing degradation or impairment in federally designated Class I areas. Class I areas are defined as those areas where any appreciable degradation in air quality or associated visibility impairment is considered significant. As part of the Prevention of Significant Deterioration (PSD) Program, Congress assigned mandatory Class I status to all national parks, national wilderness areas (excluding wilderness study areas or wild and scenic rivers), and memorial parks greater than 5,000 acres. In Class I areas, visibility impairment is defined as atmospheric discoloration (such as from an industrial smokestack), and a reduction in regional visual range. Visibility impairment or haze results from smoke, dust, moisture, and vapor suspended in the air. Very small particles are either formed from gases (sulfates, nitrates) or are emitted directly into the atmosphere from sources like electric utilities, industrial processes, and vehicle emissions. Stationary sources are regulated under the PSD Program, and the PSD permitting process requires a review of impacts to all Class I areas within 62 miles of any proposed major stationary source. Mobile sources, including aircraft and associated operations such as those occurring at Marine Corps installations, are not subject to the requirements of PSD, but PSD thresholds are used in this EA as criteria to measure air quality impacts.

In addition to criteria pollutants, the USEPA has defined 187 substances as hazardous air pollutants (HAPs). HAPS are substances that have been determined to present some level of acute or chronic health risk (cancer

or non-cancer) to the general public. These pollutants may be emitted in trace amounts from various types of sources, including combustion sources. HAPs are regulated for specific source categories under the USEPA's National Emission Standards for HAP regulations.

Individual states are delegated the responsibility to regulate air quality to achieve or maintain air quality in attainment with these standards. The California Air Resources Board (CARB) enforces air pollution regulations and sets guidelines to attain and maintain the NAAQS and California Ambient Air Quality Standards (CAAQS) within the state of California. These guidelines are found in the California State Implementation Plan (SIP). The Bureau of Air Pollution Control of the Nevada Division of Environmental Protection enforces air pollution regulations to attain and maintain the NAAQS within Nevada.

The California CAA of 1988, as amended in 1992, outlines a program to attain the CAAQS for O₃, NO₂, SO₂, particulate matter, and CO by the earliest practical date. Some of the CAAQS are more stringent than the NAAQS. In these cases, there are generally more emissions reductions within a region, and the region is required to show that it has attained an applicable CAAQS. The CARB delegates the authority to regulate stationary source emissions to local air quality management districts. The CARB requires these agencies to develop their own strategies for achieving compliance with the NAAQS and CAAQS, but maintains regulatory authority over these strategies, as well as all mobile source emissions throughout the state. The Great Basin Unified Air Pollution Control District (GBUAPCD) is the local agency responsible for enforcement of air quality regulations in the MCMWTC area.

Within the state of Nevada (except for Clark and Washoe counties), the Department of Environmental Protection monitors, regulates, and permits air emissions through the Bureau of Air Pollution Control and the Bureau of Air Quality Planning. The Nevada SIP demonstrates how the NAAQS will be achieved, maintained, and enforced within the state. The Nevada Department of Environmental Protection is the agency responsible for enforcement of air quality regulations in Lyon and Mineral counties.

The USEPA has classified the Great Basin Valley in California, and Lyon and Mineral counties in Nevada as unclassified/attainment for all criteria pollutants. The Mono Basin is a part of the Great Basin Valley to the south of MCMWTC. The Mono Basin Planning Area surrounds Mono Lake, and is roughly defined by U.S. Highway 395 to the west and SR 167 to the north. The Mono Basin is classified as a nonattainment area for PM₁₀; however, the MCMWTC is outside of the nonattainment area. The Great Basin Valley Air Basin is classified as a nonattainment area for the O₃ and PM₁₀ CAAQS. The Air Basin is either unclassified or in attainment of the CAAQS for all other criteria pollutants. The NAAQS and CAAQS are summarized in Table 3.6-1.

Section 176(c) of the CAA, as articulated in the USEPA General Conformity Rule, states that a federal agency cannot issue a permit for or support an activity unless the agency determines that it will conform to the most recent USEPA-approved SIP. This means that projects using federal funds or requiring federal approval must not: (1) cause or contribute to any new violation of a NAAQS; (2) increase the frequency or severity of any existing violation; or (3) delay the timely attainment of any standard, interim emission reduction, or other milestone. The General Conformity Rule applies to NAAQS in federal nonattainment areas. Since the air basins are in attainment of all NAAQS for all criteria pollutants, the General Conformity Rule would not apply to the Proposed Action.

Table 3.6-1. Ambient Air Quality Standards

<i>Pollutant</i>	<i>Averaging Time</i>	<i>National Standards Primary^{b,c}</i>	<i>National Standards Secondary^{b,d}</i>	<i>California Standards</i>
O ₃	8-hour (2008 standard)	0.075 ppm (147 µg/m ³)	Same as primary	0.09 ppm (176 µg/m ³)
O ₃	8-hour (2015 standard) ^f	0.070 ppm (148 µg/m ³)	Same as primary	0.09 ppm (176 µg/m ³)
O ₃	1-hour	—	—	0.070 ppm (137 µg/m ³)
CO	8-hour	9 ppm (10 mg/m ³)	—	9.0 ppm (10 mg/m ³)
CO	1-hour	35 ppm (40 mg/m ³)	—	20 ppm (23 mg/m ³)
NO ₂	Annual	0.053 ppm (100 µg/m ³)	Same as primary	0.030 ppm (56 µg/m ³)
NO ₂	1-hour	0.100 ppm (188 µg/m ³)	—	0.18 ppm (338 µg/m ³)
SO ₂	24-hour	—	—	0.04 ppm (105 µg/m ³)
SO ₂	3-hour	—	0.5 ppm (1,300 µg/m ³)	—
SO ₂	1-hour	0.075 ppm (189 µg/m ³)	—	0.25 ppm (655 µg/m ³)
PM ₁₀	Annual	150 µg/m ³	Same as primary	20 µg/m ³
	24-hour	—	Same as primary	50 µg/m ³
PM _{2.5}	Annual	12 µg/m ³	15 µg/m ³	12 µg/m ³
	24-hour	35 µg/m ³	Same as primary	—
Pb	Rolling 3-month period	0.15 µg/m ³	Same as primary	—
Pb	30-Day Average	—	—	1.5 µg/m ³
Sulfates	24 hours	—	—	25 µg/m ³
Hydrogen Sulfide	1 hour	—	—	0.03 ppm (42 µg/m ³)
Vinyl Chloride	24 hours	—	—	0.010 ppm (26 µg/m ³)

- Notes:*
- Standards other than the 1-hour ozone, 24-hour PM₁₀, 24-hour PM_{2.5}, and those based on annual averages are not to be exceeded more than once a year. The 8-hour ozone national standard has replaced the 1-hour ozone national standard.
 - Concentrations are expressed first in units in which they were promulgated. Equivalent units given in parenthesis.
 - Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than 3 years after that state's implementation plan is approved by the USEPA.
 - Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
 - The National Standards (NAAQS) are applicable to Nevada; there are no additional state standards for the state.
 - Final Rule effective on 28 December 2015.
- µg/m³ = micrograms per cubic meter; CO = carbon monoxide; mg/m³ = micrograms per cubic meter; NO₂ = nitrogen dioxide; O₃ = ozone; Pb = lead; PM_{2.5} = particulate matter less than or equal to 2.5 microns in diameter; PM₁₀ = particulate matter less than or equal to 10 microns in diameter; ppm = parts per million; SO₂ = sulfur dioxide.

Greenhouses Gases

Global temperatures are moderated by naturally occurring atmospheric gases, including water vapor, carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), which are known as greenhouse gases (GHGs). These gases allow solar radiation (sunlight) into the Earth's atmosphere, but prevent radiative heat from escaping (analogous to a greenhouse), thus warming the Earth's atmosphere. GHGs are emitted by both natural processes and human activities. CO₂, followed by CH₄ and N₂O, are the most common GHGs that result from human activity. CO₂, and to a lesser extent, CH₄ and N₂O, are products of combustion and are generated from stationary combustion sources as well as vehicles.

The USEPA defines GHGs as any of the following compounds: CO₂, CH₄, N₂O, and fluorinated gases such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. GHGs have varying global warming potentials (GWP). The GWP is the potential of a gas or aerosol to trap heat in the atmosphere. The reference gas for GWP is CO₂; therefore, CO₂ has a GWP of 1. The other main GHGs that have been attributed to human activity include CH₄, which has a GWP of 21, and N₂O, which has a GWP of 310. High GWP gases include GHGs that are used in refrigeration/cooling systems such as chlorofluorocarbons and hydrofluorocarbons. To simplify GHG analyses, total GHG emissions from a source are often expressed as a CO₂ equivalent (CO₂e). The CO₂e is calculated by multiplying the emissions of each GHG by its GWP and adding the results together to produce a single, combined emission rate representing all GHGs.

GHG emissions occur from natural processes and human activities. The most significant of the human activities emitting GHGs is the burning of fossil fuels (USEPA 2015). The accumulation of GHGs in the atmosphere regulates the earth's temperature. Scientific evidence indicates a trend of increasing global temperature over the past century correlating with an increase in GHG emissions from human activities (USEPA 2015). Emissions of GHGs are considered to have a potential cumulative impact on global climate.

Federal agencies and installations are required to comply with federal climate change policy including EO 13693, *Planning for Federal Sustainability in the Next Decade*, released on 19 March 2015. The goal of EO 13693 is to maintain federal leadership in sustainability and GHG emission reductions. The EO establishes policies to maintain federal leadership in sustainability and GHG emission reductions. The Federal Energy Policy Act required federal agencies to increase the usage of renewable sources by 3% between 2007 and 2009, 5% between 2010 and 2012, and by 7.5% for 2013 and beyond.

To calculate emissions associated with the Proposed Action, emissions attributable to Scopes 1, 2, and 3 as defined in EO 13693 have been estimated. Scope 1 emissions include those emissions attributable to sources that are owned and operated by the federal government. These emissions would include aircraft and aircraft ground equipment emissions. Scope 2 emissions include those emissions that are direct GHG emissions resulting from the generation of electricity, heat, or steam purchased by a federal agency. For the Proposed Action, it is not anticipated that Scope 2 emissions would be different from existing conditions. Scope 3 emissions include GHG emissions from sources not owned or directly controlled by a federal agency but related to agency activities such as employee travel and commuting. For the Proposed Action, these GHG emissions include emissions associated with personally-owned vehicles of personnel and staff working at and visiting the MCMWTC.

Currently, there are no formally adopted or published NEPA thresholds for GHG emissions. In December 2014, the CEQ released revised draft guidance on addressing climate change in NEPA documents (CEQ 2014). The draft guidance proposes a reference point of 25,000 metric tons of CO₂e above which agencies should quantify and evaluate GHG emissions.

3.6.2.2 Climate and Meteorology

The climate of the MCMWTC is dominated by the Sierra Nevada Mountains. The eastern side of the Sierra range is generally drier than the western side, and the region experiences cold, snowy winters and dry summers. The warmest month in the MCMWTC training areas is July, with an average maximum temperature of 72.0°F; the coldest month is January, with an average minimum temperature of 15.3°F; and the yearly average is 40.1°F (Western Regional Climate Center 2015). In the training areas of the MCMWTC, average annual precipitation (1919 to 2000) was 47.05 inches. The majority of precipitation occurs in the winter months, from November through March (Western Regional Climate Center 2015).

3.6.2.3 Regional and Local Air Pollutant Sources

The MCMWTC is located in an undeveloped area of Mono (California), Lyon (Nevada), and Mineral (Nevada) counties. According to the CARB Almanac (CARB 2014), the main emission sources in Mono County include residential fuel combustion, on-road vehicles, off-road recreational vehicles, and fugitive dust from unpaved roads and windblown dust.

Table 3.6-2 summarizes the estimated annual average emissions (stationary and mobile) of criteria pollutants and precursor emissions for Mono County in 2015.

Table 3.6-2. 2015 Estimated Annual Average Emissions for Mono County, California

	<i>Emissions, Tons/Day CO</i>	<i>Emissions, Tons/Day VOCs</i>	<i>Emissions, Tons/Day NO_x</i>	<i>Emissions, Tons/Day SO_x</i>	<i>Emissions, Tons/Day PM₁₀</i>	<i>Emissions Tons/Day PM_{2.5}</i>
Stationary Sources	0.1	0.1	0.1	0.0	0.1	0.0
Area-Wide Source	7.9	1.4	0.1	0.0	38.0	4.7
Mobile Sources	7.6	1.1	1.8	0.0	0.1	0.1
Total Mono County	15.6	2.6	2.0	0.1	38.2	4.8

Notes: CO = carbon monoxide; NO_x = oxides of nitrogen; PM₁₀ = particulate matter less than or equal to 10 microns in diameter; PM_{2.5} = particulate matter less than or equal to 2.5 microns in diameter; SO_x = oxides of sulfur; VOC = volatile organic compound

Source: CARB 2014

Table 3.6-3 summarizes the estimated annual average emissions (stationary and mobile) of criteria pollutants and precursor emissions for Lyon and Mineral counties in 2011, the most recent year for which data are available.

Table 3.6-3. 2011 Estimated Annual Average Emissions for Lyon and Mineral Counties, Nevada

	<i>Emissions, Tons/Day CO</i>	<i>Emissions, Tons/Day VOCs</i>	<i>Emissions, Tons/Day NO_x</i>	<i>Emissions, Tons/Day SO_x</i>	<i>Emissions, Tons/Day PM₁₀</i>	<i>Emissions, Tons/Day PM_{2.5}</i>
Lyon County						
Stationary Sources	0.7	0.5	0.6	0.1	1.8	0.7
Area-Wide Source	3.3	2.3	0.2	0.0	13.8	2.0
Mobile Sources	31.5	3.3	5.8	0.0	0.3	0.3
Total Lyon County	35.5	6.1	6.6	0.1	15.9	3.0
Mineral County						
Stationary Sources	0.0	0.0	0.1	0.0	0.1	0.1
Area-Wide Source	0.5	0.3	1.4	0.0	2.2	0.9
Mobile Sources	7.0	1.2	1.0	0.0	0.1	0.0
Total Mineral County	7.5	1.5	2.5	0.0	2.4	1.0

Notes: CO = carbon monoxide; NO_x = oxides of nitrogen; PM₁₀ = particulate matter less than or equal to 10 microns in diameter; PM_{2.5} = particulate matter less than or equal to 2.5 microns in diameter; SO_x = oxides of sulfur; VOC = volatile organic compound

Source: USEPA 2014.

3.6.2.4 Baseline Air Quality

The Nevada Bureau of Air Quality Planning operates air monitoring stations within the state of Nevada. The Bureau of Air Quality Planning does not conduct monitoring within either Lyon or Mineral counties. The nearest monitoring station is located in Carson City; however, due to the urban nature of that location, data are not representative of background air quality within Lyon or Mineral counties.

The GBUAPCD operates a series of ambient air quality monitoring stations throughout the Great Basin Valley Air Basin. The only monitoring station in the Great Basin Valley Air Basin that measures O₃ is located in Death Valley National Park to the southeast of the site. O₃ concentrations at the Death Valley monitoring station are likely to be representative of site conditions, as O₃ levels are most likely the result of transport rather than localized emissions, and O₃ is considered a basin-wide pollutant. The only monitoring station in the Great Basin Valley Air Basin that measures PM_{2.5} is located at Keeler, near Owens Lake to the south of the MCMWTC; this monitoring station likely experiences higher levels of PM_{2.5} than the ROI. PM₁₀ is measured at three monitoring stations surrounding Mono Lake, but measurements recorded at these monitoring stations represent the Mono Basin nonattainment area and are not representative of the project site. Hydrogen sulfide is monitored in the Coso Junction area due to concerns regarding emissions from geothermal plants. CO, NO₂, and SO₂ are not monitored within the Great Basin Valley Air Basin and are not considered to be of concern with regard to attainment of the ambient air quality standards. The most recent available ambient air quality monitoring data for the Great Basin Valley Air Basin is shown in Table 3.6-4.

Table 3.6-4. Ambient Air Monitoring Data for the Great Basin Valley Air Basin

<i>Air Quality Indicator</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>
Ozone (O₃)					
Peak 1-hour value (ppm)	0.098	0.098	0.081	0.084	0.082
Days above state standard (0.09 ppm)	1	1	0	1	0
Peak 8-hour value (ppm)	0.094	0.086	0.076	0.079	0.077
Fourth high 8-hour value (ppm)	0.077	0.070	0.069	0.075	0.073
Days above federal standard (0.075 ppm) ^(1,2)	5	2	1	3	1
Days above state standard (0.070 ppm)	21	4	2	20	8
Particulate matter less than or equal to 2.5 microns in diameter (PM_{2.5})					
Peak 24-hour value (federal) (µg/m ³) ⁽⁴⁾	58.0	69.0	106.2	208.0	99.0
Peak 24-hour value (state) (µg/m ³) ⁽⁴⁾	58.0	69.0	106.2	79.0	103.0
Days above federal standard (35 µg/m ³) ^(3,4)	4	4	5	9	4
Annual Average value (federal) (µg/m ³) ⁽⁴⁾	7.1	6.6	7.1	8.1	6.6
Annual Average value (state) (µg/m ³) ⁽⁴⁾	7.1	NA	7.4	7.9	NA

Notes: ⁽¹⁾ The federal 8-hour O₃ standard was revised downward in 2008 to 0.075 ppm.

⁽²⁾ The federal 8-hour O₃ standard was previously defined as 0.08 ppm (1 significant digit). Measurements were rounded up or down to determine compliance with the standard; therefore a measurement of 0.084 ppm is rounded to 0.08 ppm. The 8-hour O₃ ambient air quality standards are met at an ambient air quality monitoring site when the average of the annual fourth-highest daily maximum 8-hour average O₃ concentration is less than or equal to the standard.

⁽³⁾ The federal PM_{2.5} standard was revised downward in 2007 to 35 µg/m³. For PM_{2.5}, the 24-hour standard is attained when 98% of the daily concentrations, averaged over three years, are equal to or less than the standard.

⁽⁴⁾ State and federal statistics may differ for the following reasons: (1) State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and federal statistics may therefore be based on different samplers. (2) State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.

⁽⁵⁾ The federal 1-hour SO₂ standard was adopted in 2010.

µg/m³ = micrograms per cubic meter; NA = data not available; ppm = parts per million

Sources: CARB 2014, USEPA 2014.

To provide a baseline for evaluating the net emissions increases/decreases associated with the Proposed Action, emissions associated with current training operations at the MCMWTC were calculated based on the types of equipment used in each training exercise. Emissions were based on the scenario descriptions provided by the USMC. The emission estimates for baseline conditions based on these assumptions are presented in Table 3.6-5. Detailed emissions data are found in Appendix F.

Table 3.6-5. MCMWTC Baseline Emissions

<i>Emission Source</i>	<i>Emissions, Tons/Year CO</i>	<i>Emissions, Tons/Year NO_x</i>	<i>Emissions, Tons/Year VOCs</i>	<i>Emissions, Tons/Year SO₂</i>	<i>Emissions, Tons/Year PM₁₀</i>	<i>Emissions, Tons/Year PM_{2.5}</i>
Aircraft	56.51	35.43	13.93	6.35	15.47	15.32
Ground Vehicles	50.22	108.05	5.62	1.65	0.33	0.33
Heavy Equipment	3.70	6.36	0.83	0.01	0.36	0.32
Electrical Equipment	8.44	39.18	3.18	2.59	2.78	2.47
Small Arms	36.80	0.88	0.00	0.00	1.44	1.11
Total Baseline Emissions (No-Action)	155.67	189.89	23.55	10.60	20.39	19.56

Notes: CO = carbon monoxide; NO_x = oxides of nitrogen; PM₁₀ = particulate matter less than or equal to 10 microns in diameter; PM_{2.5} = particulate matter less than or equal to 2.5 microns in diameter; SO₂ = sulfur dioxide; VOC = volatile organic compound

GHG emissions associated with baseline training activities at the MCMWTC include CO₂, CH₄, and N₂O. CO₂ is the main GHG that would be emitted from activities; emissions of the other GHGs are minor. Estimated GHG emissions from existing training activities are 44,977 tons (40,803 metric tons) of CO₂.

3.6.3 Approach to Analysis

This section evaluates potential impacts to air quality as a result of implementation of the No-Action Alternative or the Proposed Action. The Proposed Action involves the proposed operation of a new suite of USMC vehicles and equipment that would replace existing vehicles and equipment, and land use authorization permitting MCMWTC activities. The Proposed Action would also add new training exercises at the MCMWTC.

Air quality impacts from training operations would occur from: (1) combustion emissions due to the use of fossil fuel-powered equipment, and (2) fugitive dust emissions (PM₁₀) from operation of vehicles. It is assumed that fugitive dust emissions would be similar between the Proposed Action and the existing condition (No-Action Alternative).

Operational emissions associated with the Proposed Action include emissions associated with ground vehicles, heavy equipment, engineering equipment, aircraft, and ordnance use at the MCMWTC. The following describes the approach to estimating emissions for each category of source.

3.6.3.1 Aircraft Activities

The methodology for estimating aircraft emissions involves evaluating the type of activity, the number of hours of operation, the type of engine, and the mode of operation for each type of aircraft. Emissions occurring above 3,000 ft AGL were considered to be above the atmospheric inversion layer and would not impact the local air quality. Aircraft flights, for the most part, originate from installations where the aircraft is based. It was assumed that landings and take-offs of aircraft participating in MCMWTC activities would be counted in the emission inventory for each individual base where the aircraft originated. Training activities would occur regardless of whether the training occurs at MCMWTC, and take-offs and landings would originate from the individual base or carrier where aircraft are based regardless of the Proposed Action requirements. Based on information from the noise analysis, each aircraft would cruise for 1.0 hour for each sortie. For the air quality analysis, the same definition of a “sortie” was used as in the noise analysis (refer to Section 3.8.2, *Existing Conditions*). Each sortie would consist of two landings at an LZ, which were modeled as Mountain Exercise (see Section 2.1.2 for the description of MCMWTC training events). Emissions for aircraft activities were calculated based on emission indices from the Navy’s Aircraft Environmental Support Office (AESO) data for specific aircraft models (AESO 1999, 2001a, 2001b, 2001c, 2001d, 2001e, 2009a, 2009b, 2009c, 2009d, 2012a, 2012b, 2013, 2014a, 2014b).

3.6.3.2 Ordnance

Ordnance emissions result from firing small arms in the course of training exercises. Emission factors for specific types of ordnance were obtained from the USEPA’s AP-42 emission factor database.

3.6.3.3 Emissions from Ground Vehicles

Ground vehicles involved in training activities at MCMWTC include combustion emissions from government vehicles such as trucks, High Mobility Multipurpose Wheeled Vehicles (HMMWVs), Marine Personnel Carrier (MPCs), Light Armored Vehicles, Internally Transportable Vehicle (ITVs), Medium Tactical Vehicles, the Mine Resistant Ambush Protected (MRAP) vehicle, and other logistical vehicles. Emissions associated with ground vehicles were estimated based on emission factors for specific vehicles from the CARB’s OFFROAD model for off-highway vehicles, based on the horsepower rating of the engines used in ground vehicles (CARB 2007).

3.6.3.4 Heavy Equipment and Engineering Equipment

Heavy Equipment and Engineering Equipment includes construction equipment that would be used in training exercises, and generators that would be used during training activities. Emissions for specific equipment were estimated based on emission factors from the CARB's OFFROAD Model (CARB 2007).

3.6.4 Environmental Consequences

3.6.4.1 No-Action Alternative

Under the No-Action Alternative, training activities would be limited to the vehicles, weapons systems, engineer systems, aircraft, ordnance, and equipment currently utilized by the USMC and other military agencies as authorized in the AOP, 40-year SUP, and four existing temporary SUPs (Appendix A). Therefore, the potential air emissions under the No-Action Alternative would be the same as described under existing conditions in Section 3.6.2, and as shown in Table 3.6-5, and direct and indirect impacts to air quality would be less than significant.

3.6.4.2 Proposed Action

As discussed in Chapter 2, under the Proposed Action, the USMC proposes to incorporate TAs 10-16 into the existing multi-year SUP and to continue using existing LZs, DZs, and training corridors in all training areas. In addition, the Proposed Action would include four new training events: Expeditionary Vehicle Convoy Training (using the M-ATV MRAP vehicle); JAB Temporary River or Stream Crossing; MGB Temporary River or Stream Crossing; and Horsemanship and Animal Packing training exercises. The Proposed Action would add new motor transport vehicles including the M-ATV MRAP vehicle and AAV as well as incorporating motor transport vehicles that would replace existing vehicles. The Proposed Action also includes High Altitude Aircraft Training, which would involve replacement of the CH-46 aircraft with the MV-22 aircraft, and would include UAVs.

Air emissions would be affected by the replacement of existing vehicles, weapons systems/ordnance, engineer systems, aircraft, and equipment used to augment the current set of training exercises. However, air emissions would not be affected by the use of newly proposed training corridors. The emissions were modeled assuming that the hours of use for each ground vehicle would be consistent, no matter which training corridor was used. The emissions associated with the new equipment and new training exercises were evaluated to address air emissions attributable to the Proposed Action as compared with the No-Action Alternative.

Emissions were quantified based on the methodologies described above. Operational emissions associated with the Proposed Action are summarized in Table 3.6-6, along with a comparison with the baseline emissions (i.e., the No-Action Alternative). Detailed emissions data are found in Appendix F.

Table 3.6-6. MCMWTC Proposed Action Emissions

<i>Emission Source</i>	<i>Emissions, Tons/Year CO</i>	<i>Emissions, Tons/Year CO NO_x</i>	<i>Emissions, Tons/Year CO VOCs</i>	<i>Emissions, Tons/Year CO SO₂</i>	<i>Emissions, Tons/Year CO PM₁₀</i>	<i>Emissions, Tons/Year CO PM_{2.5}</i>
California						
Aircraft	36.57	59.77	8.75	6.51	16.19	16.03
Ground Vehicles	71.66	154.16	8.01	2.36	0.47	0.47
Heavy Equipment	4.67	8.16	1.05	0.01	0.44	0.40
Electrical Equipment	12.35	57.32	4.65	3.79	4.07	3.62
Small Arms	36.80	0.88	0.00	0.00	1.44	1.11
Total Proposed Action Emissions, California	162.05	280.30	22.45	12.66	22.61	21.63
Nevada						
Aircraft	1.69	6.22	0.32	0.51	1.36	1.35
Ground Vehicles	19.69	42.36	2.20	0.65	1.55	1.54
Heavy Equipment	0.31	0.54	0.07	0.00	0.03	0.03
Electrical Equipment	5.42	25.15	2.04	1.66	1.78	1.59
Total Proposed Action Emissions, Nevada	27.10	74.27	4.63	2.82	4.73	4.50
Total Proposed Action Emissions	189.15	354.57	27.08	15.48	27.34	26.12
Baseline Emissions (No- Action Alternative)	155.67	189.89	23.55	8.86	20.39	19.56
Net Emissions Increase (Decrease)	33.48	164.67	3.53	6.62	6.95	6.57

Notes: CO = carbon monoxide; NO_x = oxides of nitrogen; PM₁₀ = particulate matter less than or equal to 10 microns in diameter; PM_{2.5} = particulate matter less than or equal to 2.5 microns in diameter; SO₂ = sulfur dioxide; VOC = volatile organic compound

As shown in Table 3.6-6, emissions would increase for all criteria pollutants. Increases would be well below PSD thresholds for attainment areas of 250 tons under the CAA.

In addition to the emissions shown in Table 3.6-6, some dust (particulate matter) would be generated from rotor wash during MV-22 landing, take-offs, and hover activities. Downdraft (and outwash) forces, collectively known as rotor wash, are relative to the engine power settings and the aircraft's proximity to the ground. Rotor wash (and outwash) from the MV-22 would be greater than from the CH-53E and CH-46. Rotor wash from the MV-22 would reach 50 knots at a distance of 150 feet from the aircraft when hovering at 20 feet AGL, which is three to four times greater than that associated with the CH-46 (Marine Corps Installation West 2009). To harden MV-22 LZs for the reduction of potential dust generation, a dust abatement polymer, Portland cement, or an environmentally inert soil stabilizer/matrix could be used, after consultation with the Forest Service on the specific type of dust abatement procedure selected (MCMWTC 2015c).

Air emissions would be greater under the Proposed Action compared to the No-Action Alternative, due to the proposed new equipment, vehicles, aircraft, and weaponry. However, increases would be well below

any applicable thresholds and standards. Additionally, any air quality impacts to recreational users in the MCMWTC public areas would be short-term and localized, as ground vehicles drive by or as aircraft take-off/land in specific areas. For these reasons, direct and indirect impacts to air quality would be less than significant under the Proposed Action.

3.6.5 Cumulative Effects

3.6.5.1 In Conjunction with Other Cumulative Projects

In addition to the direct and indirect environmental consequences already discussed, additional considerations required by NEPA include the potential cumulative effects of the Proposed Action. Potential cumulative effects could occur when the effects of the Proposed Action are combined with other past, present, and reasonably foreseeable projects (Appendix E). The ROI for cumulative impact analysis would be the Great Basin Valley Air Basin in California as well as Lyon and Mineral counties in Nevada. The other identified cumulative projects would not create significant amounts of air pollutant emissions that could result in a temporary or long-term impact to air quality within the ROI.

As a result of choices made regarding training and operational activities and equipment in the past (e.g., types and numbers of training equipment and vehicles, frequency of use of the vehicles, etc.) – refer to Section 3.6.2, *Existing Conditions* and the “MCMWTC Operations and Training Baseline Project” (Appendix E) – there are some minimal effects to air quality resources as a result of the No-Action Alternative. However, there are no significant impacts to air quality resources from the execution of the Proposed Action due to the replacement of older equipment and vehicles with similar but newer equipment and vehicle types and quantities, as shown in Table 2.1-2. With the addition of the new training equipment, vehicles, weapons systems/ordnance, and aircraft, emissions from the Proposed Action would increase over the baseline emissions. However, these emissions would result in a less than significant cumulative air quality impact. The total Proposed Action emissions (i.e., baseline and proposed) are shown in Table 3.6-7.

Table 3.6-7. MCMWTC Cumulative Emissions

<i>Emission Source</i>	<i>Emissions, Tons/Year CO</i>	<i>Emissions, Tons/Year CO NO_x</i>	<i>Emissions, Tons/Year CO VOCs</i>	<i>Emissions, Tons/Year CO SO₂</i>	<i>Emissions, Tons/Year CO PM₁₀</i>	<i>Emissions, Tons/Year CO PM_{2.5}</i>
<i>California</i>						
Aircraft	36.57	59.77	8.75	6.51	16.19	16.03
Ground Vehicles	71.66	154.16	8.01	2.36	0.47	0.47
Heavy Equipment	4.67	8.16	1.05	0.01	0.44	0.40
Electrical Equipment	12.35	57.32	4.65	3.79	4.07	3.62
Small Arms	36.80	0.88	0.00	0.00	1.44	1.11
Total Proposed Action Emissions, California	162.05	280.30	22.45	12.66	22.61	21.63
<i>Nevada</i>						
Aircraft	1.69	6.22	0.32	0.51	1.36	1.35
Ground Vehicles	19.69	42.36	2.20	0.65	1.55	1.54
Heavy Equipment	0.31	0.54	0.07	0.00	0.03	0.03
Electrical Equipment	5.42	25.15	2.04	1.66	1.78	1.59

Table 3.6-7. MCMWTC Cumulative Emissions

<i>Emission Source</i>	<i>Emissions, Tons/Year CO</i>	<i>Emissions, Tons/Year CO NO_x</i>	<i>Emissions, Tons/Year CO VOCs</i>	<i>Emissions, Tons/Year CO SO₂</i>	<i>Emissions, Tons/Year CO PM₁₀</i>	<i>Emissions, Tons/Year CO PM_{2.5}</i>
Total Proposed Action Emissions, Nevada	27.10	74.27	4.63	2.82	4.73	4.50
Total Proposed Action Emissions (Baseline + Proposed)	189.15	354.57	27.08	15.48	27.34	26.12

Air emissions associated with the Proposed Action would have the potential to affect the air quality throughout the entire air basin, which includes Mono County. Mono County is part of the GBUAPCD, which includes Alpine, Mono, and Inyo counties. Mono County is considered an unclassified/attainment area for all criteria pollutants.

The PSD thresholds were established by the USEPA to preserve air quality in areas that are in attainment of the ambient air quality standards. The PSD threshold of 250 tons/year takes into account the potential for a source or sources of emissions to have a cumulative impact on air quality within the air basin. Annual total Proposed Action emissions (Table 3.6-7) would be below the CAA PSD major source thresholds as set forth in the CAA for all pollutants. Therefore, implementation of the Proposed Action would contribute to less than adverse (or less than significant) cumulative impacts to air quality within the ROI.

3.6.5.2 Greenhouse Gas Effects

In addition to the potential cumulative impacts of additional criteria pollutants, the cumulative effects analysis for air quality would determine if the Proposed Action would contribute to global climate change (in combination with the other identified past, present, and reasonably foreseeable projects). The most recent California Climate Change Scenarios Assessment predicts that temperatures in California could increase by approximately 2.7°F by 2050, and up to 8.6°F by 2100 (California Energy Commission 2012). Predictions of long-term negative environmental impacts due to global warming include sea level rise, changing weather patterns with increases in the severity of droughts, changes to local and regional ecosystems including the potential loss of species, and a substantial reduction in winter snowpack. In California, predictions of these effects include exacerbation of air quality problems, a reduction in municipal water supply, increased impacts from coastal flooding, an increase in the number and intensity of wild fires, and damage to marine and terrestrial ecosystems (California Energy Commission 2012).

In December 2014, the CEQ issued revised draft guidance for federal agencies to guide them on when and how to consider the effects of GHG emissions and climate change in their projects (CEQ 2014). In the analysis of the direct effects of a Proposed Action, the CEQ proposes that it would be appropriate to 1) quantify cumulative emissions over the life of the project; 2) discuss measures to reduce GHG emissions, including consideration of reasonable alternatives; and 3) qualitatively discuss the link between such GHG emissions and climate change. The CEQ recommends that 25,000 metric tons of CO₂e or more being produced by a Proposed Action be considered the threshold warranting a more substantial evaluation of—but not necessarily a determination of—significance of climate change impact (CEQ 2014).

GHG emissions associated with the Proposed Action at the MCMWTC include CO₂, CH₄, and N₂O. The main GHG that would be emitted is CO₂; emissions of the other GHGs are negligible. Total estimated annual GHG emissions from the Proposed Action (i.e., baseline and proposed) are 66,098 metric tons of

CO₂, which would be a net annual increase of 16,705 metric tons of CO₂ compared to the No-Action Alternative.

Table 3.6-8 summarizes the total GHG emissions associated with the Proposed Action. Appendix F presents more detailed estimates of the GHG emissions generated by each of the equipment types. As shown in Table 3.6-8, the total Proposed Action CO₂e emissions are less than one thousandth of 1 percent of the total GHG emissions generated by the U.S. in 2012, and the net annual increase is well below the 25,000 metric ton per year reference point suggested by CEQ. The impacts of GHGs from the Proposed Action would not be expected to have a substantial impact on global climate.

Table 3.6-8. Estimated Annual GHG Emissions with Implementation of the Proposed Action

<i>Scenario/Activity</i>	<i>Metric Tons Per Year^(a) CO₂</i>	<i>Metric Tons Per Year^(a) CH₄</i>	<i>Metric Tons Per Year^(a) N₂O</i>	<i>Metric Tons Per Year^(a) CO₂e</i>
Total Baseline (No-Action Alternative) Emissions	49,393.02	n/a	n/a	49,393.02
Total Proposed Action Emissions (Baseline + Proposed)	66,098.36	n/a	n/a	66,098.36
Net Change in GHG Emissions	16,705.34	n/a	n/a	16,705.34
U.S. 2012 Baseline Emissions (10 ⁶ metric tons) ^(b)	-	-	-	6,525.6
Total Proposed Action Emissions as a % of U.S. Emissions	-	-	-	0.001%

Notes: ^(a)CO₂e = (CO₂ * 1) + (CH₄ * 21) + (N₂O * 310)

CO₂ = carbon dioxide; CH₄ = methane; N₂O = nitrous oxide; CO₂e = carbon dioxide equivalent

Source: ^(b)USEPA 2014

3.7 TRANSPORTATION

3.7.1 Definition of Resource

Transportation and Circulation refers to roadway and street systems and the movement of vehicles on roadway networks. The ROI for this analysis includes public roadway networks both within and in the immediate vicinity of the MCMWTC as well as the training corridors, Forest Service roads, and Forest Service vehicular trails used or proposed for use by the MCMWTC.

3.7.2 Existing Conditions

3.7.2.1 Public Road Network within MCMWTC Training Areas

Public Forest Service roads and trails traverse the Forest Service lands throughout the MCMWTC boundaries. The Forest Service Motor Vehicle Use Map (MVUM) details those roads and trails open to public vehicular use, the types of vehicles allowed, and the seasons of use. Roads are typically maintained and are open to highway legal vehicles as well as motorcycles and all-terrain vehicles (ATVs). However, the weather or road surface may preclude vehicles such as passenger cars on certain roads. Trails typically receive limited maintenance and are open to vehicles that can handle rougher terrain such as ATVs, motorcycles, and jeeps. Over-the-snow vehicles (e.g., snowmobiles) are exempt from the road and trail designations shown on the MVUM (Forest Service 2014e). Public access on these designated roads and trails is prioritized over military training activities.

In addition to the Forest Service roads and trails, which are primarily used for recreational purposes, SR 108 and SR 395 receive more vehicular use throughout the year. SR 108 connects the town of Bridgeport to the town of Sonora in Tuolumne County, California, and travels east to west through the MCMWTC boundaries. The Sonora Pass segment of SR 108, beginning just southwest of the MCMWTC boundary,

reaches an elevation of 9,624 ft and is closed in the winter due to snow accumulation and inclement weather. SR 395 (also known as U.S. Highway 395) follows near the eastern boundary of the MCMWTC training areas. The Leavitt Meadows segment of SR 108 received approximately 200 to 320 peak hour traffic trips in 2013, with up to 2,550 trips during the busiest month of the year. The junction of SR 108 and SR 395 received approximately 1,200 trips during the busiest month of 2013, with approximately 130 peak hourly trips (State of California Department of Transportation [Caltrans] 2013).

3.7.2.2 Training Corridors

As described in Section 2.2.3, a number of training corridors located outside of the MCMWTC training areas are utilized by the MCMWTC during training activities and travel is authorized under Forest Service temporary permits. The three training corridors currently used are Masonic Road, Lucky Boy Pass Road, and Kirman Lake Road (refer to Figure 2.2-5). U.S. Highway 395, California SR 108 (also known as Highway 108) and SR 182 are public roads used to reach the training corridors.

Masonic Road (FSR 046) is an improved dirt road that originates at the intersection of California SR 182 east of the Bridgeport Reservoir and continues over Masonic Mountain to intersect with Lucky Boy Pass Road (FSR 028). It was originally established to reach the Masonic mining district in the early 1900s (MCMWTC and Forest Service 2013a, b). The MCMWTC currently uses Masonic Road primarily for convoy driver training with no off-road vehicle travel.

Lucky Boy Pass Road (FSR 028/199) is an improved dirt road which provides a linkage between the HWAD and the Bridgeport area. It was originally a wagon road traveled by freight wagons and stagecoaches (MCMWTC and Forest Service 2013a, b). It extends from the vicinity of the intersection of U.S. Highway 395 and Nevada SR 338, terminating at Nevada SR 359 south of the HWAD. It traverses land managed by the Forest Service. Lucky Boy Pass Road has been used in training events to provide an area for convoy training and related logistics and movement training events in realistic terrain, and is currently used to conduct convoy operations where military vehicles (typically 10 to 20 vehicles) drive down the road along a certain route, sometimes with helicopters or jets overhead.

Kirman Lake Road (FSR 137) is adjacent to the eastern boundary of the MCMWTC training areas. This road is an access road from the MCMWTC to California SR 108. It is also used by recreational fishers accessing Kirman Lake. MCMWTC uses Kirman Lake Road for small unit movements and safety vehicle convoys of four vehicles or less to support small unit logistics and camp activities at LZ Bullet. The privately owned segments used by MCMWTC are the entrance at the Bently property, the section crossing through the Bently property, and the section of unimproved road extending to Mud Lake (USMC 2014c).

Additional roadways not currently used for MCMWTC training include Lobdell Lake Road, Burcham Flat Road, and Risue Canyon Road. Burcham Flat Road (FSR 031) intersects Kirman Lake Road to the east of the MCMWTC training areas. It is open to the public for vehicular use throughout the entire year (Forest Service 2014a) but is generally accessible in the summer and early autumn months.

The portion of Lobdell Lake Road along FSR 32067 is an existing Forest Service road that is designated as “suitable for passenger cars” (Operational Maintenance Level 3). The road is not closed by the Bridgeport Ranger District in the winter (Forest Service 2015f) but is effectively closed to vehicle travel while snow is present. The portion of Lobdell Lake Road along Forest Service Trail 22482 is a trail that is open to all vehicles, year-round. It is an existing route, Trail Class 2 (Moderately Developed) (Forest Service 2015f). Trail Class 2 means that the trail is single-lane, with minor allowances constructed for passing. Vegetation may encroach into the trailway, and there would be natural fords to allow for drainage, and bridges constructed where necessary to allow for access and resource protection (Forest Service 2008b).

Specific to training activities that currently utilize military ground vehicles (such as the Expeditionary Vehicle Convoy Training), the vehicles must travel along designated roads, as shown in Table 3.7-1, under the No-Action Alternative. Wheeled and tracked tactical vehicles are used to move troops and equipment to designated and approved points in the training area, including road transit to the Sonora Pass, Leavitt Lake training area, HWAD via Lucky Boy Pass Road, and other approved areas outside of the MCMWTC training areas.

3.7.3 Approach to Analysis

This section evaluates potential impacts to transportation as a result of implementation of the No-Action Alternative or the Proposed Action. For the purposes of this analysis, transportation refers to the movement of vehicles on public roadways.

3.7.4 Environmental Consequences

3.7.4.1 No-Action Alternative

Under the No-Action Alternative, training activities would be limited to the vehicles, weapons systems, engineer systems, aircraft, ordnance, and equipment currently utilized by the USMC and other military agencies as authorized in the AOP, 40-year SUP, and four existing temporary SUPs (Appendix A). In addition to the training corridors used by the MCMWTC to perform specific training activities, the 40-year SUP designates Forest Service roads and routes that can be traversed by the USMC within the MCMWTC boundaries. Table 3.7-1 lists these roads and routes, as well as their applicable road maintenance levels.

Table 3.7-1. Designated Roads Listed in the MCMWTC 40-Year SUP (BRI250)

<i>Forest Service Road/Route – Maintenance Level 3</i>	<i>Forest Service Road/Route – Maintenance Level 2</i>
Creek Connector Road 062 (Wolf Creek Road)	Cloudburst Creek Rd
Grouse Meadows Road 023	Connector Road
Marine Corps Loop (Silver Creek Road and Grouse Meadows Road) (ML Loop)	Connector Road
Marine Spur Rd 023A (POW Camp Road)	Connector Road 023E
Silver Creek Road 059	Creek Road
Summit Meadows Road 059	Creek Spur Road
Wolf Creek Road 059 (Silver Creek Road)	Driveway Creek Road
Wolf Creek Road 062 (Finley Mine Road)	Grouse Meadows Spur Rd.
Wolf Creek Spur Road 042	Loop Road
	Loop Road 023i
	Loop Road 023k
	Lost Cannon Creek Rd 212
	Mean Peak Road 059B
	Mill Creek Canyon Rd 028
	Northside River Road
	Silver Creek Meadows 059A
	Spur Road
	Spur Road 023D
	Spur Road 023F
	Spur Road 023G
	Spur Road 023J
	Spur Road 028B
	Spur Road 213
	Spur Road 213B

Table 3.7-1. Designated Roads Listed in the MCMWTC 40-Year SUP (BRI250)

<i>Forest Service Road/Route – Maintenance Level 3</i>	<i>Forest Service Road/Route – Maintenance Level 2</i>
	Spur Road 213C
	Spur Road 213D
	Terry Canyon Road 028A

Source: Forest Service 2009a

Road Maintenance Level 3 typically applies to roads that are low speed and single-lane with turnouts that typically connect to arterial and collector roads (Forest Service 2005c). They are open to and maintained for travel by standard passenger cars, although they may have some potholing and washboarding from vehicle use and erosion. Road Maintenance Level 2 typically applies to roads that are not suitable for passenger cars. They are open to use for high-clearance vehicles as they are not required to have a smooth surface, are composed of native materials, and may have obstacles and grades not passable by a passenger car (Forest Service 2005c). As part of the 40-year SUP, the MCMWTC is required to repair or correct damage to Forest Service roads and routes caused by USMC travel along the roads. Any necessary road maintenance cannot improve the road or road segment beyond the designated Road Maintenance Level. Therefore, unimproved or primitive roads may not be improved beyond the existing baseline road condition.

Transportation under the No-Action Alternative would be the same as described under the existing conditions in Section 3.7.2. The No-Action Alternative does not involve site improvements, the construction of new facilities, or any increase in personnel that places any additional permanent demand on the existing transportation network. The existing levels of vehicular use on the public roads within and near the MCMWTC, as described in Section 3.7.1, would remain the same. There would be no change in the types of military ground vehicles and equipment that would be driven on the public roads. Therefore, direct and indirect impacts to transportation resources would be less than significant under the No-Action Alternative.

3.7.4.2 Proposed Action

Under the Proposed Action, the three training corridors currently used for military training activities (Kirman Lake Road, Lucky Boy Pass, and Masonic Mountain Road) would continue to be used as such, except that they would be folded into the 40-year SUP instead of being approved under temporary permits. In addition, Burcham Flat Road (approved for temporary use in the past) and Leavitt Lake Road (FSR 32067 and a portion of Forest Service trail 22482) would be approved for convoy training.

As outlined in the AOP for the permits authorizing use of the training corridors, MCMWTC is responsible for road maintenance on Forest Service designated roads needed after military training activities (Forest Service 2015a). The road maintenance must adhere to Forest Service standards. Road upgrades and improvements needed as a result of the increased use of such roads, bridges, trails, and general forest area by the MCMWTC would be made by mutual agreement by the Forest Service and MCMWTC in cooperation with state agencies as appropriate. In addition, the roads would be cleared of any debris following the training activities. Therefore, there would be no direct or indirect impacts to the physical state of the local transportation network used by MCMWTC, as any road maintenance required as a result of military vehicle use would be achieved.

Signs would be posted on the roads during scheduled training events to notify the public of potential delays on specific roads. If the event is on a public highway (e.g., SR 108 or U.S. Highway 395), then CalTrans and California Highway Patrol would be notified in advance so that they could provide advanced public

notification if necessary (MCMWTC 2014b). Notification would be given to CalTrans and the California Highway Patrol several weeks in advance of the training event, when possible.

Forest Service roads in the MCMWTC training areas would only be closed to through traffic during live-fire events or other public safety hazards (e.g., helicopter landing), and only then during the portion of the event that creates a safety hazard. During live-fire events, roads would only be closed during the actual live-fire portion, which typically lasts no more than 2 hours. Due to Force Protection and National Security policy, no advance notification would be given to the public, but signs would be posted on the day of training. Existing bulletin boards that may be used by the MCMWTC for public notification would be located at Peoples Gate, Finley Mine Road Junction, Silver Creek Meadows, and Deer Run Trail (existing 10-kilometer run obstacle wall). In addition, when applicable, signs would be placed at the start of the Lucky Boy Pass Road, at Fletcher, and at the end of Lucky Boy Pass Road to alert the traveling public to the presence of military training on the road. A road guard would be placed at the entrance to the road to provide additional information to the public. Signs would also be placed at the beginning and end of Masonic Road and Lobdell Lake Road for the same purpose. The MCMWTC would continue to operate a manned Duty Desk with a toll-free phone line (1-877-774-1902 or 760-932-1401) 24 hours a day, which can be used for reporting public complaints, noise disturbances, damages to roads, or other property damages caused by training exercises.

Road Guards would be posted at key locations to control access to the road during the road closure, and the signs and road guards would be removed immediately following the training event. On average, the roads would be closed one to two times per month (MCMWTC 2014b).

During all other training operations, including convoy training, the FSRs and other public roads would not be closed. Public traffic would be allowed through the event unimpeded, with a potential delay of a few minutes while the military vehicles or equipment are moved out of the way. Therefore, there would be temporary, direct, adverse impacts to civilian vehicular movement through the area during these times, but the affects would be limited in duration and intensity and would not be permanent.

Some additional restrictions would be placed on specific types of equipment when using FSRs. For example, the BV 206 (a tracked all-terrain carrier) would be allowed on the Leavitt Lake Road during non-snow conditions from November through mid-April. It would also be allowed on groomed Leavitt Lake Road but only when a minimum of 2 ft of snow is present (MCMWTC 2015b).

During the winter, over-the-snow vehicles would be normally limited to groomed and/or previously existing flat road surfaces. Snowmobiles would be allowed off-road under approved conditions (e.g., medical safety support, area inspections, etc.). BV 206 tracked vehicles are allowed on Leavitt Lake Road during both non-snow and snow conditions, but the use is limited or prevented if the road surface is heavily saturated from rain or snow melt. Winter snowmobile recreationalists would continue to be able to use and access the BRWA while MCMWTC winter training activities are occurring, so at most, very minor and temporary direct impacts to winter vehicular recreational use would occur.

With the exception of using Lobdell Lake Road for training activities, there would be no new sources of traffic or other demands on the local transportation network as a result of the Proposed Action. The proposed military training would have a direct adverse effect of temporarily occupying road capacity and closing roads, resulting in delays to routine personal and recreational vehicle trips. However, because the closures would be temporary, the number of personal and recreational vehicles is relatively small, and with the implementation of design features and mitigation measures, the effect would not be significant.

3.7.5 Cumulative Effects

In addition to the direct and indirect environmental consequences already discussed, additional considerations required by NEPA include the potential cumulative effects of the Proposed Action. Potential cumulative effects could occur when the effects of the Proposed Action are combined with other past, present, and reasonably foreseeable projects (Appendix E). As detailed in Appendix E, the ROI for cumulative impact analysis is dependent upon the specific resource being analyzed. The ROI for transportation resources include the public roads within and adjacent to the MCMWTC boundaries and the training corridors.

As a result of choices made regarding training and operational activities in the past (e.g., training on public roads, road maintenance activities, etc.) – refer to Section 3.7.2, *Existing Conditions* and the “MCMWTC Operations and Training Baseline Project” (Appendix E) – there are some minimal but less than significant effects to transportation resources as a result of the No-Action Alternative, due to temporary road closures during some training activities. There would be no significant impacts to transportation resources under the Proposed Action because, like the No-Action Alternative, the Proposed Action would continue to: (1) prioritize public access of the roads; (2) require posted notice of temporary road closures; and (3) require maintenance after training activities, among other miscellaneous requirements. The Proposed Action would contain the same or similar design features as the No-Action Alternative, that are intended to protect public access on public roads and prevent significant negative effects.

The other identified cumulative projects, as described in Appendix E, would not involve infrastructure improvements that would create a temporary or long-term increase in traffic. The cumulative projects would not also close public roads and trails that are used for Marine Corps training activities at MCMWTC. The Mono County General Plan Update project discusses proposed designation of U.S. Highway 395 as a Scenic Byway, which would lead to a new signage program along the corridor, but direct environmental effects are expected to be minimal. Therefore, no significant cumulative impacts would occur to transportation with implementation of the Proposed Action along with past, present, and reasonably foreseeable projects in the ROI.

3.8 NOISE

3.8.1 Definition of Resource

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air or water. Sound is all around us. The minute vibrations are sensed by humans and wildlife, as well as non-human vertebrates and potentially some invertebrates. Noise is defined as unwanted or annoying sound that interferes with or disrupts normal human activities. Noise can also disrupt normal wildlife activities. Although exposure to very high noise levels can cause hearing loss, the principal human response to noise is annoyance (see Appendix G). The response of different individuals to similar noise events is diverse and is influenced by the type of noise, the perceived importance of the noise, its appropriateness in the setting, the time of day, the type of activity during which the noise occurs, and the sensitivity of the individual. Noise may also affect wildlife through disruption of resting, foraging, migrating, and other life-cycle activities.

In a forest environment like that around MCMWTC, aircraft are readily identified by their noise output and can contribute to or detract from typical forest experiences, such as recreation. Consequently, aircraft noise often dominates analyses of environmental impacts. Additional background information on noise, including its effect on many facets of the environment, is provided in Appendix G.

Noise and sound are expressed in logarithmic units of decibel (dB). A sound level of 0 dB is the approximate threshold of human hearing and is barely audible under extremely quiet listening conditions (Figure 3.8-1). Normal speech has a sound level of approximately 60 dB. Sound levels above 120 dB begin to be felt inside the human ear as discomfort. Sound levels between 130 to 140 dB are felt as pain (Berglund and Lindvall 1995). The minimum change in the sound level of individual events that an average human ear can detect is about 3 dB. On average, a person perceives a doubling (or halving) of the sound's loudness when there is a 10 dB change in sound level.

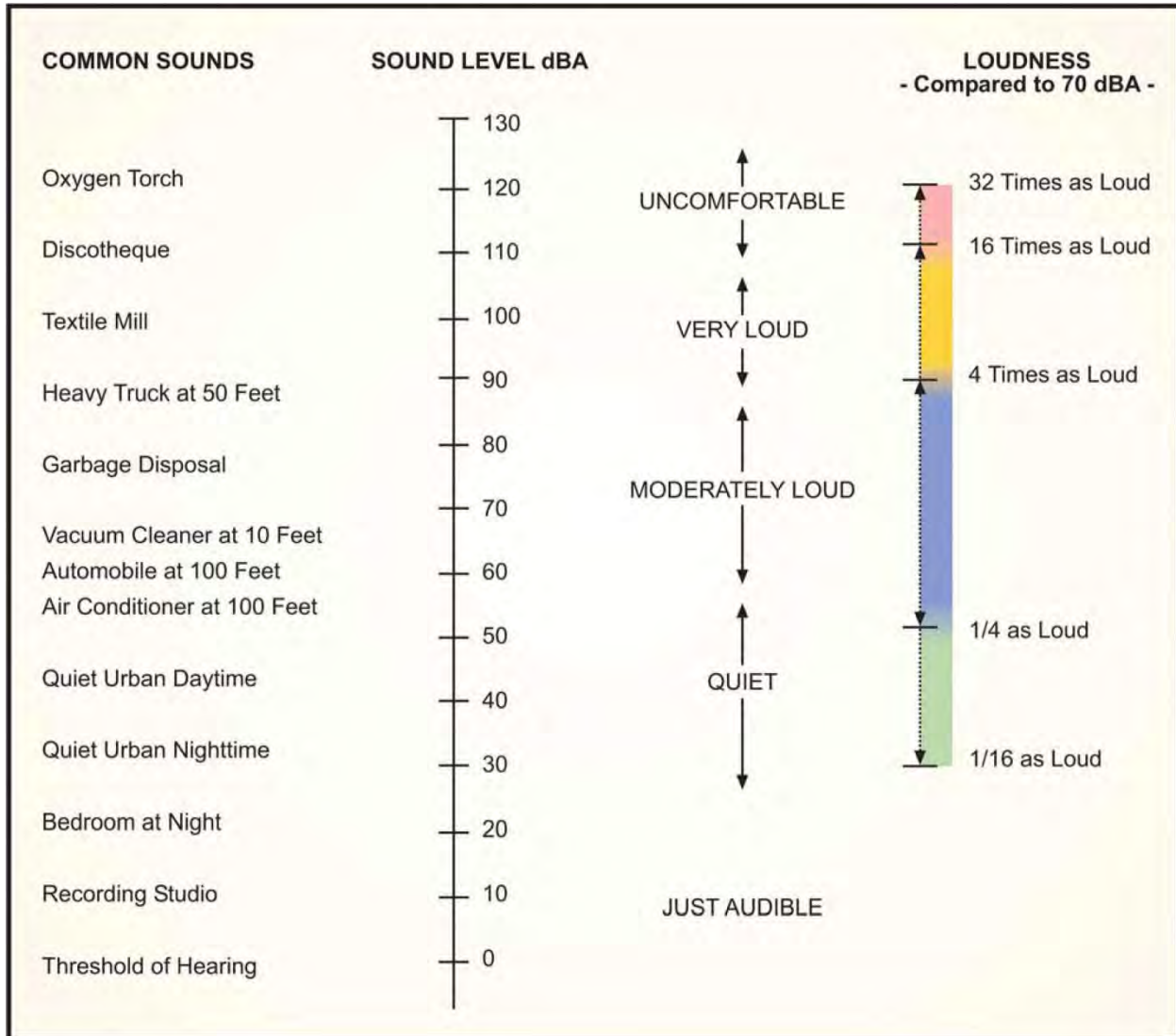


Figure 3.8-1 Typical A-Weighted Sound Levels of Common Sounds

All sounds have a spectral content, which means their magnitude or level changes with frequency, where frequency is measured in cycles per second or hertz. To mimic the human ear's non-linear sensitivity and perception of different frequencies of sound, the spectral content is weighted. For example, environmental noise measurements are usually on an "A-weighted" scale that filters out very low and very high frequencies to replicate human sensitivity. It is common to add the "A" to the measurement unit to identify that the measurement has been made with this filtering process (dBA). In this document, the dB unit refers to A-

weighted sound levels. “C-weighting” is typically applied to impulsive sounds such as a sonic boom or ordnance detonation and is denoted by the units “dBC.”

In accordance with DoD guidelines and standard practice for environmental impact analysis documents, the noise analysis herein utilizes the following (A-weighted) noise descriptors or metrics: Maximum Sound Level (L_{\max}), Sound Exposure Level (SEL), Day-Night Average Sound Level (DNL) and Community Noise Equivalent Level (CNEL). L_{\max} and SEL describe single noise events whereas DNL and CNEL are time-averaged metrics describing the cumulative noise environment of individual noise events over longer periods, usually up to 24 hours. The DNL and CNEL account for single-event noise levels and also weight or penalize those levels depending on the time period in which they occur, weighting evening (7:00 p.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) sounds up to 10 dB. The CNEL, which includes penalties for evening (5 dBA) and night (10 dBA) operations, is specific to California (State of California 1990); DNL, which requires a 10 dBA penalty for night operations, is applicable to the remaining 49 states.

The highest A-weighted integrated sound level measured during a single event in which the sound level changes value with time (e.g., an aircraft overflight) is called the Maximum A-weighted Sound Level and is abbreviated “ L_{\max} .” During an aircraft overflight, the noise level starts at the ambient or background noise level, rises to the maximum level typically when the aircraft flies closest to the observer, and returns to the background level as the aircraft recedes into the distance. The L_{\max} indicates the maximum sound level occurring for a fraction of a second. For aircraft noise, the “fraction of a second” over which the maximum level is defined is generally one-eighth of a second, and is denoted as “fast” response (American National Standards Institute 1988). Slowly varying or steady sounds are generally measured over a period of one second, denoted “slow” response.

The SEL is a composite metric that represents both the intensity of a sound and its duration. Individual time-varying noise events (e.g., aircraft overflights) have two main characteristics: a sound level that changes throughout the event and a period of time during which the event is heard. The SEL provides a measure of the net impact of the entire acoustic event, but it does not directly represent the sound level heard at any given time. During an aircraft flyover, SEL would include both the maximum noise level and the lower noise levels produced during onset and recess periods of the overflight. For sound from aircraft overflights, which typically lasts more than one second, the SEL is usually greater than the L_{\max} because an individual overflight takes seconds and the L_{\max} occurs instantaneously. The SEL represents the best metric to compare noise levels from overflights, especially those from different types of aircraft (e.g., fixed-wing and rotary-wing or jets and propeller-driven aircraft).

The Onset-Rate Adjusted Monthly variant of DNL and CNEL, denoted Ldn_{mr} and $CNEL_{mr}$, respectively, are specifically utilized for describing cumulative aircraft noise exposure from airspace and range operations. C-weighted CNEL, denoted CCNEL or dBC CNEL, is specifically utilized for describing noise exposure from ordnance activity. Each descriptor, along with other noise metrics, is described in detail in Appendix G.

In calculating time-average sound levels for airspace activity, the reliability of the results decreases at lower levels (i.e., less than or equal to 45 dB). This arises from the increasing variability of individual aircraft sound levels at longer distances due to atmospheric effects on sound propagation and the presence of other sources of noise. Also, when flight activity is infrequent, the time-averaged sound levels are generated by only a few individual aircraft noise events which may not be statistically representative of the given aircraft modeled. Time-averaged outdoor sound levels less than 45 dB are well below any currently accepted guidelines for aircraft noise compatibility. Most of the guidelines for the incompatibility of aircraft noise

are on the order of 65 dB DNL/CNEL or greater. Therefore, all calculated DNL/CNEL or $Ldn_{mr}/CNEL_{mr}$ less than 45 dB are stated in this report as “<45 dB.”

Small arms and high-amplitude noise resulting from artillery or demolition firings is described in terms of the Peak Sound Pressure Level exceeded by 15% of events based on variable meteorological conditions using no frequency weighting, or the Peak Sound Pressure Level Exceeded by 15% of Events (PK 15[met]) (see Appendix G for description).

It is important to note that all metrics and associated noise models draw from a database of actual aircraft noise measurements and ordnance detonations. Secondly, the noise models are most accurate and useful for comparing “before-and-after” noise levels resulting from alternative scenarios with calculations made in a consistent manner. The models allow noise exposure prediction of such actions without actual implementation and/or noise monitoring of those actions.

For the Proposed Action, many components may generate noise and warrant analysis in this EA. The predominant noise sources consist of aircraft operations at the EAF and in the airspace as well as noise at the live-fire ranges from small arms weapons. Other components such as construction and vehicle traffic would produce noise, but such noise would represent a transitory and negligible contribution to the overall noise environment and are not analyzed in this study. The federal government supports conditions free from noise that threatens human health and welfare and the environment. Response to noise varies, depending on the type and characteristics of the noise distance between the noise source and whoever hears it (the receptor), receptor sensitivity, and time of day. The ROI consists of the MCMWTC where training activities would occur and adjacent areas where noise impacts may occur.

3.8.2 Existing Conditions

3.8.2.1 MCMWTC

Expeditionary Airfield

Many of the aircraft that use the MCMWTC operate out of the EAF. No prior comprehensive noise studies have been conducted for the EAF activity, so this study analyzes the current operating conditions which will serve as the baseline at the EAF for this EA.

Modeling Data

This study analyzes the busiest month flight operations, consistent with standard airspace noise analysis methodologies, as detailed in Table 3.8-1. However, MCMWTC flight operations vary from month to month without a clear busiest month. The frequency of operations at the EAF fluctuates throughout the year and annual totals are not regularly tracked. Therefore, the USMC very conservatively estimated a “busiest month” by assuming a Military Expeditionary Unit training event occurs for that entire month resulting in 3,600 sorties (USMC 2014a). This very conservative estimate is at least approximately two times greater than the current flight operations. The use of conservative sortie estimates for noise assessment ensures that actual noise level would not exceed the results presented in this document.

Table 3.8-1. MCMWTC EAF Busiest Month Sorties for Baseline

<i>Aircraft Type</i>	<i>Number of Aircraft</i> ⁽¹⁾	<i>Sorties per day</i> ^(2, 4)	<i>Sorties per month</i> ^(3, 4)
CH-46E	6	36	864
CH-47E	6	36	864
CH-53E	2	12	288
AH-1W	4	24	576
UH-1	1	6	144
UH-60	6	36	864
Totals	25	150	3,600

Notes: ⁽¹⁾ Busiest Month assumes a Military Expeditionary Unit training for entire month

⁽²⁾ Assuming 6 sorties during 10 hour period due to refueling time

⁽³⁾ Assuming 6 flying days per week, 4 weeks per month during busiest month; each sortie includes average of 2 landings at an LZ

⁽⁴⁾ 80% during CNEL daytime (0700-1900), 20% during CNEL evening (1900-2200), <1% during CNEL nighttime (2200-0700); nighttime activity negligible and not modeled.

The USMC defines a sortie as “multiple aircraft completing one specific mission.” However, for noise modeling the effect of each aircraft must be accounted for so the sortie counts presented in Table 3.8-1 have been adjusted to represent a single aircraft departure from the EAF, completing a training mission in the MCMWTC, then an arrival back to the EAF. Throughout this document, all sortie counts are presented using the ‘modeling definition’ based on a single aircraft’s mission. The CH-46E Sea Knight (twin engine, twin rotor, medium lift helicopter), CH-47E Chinook (twin engine, twin rotor, heavy lift helicopter), and UH-60 Black Hawk (twin engine, four-bladed, multi-purpose helicopter) are the most frequent users of the EAF, each contributing 24% of total sorties. The majority (80%) of flight operations occur during CNEL daytime (7:00 a.m. to 7 p.m.), with 20% during CNEL evening (7 p.m. to 10 p.m.), and minimal (less than 1%) operations during CNEL nighttime (7 p.m. to 7 a.m.). The few CNEL nighttime operations constitute a negligible contribution to the noise environment and were not modeled.

The runway direction utilization is dependent upon wind direction resulting in Runway 23 (west) usage for 90% of operations and the remaining 10% on Runway 05 (USMC 2014a). Aircraft departing from the EAF transit to approximately 2 miles northeast to the Sonora Bridge visual check point 1.5 miles southwest to the Millie Lake visual check point. Upon reaching either check point, the aircraft would turn to head toward the destination training area which is nearly always to the north or to the west where the vast majority of training airspace is located at the MCMWTC (USMC 2014a). The modeled flight tracks are depicted in Appendix G along with a table of the flight track utilization and figures of representative flight profiles for each modeled aircraft type. The UH-1 was modeled as the AH-1W and the CH-47E was modeled as the CH-46E.

Maintenance run-up operations were not modeled because maintenance run-ups are not typically conducted at the EAF.

Noise Exposure

Figure 3.8-2 shows the 65 to 85 dB CNEL contours, in 5 dB increments, for the existing condition during the average day of the busiest month. This is the most conservative method and the resulting contours would only apply to that busiest month. The remaining months of the year would experience smaller noise contours. The contours follow the helicopter routes from the EAF runway concluding in the vicinity of the two visual check points. The southwest lobe of the 65 dB CNEL extends approximately 2 miles beyond the runway end while the northeast lobe extends approximately 1.6 miles beyond the runway. Additionally, a small disconnected 65 dB CNEL contour exists 2.3 miles from the runway at the location that the helicopters conduct a turn to or from the training area. This contour is primarily due to rising ground terrain in the vicinity which places the helicopters at a shorter distance from the ground causing the increase in CNEL.

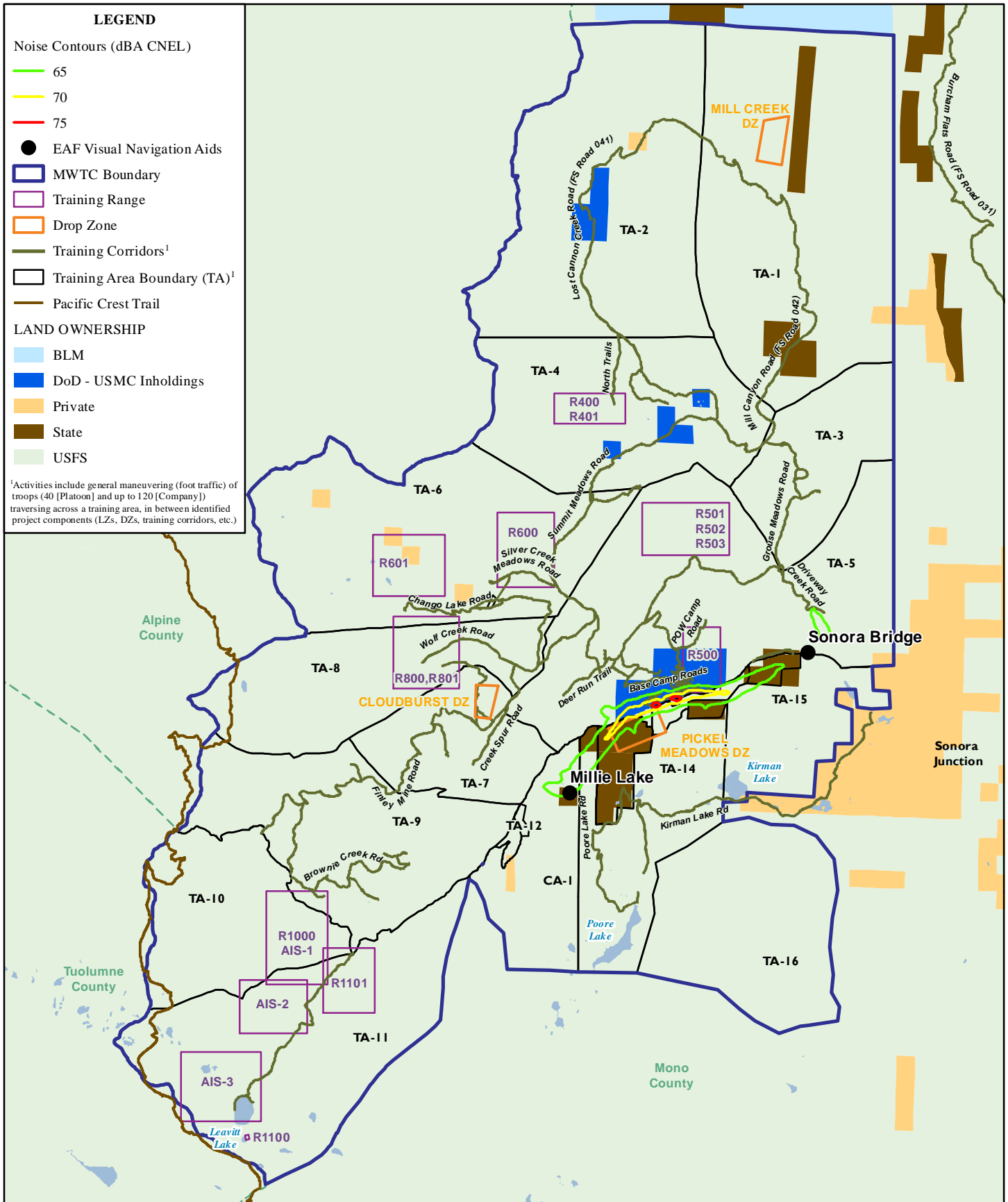


Figure 3.8-2
 Baseline Average Daily CNEL During Busiest Month at MCMWTC EAF



Because the CNEL contours are wholly contained within the MCMWTC, there are no civilians or housing units off-station within the CNEL contours.

Airspace Activity

No prior comprehensive noise studies have been conducted for the MCMWTC airspace activities, so this study analyzes the current operating conditions which will serve as the baseline for this EA. Much of the aircraft activity is spent training at or near LZs or DZs that are the focus of this analysis.

Modeling Data

The USMC currently utilizes a total of 56 LZs or DZs for training activity (USMC 2014b). Because the noise analysis focuses only on the aircraft activity, and the approach or departure at an LZ and DZ are similar, both are modeled the same.

The frequency of flight operations at the MCMWTC fluctuates throughout the year and annual totals are not regularly tracked. Consistent with the EAF methodology, this study analyzes the busiest month flight operations as detailed in Table 3.8-1, conservatively estimated at 3,600 sorties. The majority, 80%, of airspace flight operations occur during CNEL daytime (7:00 a.m. to 7 p.m.), 20% during CNEL evening (7 p.m. to 10 p.m.), and no operations during CNEL nighttime (7 p.m. to 7 a.m.).

The usage of each LZ/DZ varies greatly throughout the year due to seasonal limitations making analysis of each individual LZ/DZ not practical. This study models a ‘most frequently used’ LZ/DZ with 10% of the monthly sorties (360) occurring at that single LZ/DZ.

Each sortie typically consists of one or more helicopters approaching a LZ/DZ, hovering or landing, departing, then repeating this series of steps a second time. Table 3.8-2 presents the typical sortie composition along with average duration of each portion. Detailed tables of aircraft modeling are presented in Appendix G.

Table 3.8-2. MCMWTC Sortie Composition and Flight Profiles at Landing Zones

<i>Aircraft Activity</i>	<i>Location</i>	<i>Duration (minutes)</i>	<i>Altitude (feet AGL)</i>	<i>Speed (knots)</i>	<i>Number of Occurrences per Sortie</i>	<i>Total Time by Portion ⁽¹⁾</i>
Hover/ Landing	750 feet diameter area centered at LZ	5	0 - 100	0 - 60	2	10
Approach/ Depart LZ area	Within 1500 foot radius of center of LZ	5	100 - 500	60 - 80	2	10
Transit Airspace	Within MCMWTC training areas	60	500	80 - 120	1	60

Note: ⁽¹⁾ Remaining 10 minutes of 1.5 hour sortie spent departing or arriving at EAF.

AGL = Above Ground Level; LZ = Landing Zone; MCMWTC = Marine Corps Mountain Warfare Training Center

No defined transit routes or corridors exist at MCMWTC because pilot training typically requires travel directly from one training area to the next while traversing mountainous terrain. Although the “Transit Airspace” portion contains the largest portion of each sortie’s time, the activity is spread throughout a large area of the MCMWTC and occurs at higher altitudes. Due to the greatly dispersed transit activity, the cumulative noise generated is considered negligible and unlikely to reach or exceed 65 dB CNEL_{mr} and is not modeled.

Noise Exposure

The resultant $CNEL_{mr}$ contours at “most frequently used” LZ/DZ for baseline generate circular contours. Table 3.8-3 presents $CNEL_{mr}$ levels and the maximum approximate distance each would extend beyond the LZ/DZ. The 65 dB $CNEL_{mr}$ extends up to 3,700 ft while the 75 dB $CNEL_{mr}$ extends approximately 1,400 ft from the center of the LZ. These distances represent a conservative estimate of noise exposure that might only apply at a single LZ. All remaining LZs experience much less noise exposure.

Table 3.8-3. Baseline Busiest Month $CNEL_{mr}$ at Most Frequently Used Landing Zones

$CNEL_{mr}$ (dBA)	Distance from LZ Center (feet)	Area Contained Within Contour (Acre)
85	n/a	n/a
80	250	5
75	1,400	141
70	2,600	488
65	3,700	987

Note: n/a = not available; $CNEL_{mr}$ = Onset-Rate Adjusted Monthly Community Noise Equivalent Level; dBA = A-weighted decibel; LZ = Landing Zone

Small Arms Activity

Training at MCMWTC includes live-fire operations at 11 active small arms ranges (400, 500, 502, 502a, 503, 600, 800, 801, 1000, 1100, and 1101).

Modeling Data

The USMC provided detailed data for numbers of rounds of each type fired in each range for calendar year 2013 along with geographical information or each range’s layout (USMC 2014a). This information is tabulated in Appendix G. The most rounds fired, approximately 13,000, occurred in Range 502.

Noise Exposure

The baseline conditions are depicted in Figure 3.8-3 in terms of the single event metric PK 15(met). The 87 dB PK 15(met) contour is nearly contained within the MCMWTC training areas except for a portion to the west of Range 801, which extends approximately 4,500 ft beyond the MCMWTC boundary. Additionally, the 87 dB and 104 dB PK 15(met) contours, due to Range 1100 activity, extend beyond the MCMWTC training areas to the south by approximately 5,000 ft and 500 ft, respectively. The Small Arms Range Noise Assessment Model (SARNAM 2) is not capable of including the effects of terrain feature in the noise computation so all ground is automatically modeled as flat. Due to the mountainous terrain in and around the MCMWTC, the actual 87 dB and 104 dB PK 15(met) contours would be smaller. All areas outside of the MCMWTC with potential to exposure to 87 dB PK(met) or greater are un-populated, so the range activity would not affect any off-installation civilians.

Ordnance Activity

MCMWTC ordnance activity may consist of small demolition charges detonated at the AIS-1, AIS-2, and AIS-3 demolition ranges, explosive abatis training in TA-5 and TA-8, and explosive ice breaching at Leavitt Lake.

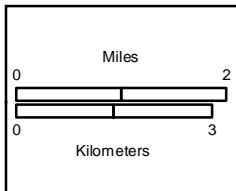
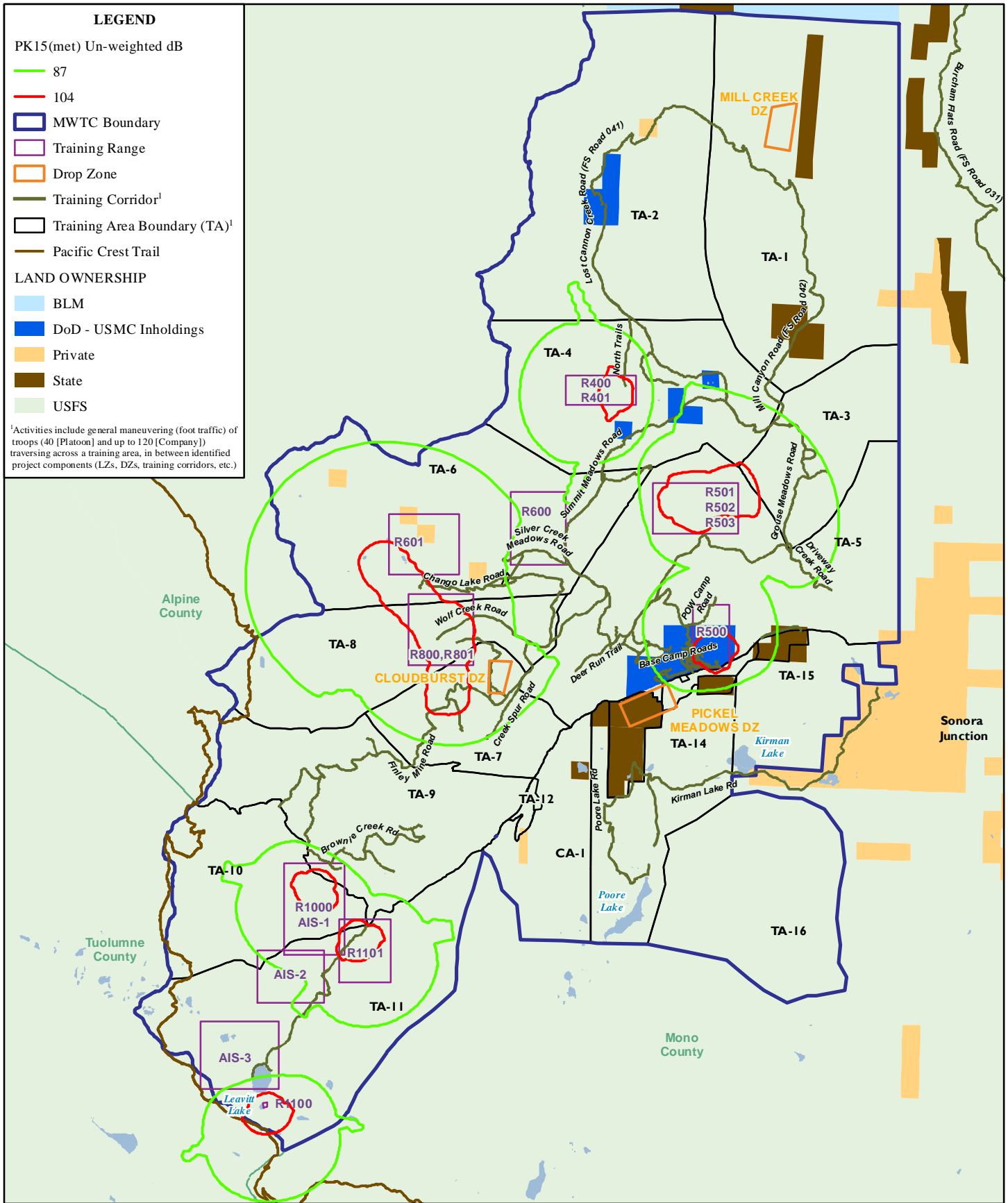


Figure 3.8-3
 Baseline PK15(met) Contours for Live Fire Small Arms Ranges at MCMWTC



Modeling Data

During calendar year 2013, a total of 22 1-pound TNT blocks were detonated along with a corresponding number of blasting caps and the necessary detonating cord within the AIS-3 demolition range (USMC 2014a).

Noise Exposure

Depending on weather conditions, the high complaint risk area (>130 dB Peak) extends 1,500 to 3,500 ft and the moderate complaint area (115-130 dB Peak) extends from 5,000 to 8,500 ft. Due to the limited amount of ordnance detonations (22 events of 1-pound TNT), 62 dBC CNEL contours are wholly contained within the peak sound level contours and were not computed. Therefore, no civilian populations outside of the installation are exposed to CNEL equal to or greater than 62 dBC.

3.8.3 Approach to Analysis

3.8.3.1 Methodology

The approach to the noise analysis is the same as the approach used to define the baseline noise environment (i.e., the NOISEMAP suite of programs, including the Rotorcraft Noise Model [RNM] to evaluate the EAF environment; the Military Operating Area and Range Noise Model [MR_NMAP] suite of programs to evaluate the noise environment from aircraft activity at LZs and DZs; and the SARNAM 2 program to evaluate the small arms weapon fire activity at the live-fire ranges). The potential impacts due to demolition activity were determined using measured peak sound level versus distance information provided by the U.S. Army (U.S. Army 2014).

The airfield and airspace (EAF and LZ/DZ) noise results are expressed using the CNEL metric on a dBA scale while the live-fire ranges environment expresses PK 15(met), which is the Peak Sound Pressure Level exceeded by 15% of events based on variable meteorological conditions using no frequency weighting. Due to differences in the metrics, the results cannot be combined but instead reviewed individually. As discussed in Appendix G, A-weighting simulates the sensitivity of the human ear to flight activity (and other similar sounds), whereas un-weighted levels simulate the sensitivity of the human ear to impulsive sounds such as gun fire noise.

Airfield Environment

Analyses of aircraft noise exposure and compatible land uses around DoD airfield facilities are normally accomplished using a group of computer-based programs, collectively called NOISEMAP (Czech and Plotkin 1998; Page et al. 2008; Wasmer Consulting 2013a, b). The NOISEMAP suite of computer programs was primarily developed by the Air Force, which serves as the lead DoD agency for aircraft noise modeling. The NOISEMAP suite of computer programs includes BaseOps, OMEGA10, OMEGA11, NMAP, RNM, and NMPlot. The suite also includes the NOISEFILE and NCFiles databases. The BaseOps program allows entry of runway coordinates, airfield information, flight tracks, flight profiles (engine thrust settings, altitudes, and speeds) along each flight track for each aircraft, numbers of daily flight operations, run-up coordinates, run-up profiles, and run-up operations. The OMEGA10 program then calculates the SEL for each model of aircraft from the NOISEFILE database, taking into consideration the specified speeds, engine thrust settings, and environmental conditions appropriate to each type of flight operation. The OMEGA11 program calculates maximum A-weighted sound levels from the NOISEFILE database for each model of aircraft, taking into consideration the engine thrust settings and environmental conditions appropriate to run-up operations. The core programs called NMAP and RNM incorporate the number of daily operations by time period, single-event noise levels, flight tracks and profiles of the aircraft to primarily calculate DNL

and CNEL at many points on the ground, accounting for the effects of ground elevation and impedance in the propagation of sound. From calculations of DNL/CNEL for many points on the ground, the NMPlot program draws contours of equal DNL/CNEL for overlay onto land-use maps. In this EA, NOISEMAP Version 7.2 was used to analyze fixed-wing aircraft/operations and RNM Version 7.2.4.0 was used to analyze rotary-wing aircraft/operations.

The RNM simulates vehicle flight in a time-based manner along a prescribed flight track and the sound is analytically propagated through the atmosphere to specified receiver locations. The RNM accounts for spherical spreading, atmospheric absorption, ground reflection and attenuation, Doppler shifts, the difference in phase between direct and reflected rays, and varying terrain and ground impedance between the vehicle and the receiver. The RNM has the ability to account for horizontally stratified atmospheres with winds and curved ray paths but this particular ability was not utilized for this study. The RNM's acoustic algorithms are more robust than NOISEMAP's algorithms, partially due to RNM's more detailed noise database (NCFiles) of one-third octave band sound hemispheres for each vehicle in its inventory. In addition to altitude and speed, RNM accounts for roll, angle of attack (similar to pitch), yaw, and nacelle angles, if applicable, along each flight track for each aircraft. In this report, RNM Version 7.2.4 was used to analyze all of the modeled rotary-wing aircraft operations.

Airspace Environment

MR_NMAP (Lucas and Calamia 1997) is a model based on NOISEMAP technology for predicting aircraft noise from aircraft operating in three types of Special Use Airspace: Military Operations Areas, Range/Restricted Areas, and Military Training Routes (MTRs). The MR_NMAP suite of computer programs consists of MR_OPS Version 1.0, OMEGA10R, MR_NMAP Version 2.20, NMPlot, and NOISEFILE Version 6.4. The MR_OPS program allows for entry of airspace information, the horizontal distribution of operations, flight profiles (average power settings, altitude distributions, and speeds), and numbers of sorties. "Horizontal distribution of operations" refers to the modeling of lateral airspace utilization via three general representations: broadly distributed operations for modeling of Military Operations Areas and Range events, operations distributed among parallel tracks for modeling of MTR events, and operations on specific tracks for modeling of unique Military Operations Areas, Range, MTR, or target area activity.

OMEGA10R, like OMEGA10 for NOISEMAP, extrapolates/interpolates the reference SELs for each model of aircraft from the NOISEFILE database, taking into consideration the specified speeds, engine thrust settings, and environmental conditions appropriate to each flight operation and generates tables of SEL for increasing altitude. The core program called MR_NMAP incorporates the number of monthly operations by time period, specified horizontal distributions, volume of the airspaces, and profiles of the aircraft to primarily calculate: (a) CNEL_{mr} at many points on the ground, (b) average CNEL_{mr} for entire airspaces, or (c) maximum CNEL_{mr} under MTRs or specific tracks. From calculations of CNEL_{mr} for many points on the ground, the NMPlot program draws contours of equal CNEL_{mr} for overlay onto land-use maps.

Small Arms Ranges Environment

To evaluate noise contours resulting from the range small arms training operations, the DoD's SARNAM 2, version 2.6 computer program was used. For small arms range complexes, SARNAM 2 calculates and plots noise contours for a variety of noise management tasks, such as assessing long-term community noise impact, examining noise levels resulting from single firing events, or planning range operations. It includes consideration of weapon and ammunition type, spectrum and directivity for both muzzle blast and projectile bow shock, number of rounds fired, time at which rounds are fired, range attributes, frequency weighting, propagation conditions, noise metrics, noise assessment penalties, and long-term assessment period and

procedure. Effects of terrain on sound propagation are not considered in the program (a flat terrain assumption). Input data files for the SARNAM 2 program were prepared based upon the range operations information provided, range design attributes, propagation conditions, and a noise receiver grid.

Since the SARNAM software cannot take into account any reflection or absorption of sound as a result of the terrain, the actual peak noise levels are expected to be less than computed levels.

3.8.3.2 Evaluation Criteria

For airfields, the Navy Air Installations Compatible Use Zones (AICUZ) Instruction has a land-use compatibility criterion of 65 dBA CNEL for the lower bound of its Noise Zone I. Noise Zone II is defined as 65 to 75 dBA CNEL (exclusive of the upper bound) and Noise Zone III as greater than or equal to 75 dBA CNEL (DoN 2008a). Due to the shared use of Forest Service land for recreation and for USMC training/operations, it is also important to consider the potential for annoyance to the public due to aircraft operations. Potential for annoyance best correlates with percent time audible of aircraft flights and is discussed in this analysis (Miller et al. 1999).

For airspace, the Navy Range AICUZ Instruction has a land-use compatibility criterion of 65 dBA CNEL_{mr} for the lower bound of its Noise Zone I. Noise Zone II is defined as 65 to 75 dBA CNEL_{mr} (exclusive of the upper bound) and Noise Zone III as greater than or equal to 75 dBA CNEL_{mr} (DoN 2008b).

The Navy Range AICUZ Instruction is expressed in terms of A-weighted noise levels. To evaluate small arms weapon fire training operations, the DoD's Small Arms Range Noise Assessment Model (SARNAM 2) computes PK 15(met) which is the Peak Sound Pressure Level exceeded by 15% of events based on variable meteorological conditions using no frequency weighting.

Army Regulations AR 200-1 specifies the use of PK 15(met) as the most appropriate metric for assessing community noise impacts of small arms activities. The USMC does not currently specify a preferred assessment metric so, consistent with AR 200-1 recommendations, PK 15(met) is used in this study. PK 15(met) is the Peak Sound Pressure Level exceeded by 15% of events based on variable meteorological conditions using no frequency weighting. The resulting noise contours for PK 15(met) of 87 and 104 dB define the compatibility noise zones, such as:

- Noise Zone I: PK 15(met) less than 87 dB; acceptable for noise-sensitive land uses, such as housing, schools, and medical facilities,
- Noise Zone II: PK 15(met) from 87 to 104 dB; noise-sensitive land uses are normally not recommended, and
- Noise Zone III: PK 15(met) greater than 104 dB; noise-sensitive land uses are not recommended.

3.8.4 Environmental Consequences

3.8.4.1 No-Action Alternative

Under the No-Action Alternative, training activities would be limited to the vehicles, weapons systems, engineer systems, aircraft, ordnance, and equipment currently utilized by the USMC and other military agencies as authorized in the AOP, 40-year SUP, and four existing temporary SUPs (Appendix A). Therefore, the noise exposure would be the same as described under existing conditions in Section 3.8.2, and direct and indirect impacts from noise would be less than significant under the No-Action Alternative.

3.8.4.2 Proposed Action

Airfield Activity and Noise

Under the Proposed Action, the airfield flight tempo of 3,600 sorties from Baseline would remain unchanged. Each sortie would consist of one departure and one arrival. The MV-22 introduction would be complete and have replaced the CH-46E Sea Knight (twin engine, twin rotor, medium lift helicopter) sorties on a one-for-one basis. Table 3.8-4 details the busiest month sorties at the MCMWTC EAF. The MV-22 Osprey (twin engine, tilt-rotor, medium lift aircraft), CH-47E Chinook (twin engine, twin rotor, heavy lift helicopter), and UH-60 Black Hawk (twin engine, four-bladed, multi-purpose helicopter) would be the most frequent users of the EAF, each contributing 24% of total sorties. The majority (80%) of flight operations would occur during CNEL daytime (7:00 a.m. to 7 p.m.), with 20% during CNEL evening (7 p.m. to 10 p.m.), and no operations during CNEL nighttime (7 p.m. to 7 a.m.).

Table 3.8-4. MCMWTC EAF Busiest Month Sorties for Proposed Action

<i>Aircraft Type</i>	<i>Number of Aircraft</i> ⁽¹⁾	<i>Sorties per day</i> ^(2, 4)	<i>Sorties per month</i> ^(3, 4)
CH-46E	-	-	-
MV-22	6	36	864
CH-47E	6	36	864
CH-53E	2	12	288
AH-1W	4	24	576
UH-1	1	6	144
UH-60	6	36	864
Totals	25	150	3,600

Notes: ⁽¹⁾ Busiest Month assumes a Military Expeditionary Unit training for entire month.

⁽²⁾ Assuming 6 sorties during 10-hour period due to refueling time.

⁽³⁾ Assuming 6 flying days per week, 4 weeks per year; each sortie includes average of 2 landings at an LZ.

⁽⁴⁾ 80% during CNEL daytime (0700-1900), 20% during CNEL evening (1900-2200).

As shown in Figure 3.8-4, the 65 dB CNEL contour would be fully contained within the MCMWTC training areas. Therefore, no permanent residents outside the training areas would be exposed to CNEL greater than or equal to 65 dB. The CNEL contours at the EAF would remain similar but slightly smaller than the existing conditions due to the MV-22 being slightly quieter than the CH-46E when departing or arriving from an airfield. There would be no significant direct or indirect impacts to residents or wildlife in the vicinity of the EAF due to noise.

Airspace Activity and Noise

For the Proposed Action, the MV-22 would replace the CH-46E on a one-for-one basis, so there would be no change in overall operations. The MV-22 would operate at the EAF in a similar manner as the existing helicopters. The MV-22 would utilize the MCMWTC airspace and LZs/DZs with a similar frequency but would be limited to 44 of the currently used 56 LZs/DZs. The live-fire weapon range activity would continue unchanged relative to existing activity.

The usage of each LZ/DZ would continue to vary greatly throughout the year due to seasonal limitations making estimation of individual LZ/DZ sorties not practical. Consistent with the Baseline analysis, a “most frequently used” LZ/DZ is modeled with 10% of the monthly sorties from Table 3.8-4 (i.e., 360 sorties) occurring at that single LZ/DZ.

The MV-22 sorties would be very similar to the existing helicopter sorties except for minor variations necessary due to differing aircraft performance as well as slightly varying training requirements. Detailed tables of aircraft modeling are presented in Appendix G.

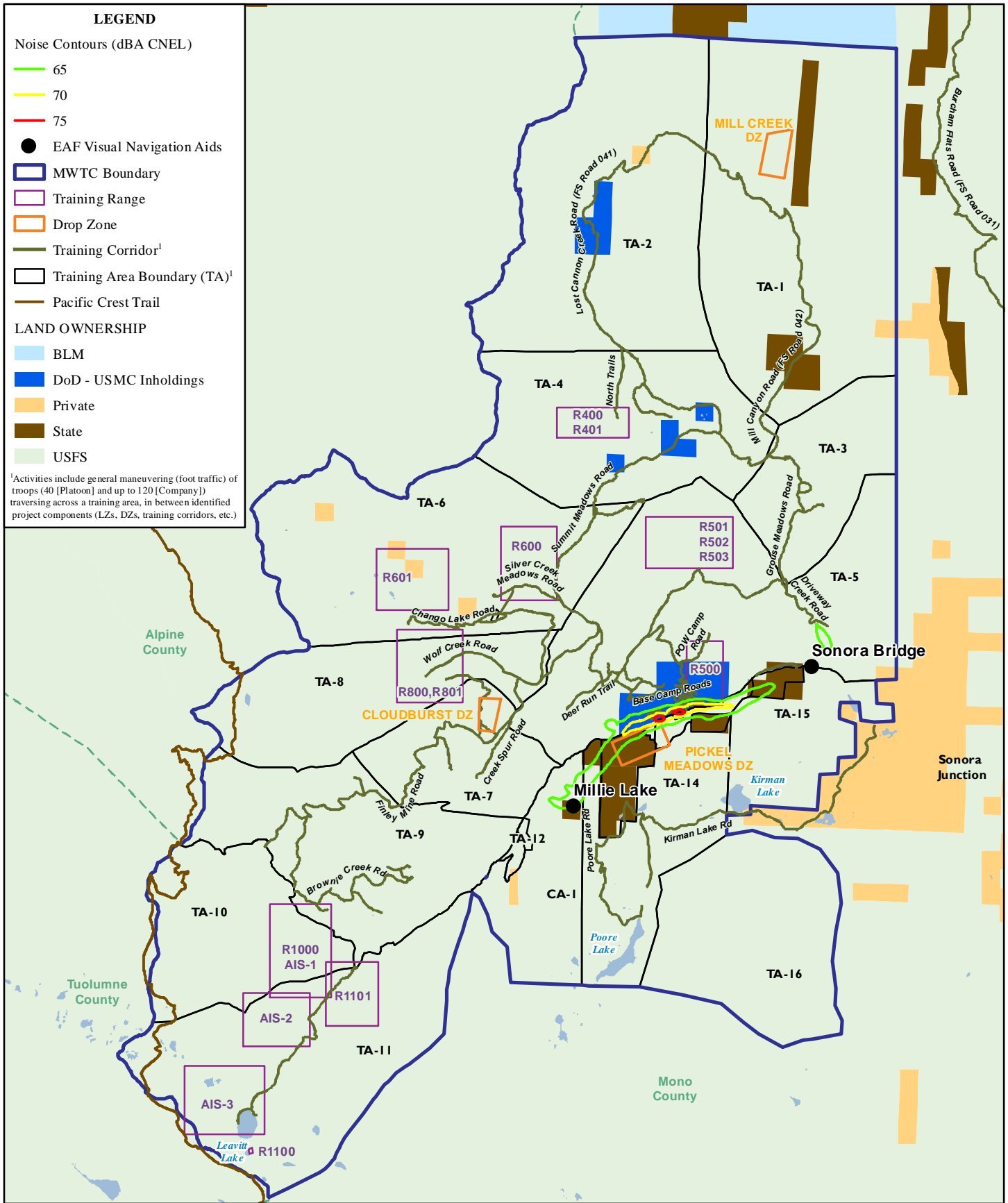


Figure 3.8-4
Proposed Average Daily CNEL During Busiest Month at MCMWTC EAF



No defined transit routes or corridors are to be added as part of the Proposed Action so the helicopters and MV-22 would continue to transit the MCMWTC airspace in a more dispersed manner traveling directly from one training area to the next while traversing mountainous terrain.

As tabulated in Table 3.8-5, $CNEL_{mr}$ and their maximum approximate extent distance are listed. The 65 dB $CNEL_{mr}$ would extend almost 4,000 ft from the center of the LZ. These distances represent a conservative estimate of noise exposure that might only apply at a single LZ. All remaining LZs would experience less noise exposure because each would experience less frequent usage. The “most frequently used LZ” is not any specific identified LZ, since the frequency of LZ usage varies from year to year. Rather, the information provided in Table 3.8-5 is a conservative scenario applicable to a generic “most frequently used” LZ.

Table 3.8-5. Baseline Busiest Month $CNEL_{mr}$ at Most Frequently Used Landing Zone

$CNEL_{mr}$ (dBA)	Baseline Distance from LZ Center (feet)	Baseline Area Contained Within Contour (Acre)	Proposed Distance from LZ Center (feet)	Proposed Area Contained Within Contour (Acre)	Increase Relative to Baseline Distance from LZ Center (feet)	Increase Relative to Baseline Area Contained Within Contour (Acre)
85	n/a	n/a	n/a	n/a	n/a	n/a
80	250	5	500	18	+250	+13
75	1,400	141	1,600	185	+200	+44
70	2,600	488	2,700	526	+100	+38
65	3,700	987	3,900	1,097	+200	+110

Note: LZ = Landing Zone

Nearly all LZs/DZs would be located sufficiently far from the MCMWTC boundary so that the 65 dB $CNEL_{mr}$ contours would be fully contained within the training areas. Five LZs (Loon, Pickel, Vulture, Yarup, and Vireo) would be located closer than 4,000 ft from the MCMWTC boundary. If those LZs experience heavy usage (i.e., greater than 10% of all sorties), the 65 dB $CNEL_{mr}$ would extend beyond the training areas. However, based on aerial imagery review, no structures are located in proximity. Four LZs (Sweetwater, Swallow, Finch and Lucky Boy) are located outside of the MCMWTC, so $CNEL_{mr}$ equal or greater to 65 dB would exist outside of the training areas within 4,000 ft of each of those four LZs. However, based on review of aerial imagery, no structures would be located within the 4,000 ft extent. No residents would be exposed to $CNEL_{mr}$ greater than or equal to 65 dB under the Proposed Action and there would be no direct impacts due to aircraft noise.

There is still potential that recreational users could be annoyed by aircraft noise. The relative potential of annoyance can best be assessed by analyzing the percent of time aircraft are audible to the users. Under the Proposed Action, the total numbers of aircraft flight operations would remain constant with current conditions so that in and of itself would not cause increases in percent of time aircraft are audible. Under the Proposed Action, the MV-22 operations would be replacing the existing CH-46 operations on a one-for-one basis. The MV-22 is slightly noisier (1 to 4dB) than the CH-46 when operating at LZs in ‘helicopter-mode’ so there is the potential for slight increases in percent of time audible to the users if they are within 1 mile of the LZ being used. However, the MV-22 is slightly quieter (2 to 4dB) than the CH-46 during overflights, so percent of time audible for the proposed MV-22 events would be shorter and cover less area of land. These increases and decreases in percent of time audible per event are estimated to be small (+/- 10 seconds). Both the small increases in audible sound at LZs and small decreases during transitory overflights are expected to have a negligible overall effect on visitor annoyance from aircraft noise so no indirect impacts would be anticipated under the Proposed Action.

Small Arms Activity and Noise

Under the Proposed Action, there would be no change to the existing small arms weapon fire activity at the existing ranges. Nearly all of the 87 dB PK 15(met) contour would be contained within the MCMWTC training areas except a portion to the west of Range 801, as well as the 87 dB and 104 dB PK 15(met) contours south of Range 1100 activity. SARNAM 2 is not capable of including the effects of terrain feature in the noise computation so all ground is automatically modeled as flat. Due to the mountainous terrain in and around the MCMWTC, the actual 87 dB and 104 dB PK 15(met) contours would be smaller in size.

All areas outside of the MCMWTC with potential to be exposed to 87 dB PK 15(met) or greater are unpopulated, so the range activity would not affect permanent civilian residents. Although the public could be in areas close enough to hear the small arms activity, no increase in annoyance is expected because the existing activity would not change under the Proposed Action. No direct or indirect impacts would occur due to small arms activity.

Ordnance Activity and Noise

Under the Proposed Action, there would be no changes to the ordnance activity that currently consists of small demolition charges detonated at the AIS-3 demolition range. Since no changes to the existing ordnance activity would occur for the Proposed Action, the moderate risk of complaint area (115 dB Peak sound pressure level) would remain contained within the MCMWTC training areas. Therefore, no civilians outside of the training areas would be exposed to peak sound levels considered in the moderate complaint risk range. Due to the limited amount of ordnance detonations (22 events utilizing 1 pound of TNT), 62 dBC CNEL contours would be wholly contained within the peak sound level contours and were not computed. Therefore, no permanent residents would be exposed to CNEL equal to or greater than 62 dBC. Public recreational users could be in areas close enough to hear this activity, but because ordnance operations are infrequent and the Proposed Action would not change the existing ordnance operations, no increase in annoyance is expected. Therefore, direct and indirect impacts from noise would be less than significant under the Proposed Action.

3.8.5 Cumulative Effects

In addition to the direct and indirect environmental consequences already discussed, additional considerations required by NEPA include the potential cumulative effects of the Proposed Action. Potential cumulative effects could occur when the effects of the Proposed Action are combined with other past, present, and reasonably foreseeable projects (Appendix E). The ROI for noise includes the publicly accessible areas within and adjacent to the MCMWTC boundaries.

Cumulative effects from the Proposed Action were assessed when added to: (1) the existing environmental conditions as a proxy for the impacts of past actions (refer to Section 3.8.2); (2) the “MCMWTC Operations and Training Baseline Project” as described in Appendix E; and (3) other past, present, and reasonably foreseeable projects in the ROI. Due to aircraft training and operational activities in the past (e.g., transiting the airspace and training at landing zones, etc.) there are some minimal (but not significant) effects that include recreational visitors occasionally hearing aircraft near training areas. However, there are no significant impacts due to noise from the execution of the Proposed Action because the number and frequency of aircraft, small arms, and ordnance would not increase relative to the existing condition. The Proposed Action would replace the CH-46E operations with the MV-22 on a one-for-one basis but there would not be a significant increase in noise levels generated by the MV-22.

The other identified cumulative projects may involve infrastructure improvements, but would not create additional noise exposure. Therefore, no significant cumulative impacts would occur from noise with implementation of the Proposed Action along with past, present, and reasonably foreseeable projects in the ROI.

3.9 RECREATION

3.9.1 Definition of Resource

Recreational areas are defined as public or private lands that provide for relaxation, rest, activity, education, or other opportunities for leisure services and community support that lead to an enhanced quality of life. Recreation may include any type of activity in which area residents, visitors, or tourists may participate. The ROI for the discussion of recreational resources are the publicly-accessible lands within and adjacent to the MCMWTC boundaries, and along the training corridors.

3.9.2 Existing Conditions

The majority of MCMWTC training areas are situated on land owned and managed by the Forest Service. The USMC owns only approximately 960 acres of the approximately 64,000 training acres at MCMWTC. Other than Base Camp, the USMC/DoN owns land in TA-2 (along Lost Cannon Creek) and in TA-4 (Summit Meadows area). The USMC also owns 480 additional acres in Lyon County, Nevada for the Sweetwater Airstrip. There is some privately owned land in TAs 1, 2, 5, and 6, and some state-owned lands in TAs 13 and 14. Otherwise, the remaining land within the MCMWTC installation boundaries is managed by the Forest Service.

With the exception of the land that is owned by the USMC/DoN, the MCMWTC does not control land uses within or around MCMWTC nor does the USMC have exclusive use of the area. As stated in the 2011 AOP for the 40-year SUP, “The Forest Service retains administrative control of the land. The Forest Service may designate permanent or temporary off-limits areas including but not limited to sensitive areas, special interest areas, recreation areas, wildlife food plots, pipeline/utility corridors, and critical or unique ecosystems with the potential to be impacted or damaged by military training, as allowed by Federal Law” (MCMWTC 2015d).

The MCMWTC training sites located on Forest Service lands are all located in the Bridgeport Ranger District of the HTNF. Very little of this area is developed with human infrastructure. Outdoor recreation, Forest Service management programs, MCMWTC training, and grazing are the dominant land uses.

Within the MCMWTC boundaries, Base Camp is the only area of concentrated human activity. Other than existing USMC training as described in Section 2.1.2, other land use and recreation activities within the MCMWTC boundaries include hunting, hiking, camping, skiing, snowmobiling, recreational day use areas, and grazing of sheep and cattle (Forest Service 2014b). The MCMWTC installation is bounded on two sides by federal wilderness areas and is near Yosemite National Park.

Wilderness is a unique land management designation guided by the Wilderness Act of 1964 (Public Law 88-577 [USC 1131-1136]). Currently, there are three wildernesses adjacent to the area under permit for USMC training: Hoover Wilderness, Carson-Iceberg Wilderness, and Emigrant Wilderness. None of these National Forest wildernesses lie within the area under permit for USMC training activities. Preservation of wilderness character is the overriding management task within these wildernesses. Wilderness, by law and by management, “has outstanding opportunities for solitude or a primitive and unconfined type of recreation.” The setting and type of experience that Congress directed the Forest Service to provide in these

wildernesses is incompatible with military unit training. Wilderness, by Forest Service policy (FSM 2323.13h) is off-limits for military training. In addition, these wildernesses are extremely popular with the public. Visitors come to these Sierra Nevada wildernesses from all over California, from the rest of the country, and many international visitors make their way here. With the amounts of wilderness use within these Sierra Nevada wildernesses, military training is incompatible and inappropriate.

Although comprehensive visitation statistics for the Bridgeport Ranger District are not available, a combination of anecdotal observations, limited visitor counts, and observed occupancy at developed recreation sites and travel routes indicates the area experiences a high volume of recreational visitation. Most visitation is concentrated in the summer months at the high use locations mentioned above with a noticeable spike in winter use occurring in the Bridgeport Winter Recreation Area during peak snowmobiling conditions (January through April, conditions permitting). Based on the high occupancy observed at developed recreation site parking areas as well as along popular travel corridors (e.g., roadside parking along SR108, Twin Lakes Road, and Green Creek Road), it is reasonable to assume a significant number of visitors annually frequent the more remote destinations within the project area that include Burcham Flat Road, Lobdell Lake Road, Kirman Lake Road, Masonic Road, and Risue Canyon as well as several other locations north and northwest of State Route 108 behind the MCMWTC.

3.9.2.1 Inventoried Roadless Areas

The MCMWTC overlaps or is adjacent to 13 IRAs: Iceberg-Wolf Creek, Iceberg-Mill Creek, Hoover-North, Fales, Wild Horse Mountain, Long Meadow, Sweetwater, Fourth of July Spring, Wellington Hills, Fourmile Hill, Devil's Gate, West Walker, Butler Mountain, and Chinese Camp. IRAs include motorized roads and trails. The HTNF manages IRAs to maintain a variety of specific values and characteristics related to natural and cultural resources and recreation. These roads and trails provide access to a variety of dispersed recreation opportunities within IRAs where visitors can test their technical trail driving abilities and access remote destinations in semi-primitive settings. Hunting, camping, hiking, OHV use, fishing, and wildlife viewing are all popular recreational pursuits that occur within IRAs. These same roads and trails also provide access to training areas used by the Marine Corps. Additional background on IRAs is provided in a Specialist Report (HTNF 2017b). GIS maps of the IRAs are available online at <https://data.fs.usda.gov/geodata/edw/datasets.php?xmlKeyword=Roadless>.

Of the aforementioned IRAs, only Sweetwater is considered to have wilderness capability (Forest Service 2010c). The Sweetwater IRA borders the northern end of the Lobdell Lake Road training corridor.

Sixteen LZs are within the Iceberg-Mill Creek IRA in the central part of the MCMWTC; the Hoover North and West Walker IRAs each have one LZ. Of the four DZs currently authorized, only three are located near an IRA (Iceberg-Mill Creek, Iceberg-Wolf Creek Lake, and Hoover North IRAs). In addition, the No Action alternative would continue to allow for use of four convoy training corridors that lie adjacent to five roadless areas: Kirman Lake Road (Hoover North IRA), Lucky Boy Pass (Butler Mountain IRA), Masonic Road (West Walker IRA), and Burcham Flat Road (Fales and Wild Horse Mountain IRAs). Other IRAs mentioned above are adjacent to but do not overlap the MCMWTC training areas.

3.9.2.2 Recreational Opportunities

Recreational Opportunities within the MCMWTC Boundaries

The Bridgeport Ranger District serves as a popular recreation destination for summer and winter outdoor enthusiasts alike. The 1986 Toiyabe National Forest Land and Resource Management Plan (LRMP) contains direction for managing the Forest's recreation resources in the project area. The Proposed Action falls within Management Area No. 4, Walker, and Management Area No. 6, Bridgeport Pinyon-Juniper.

The designated recreation opportunity spectrum (ROS) class for NFS lands where MCMWTC authorized activities occur is predominantly roaded natural and semi-primitive motorized areas, with little overlap of the semi-primitive non-motorized and primitive ROS classes (Forest Service 2010c; HTNF 2017a).

As shown in Figure 3.9-1, there are numerous recreational activities within and adjacent to the MCMWTC installation boundaries. The locations of campsites, trailheads, trails, lakes and other waterways, and the BWRA within and surrounding MCMWTC are shown. Developed and dispersed recreation opportunities abound and include several miles of scenic highways, camping, off-highway vehicle use, snowmobiling, cross-country and back country skiing, backpacking, climbing, boating, fishing, horseback riding, hiking, hunting, and mountain biking. Many of these pursuits are provided through hosted recreation experiences authorized under special use permits such as outfitting and guiding, resorts, and recreation events (HTNF 2017a). In addition, the community of Bridgeport is heavily dependent on local recreation, such as the Twin Lakes (Forest Service 1986).

The West Walker River watershed offers several primitive trailheads and camping areas. Within the Walker area, Twin Lakes, Virginia Lakes, Green Creek, Buckeye Creek, Little Walker River, and Leavitt Meadows are popular recreational areas. Kirman Lake is a popular fly-fishing area. The Pickel Meadow Wildlife Area is also a popular hunting and fishing destination on the West Walker River with fish planted weekly during summer months (CDFW 2016b). These areas contain some developed recreational amenities such as campgrounds, fishing resorts, and summer homes (Forest Service 1986), and are also used for activities such as backpacking, hiking, and off-highway vehicle recreation. Snowmobiling in winter months often follows trails established by MCMWTC training activities (Forest Service 2005a). The PCT, running from Washington through California, generally follows along the western boundaries of TAs 8, 10, and 11, for approximately 2 miles. Smaller trails run near the other sites in the project area, and many trails begin in the MCMWTC area and lead into adjacent wilderness areas.

The PCT is a 2,663.5-mile trail that runs from the California/Mexico border to the Washington/Canada border. The PCT was established with passage of the National Trails System Act of 1968 (PL 90-543 [USC 1241-1251]). The PCT is an extremely popular trail, providing opportunities for through hikers, section hikers, and day hikers. The PCT provides access to spectacular portions of the Sierra Nevada in this region, and visitors expect a “wild” experience, since much of the trail also lies within wilderness. The PCT, by policy, is an all-seasons, non-motorized, and non-mechanized route. It was designated for use by hikers and equestrians. Motorized crossings of the PCT occur only at designated places. The experience that trail users expect on the PCT includes the types of sights and sounds of uses adjacent to the trail, views and landscapes that can be seen from the trail, and the compatibility of types of uses on the trail. Motorized use adjacent to, and along the trail is incompatible with the experience that land managers are trying to provide. Military training activities are not compatible with visitor use on the PCT.

The PCT crosses SR 108 at Sonora Pass. Mono County considers it to be part of the Sonora Junction Planning Area for regional land use planning and coordination purposes. The Mono County General Plan (2013) states that, “the primary issue within the Sonora Junction Planning Area is the continued successful integration of private property use with activities such as recreation and military operations associated with the USMC Mountain Warfare Training Center.”

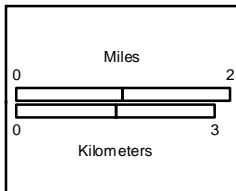
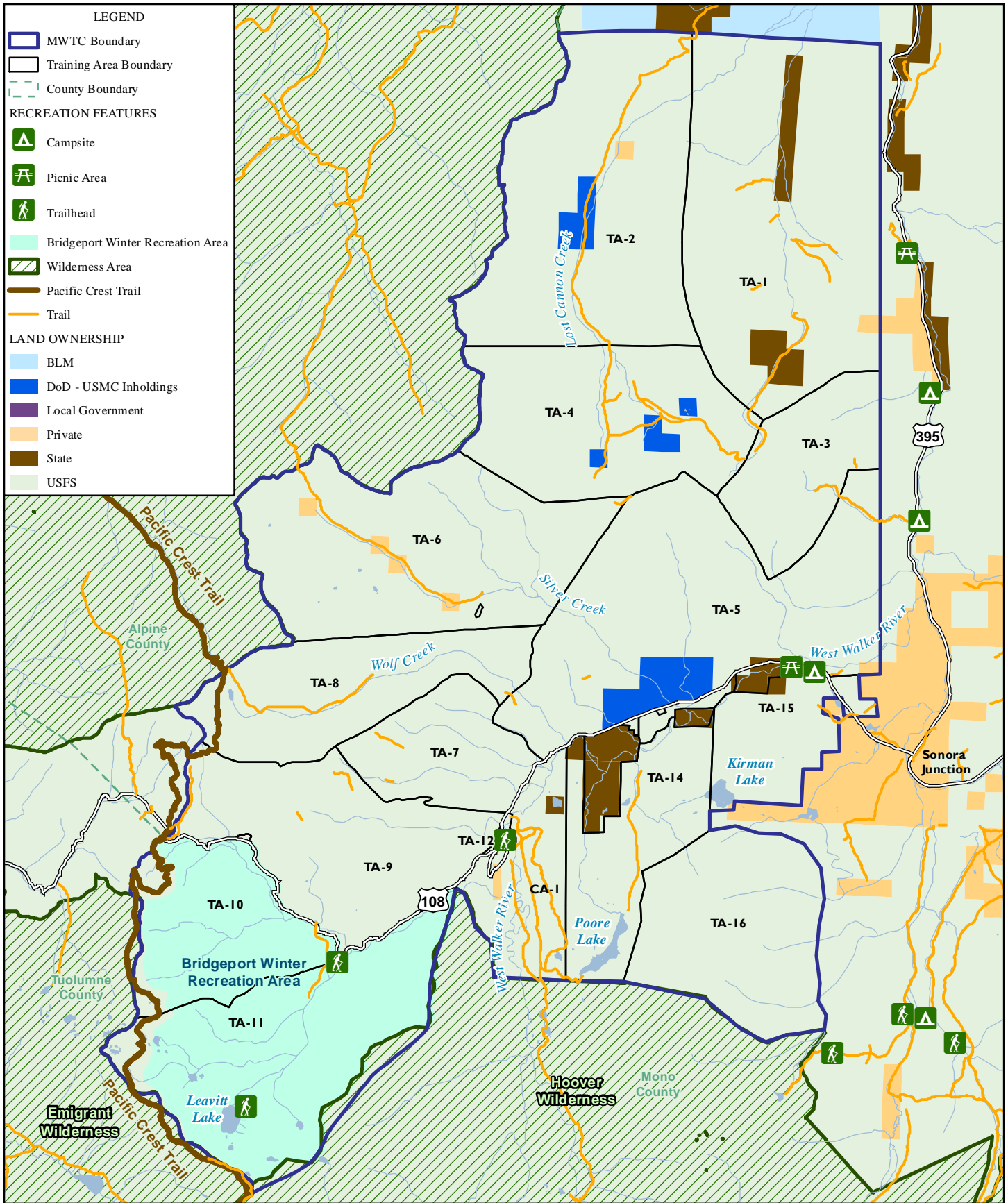


Figure 3.9-1
Recreation Opportunities Within and Surrounding MCMWTC



No concentrated (groups larger than 25 individuals) military training activities (e.g., camping, setting up RHUs) currently occur on or near the PCT during the summer, when the majority of PCT users recreate along the trail. The terrain within the MCMWTC near the PCT is difficult to access during the summer, except by road or trail. The closest training activity that occurs near the PCT in the summer is the Mountain Medicine Course that occurs at Wolf Creek Lake in TA-8. Wolf Creek Lake is approximately 0.2 mile to the east of the trail at the closest point. Each course is 12 training days in length, and it is conducted three times per year. The class sizes range from 10 to 40 students. Training activities include performing cold weather preventative medicine, managing a hypothermia casualty, and applying the principles of nutrition in a mountainous environment. Additionally, a scout sniper training element consisting of 4-6 military personnel comes within 0.5 mile of the PCT, up to two times per year. There are no LZs used during the summer that are within 1 mile of the PCT.

During the winter, TA-10 and TA-11 are used for winter training activities. Military personnel do cross over the PCT on foot while training. However, during the winter season, there are few recreational users of the PCT. The closest LZ used near the PCT is LZ Vireo in TA-11, approximately ¼ mile from the trail. However, LZ Vireo typically sees very minimal use during the winter.

Bridgeport Winter Recreation Area

In the course of designating wilderness areas, the 2009 Omnibus Public Lands Act also has identified the 7,254-acre BWRA. The BWRA is the first winter recreation area to be congressionally designated. It is located just south and east of Sonora Pass and contains forest, meadow, and mountainous areas. The predominant winter recreational use is snowmobiling, skiing, and snowboarding. Vehicular access is available along and from SR 108.

The BWRA is managed by the Forest Service with support from the USMC, the Pacific Crest Trail Association, and recreational users. Grooming of Highway 108 is performed by MCMWTC and is according to their training schedule (Forest Service 2010e). All BWRA users must receive permits during the winter use season. The use season is from the first Saturday in December, provided that there is at least 24 inches of snow at the Leavitt Lake Road/SR 108 junction, to the last Sunday of April or earlier if there is less than 12 inches of snow at the junction (Forest Service 2014c).

On the east side of the BWRA, approximately 35 vehicles with trailers (100 snowmobiles) use the area during the weekends, and approximately 7 vehicles with trailers (20 snowmobiles) use the area on weekdays. On the west side, the SR 108 SNO-PARK is at capacity on most weekends (Forest Service 2010e). The SNO-PARK has 62 parking slots for vehicles with trailers attached (Forest Service 2014d). From the SNO-PARK, users can find snowmobile trails and areas for general snow play.

The BWRA overlaps TAs 10 and 11, which are critical to winter training at MCMWTC. In addition to non-live-fire training activities conducted in TAs 10 and 11, there are three live-fire ranges and three demolition ranges in TAs 10 and 11. In the more than five decades that the USMC has been using the BWRA area, there have been no documented deaths, major injuries, or significant conflicts between military and civilian users (Forest Service 2010e). While the designation of this area specifically for winter recreation occurred too recently to allow determination of potential impacts to training, the potential for user conflicts exists (MCMWTC 2011).

Recreational Opportunities along the MCMWTC Training Routes

Figure 3.9-2 shows the campsites, picnic areas, trails, and wilderness areas along the MCMWTC training routes. Other recreational opportunities along the training routes include fuel wood gathering and snowmobiling (Forest Service 1986). Public Forest Service roads and trails traverse on the Forest Service lands throughout the MCMWTC boundaries. The Forest Service Motor Vehicle Use Map details those roads and trails open to public vehicular use, the types of vehicles allowed, and the seasons of use. Roads are typically maintained and are open to highway legal vehicles as well as motorcycles and all-terrain vehicles. However, the weather or road surface may preclude vehicles such as passenger cars on certain roads. Public access on these designated roads and trails is prioritized over military training activities.

Existing Public Notification of Military Training

All training associated with MCMWTC is conducted on public lands. The existing permits between the Marine Corps and Forest Service do not allow for exclusive use by the USMC. Public use of training lands within MCMWTC occurs regularly. Levels of public use of lands within MCMWTC vary seasonally.

MCMWTC has initiated a comprehensive public outreach program designed to inform the public of the installation's presence and mission, facilitate coordination with other agencies and public stakeholders, and reduce conflicting uses of MCMWTC training lands. Nevertheless, the potential for land-use conflicts is inherent in the military use of public lands, given that virtually all training areas are open to the public without the need for advance coordination or notice (MCMWTC 2011; HTNF 2017a-b).

The MCMWTC is not allowed to close the Special Use Areas or Limited Use Areas to public access for military training purposes unless previously approved by the Forest Service. The Forest Service administers any forest closure orders to support military training.

In addition, under the existing SUP and temporary permits, the MCMWTC is required to prepare and post schedules and maps of areas in the Limited Use Area scheduled for training exercises to inform the public of the military's presence in those areas, as reasonably feasible. Existing bulletin boards that can be used by MCMWTC for public notification are located at Peoples Gate, Finley Mine Road Junction, Silver Creek Meadows, and Deer Run Trail (existing 10-kilometer run obstacle wall). These schedules show the projected training information (MCMWTC 2015d).

Recreation Special Uses

There are currently nine recreation special use permits issued within the project area. Of these, one is a commercial pack station, one is a concession campground, two are for summertime recreation events, and the remaining five authorize outfitting and guiding activities such as guided fishing excursions and mountaineering trips. The commercial pack station and concession campground activities are the most likely to overlap on a day-to-day basis with Marine Corps training exercises under the No Action and Proposed Action alternatives due to their proximity to the Mountain Warfare Training Center and Leavitt Meadows.

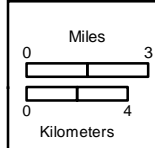
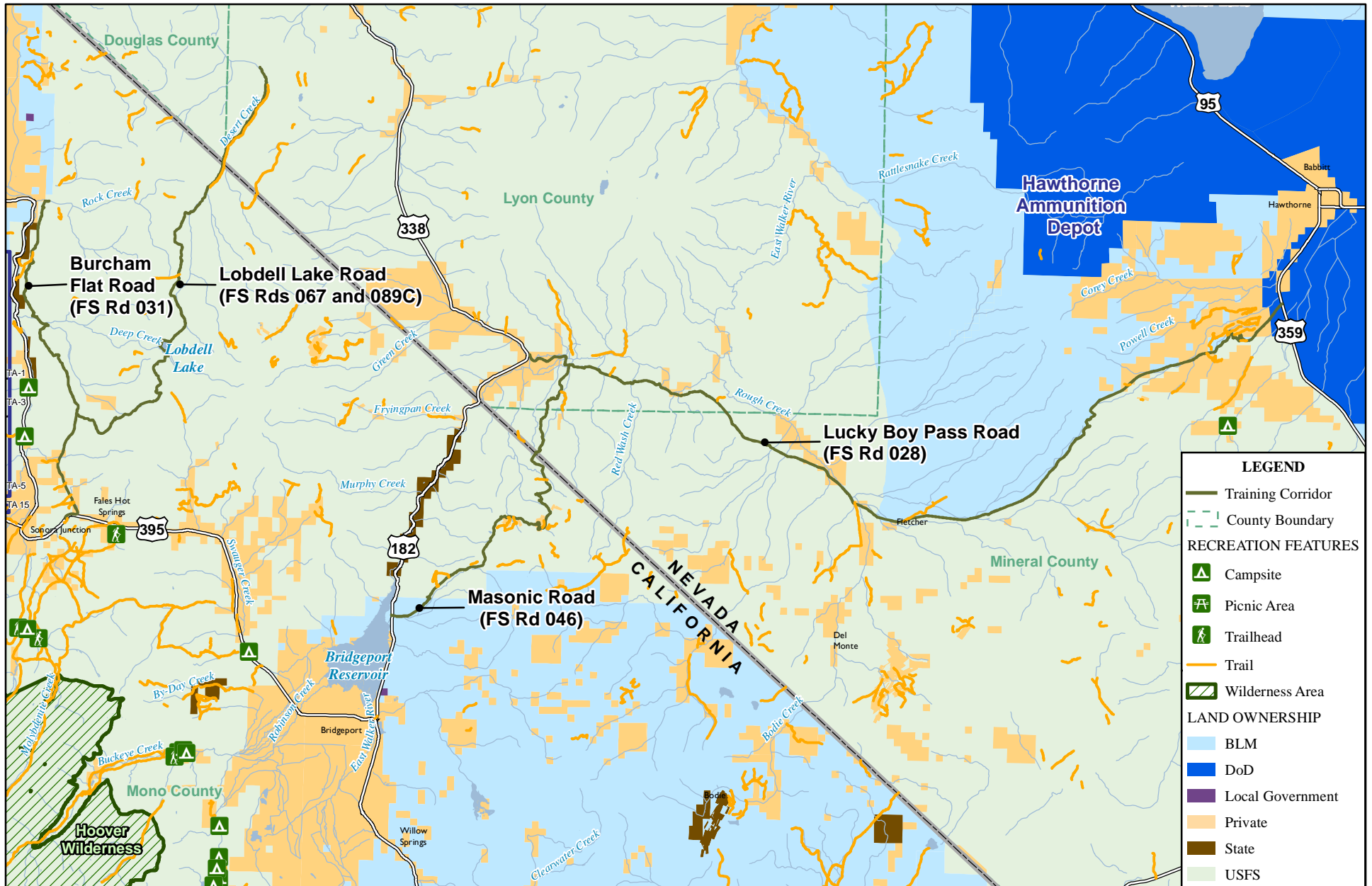


Figure 3.9-2
 Recreation Opportunities Outside of MCMWTC and Along Training Corridors



3.9.3 Approach to Analysis

This section evaluates potential impacts to recreation as a result of implementation of the No-Action Alternative or the Proposed Action. In general, recreation impacts would be significant if they would: (1) be inconsistent or in non-compliance with applicable recreation plans or policies; (2) preclude the viability of a recreation activity; (3) preclude continued use or occupation of an area; and (4) be incompatible with adjacent or vicinity recreational uses to the extent that public health or safety is threatened.

The recreation resource on the Bridgeport Ranger District encompasses a large variety of experiences: wilderness-like settings to motorized uses to both summer and winter activities to concentrated use in popular destination areas. In order to best capture the potential effects of the Proposed Action on the diversity of recreation opportunities on the District, ROS classification, the presence or potential for user conflicts between user groups (e.g., motorized vs. non-motorized), and existing activities authorized under special use permit must be considered (HTNF 2017a).

Measurement indicators of potential impacts to recreation and the recreational characteristics of IRAs include the following (HTNF 2017a):

- Proximity of military training activities to lands classified as primitive, semi-primitive non-motorized, and semi-primitive motorized under the ROS;
- Number of encounters between military personnel and/or vehicles and recreating public; and
- Number and type of recreation special use authorizations within the project area.

3.9.4 Environmental Consequences

While activities such as vehicle transport would be limited to the roadbed and aircraft landings to established perimeters, troop movement including ambush practice, simulated fire practice, IED training using simulated devices, base camp set-up, and other similar activities would occur on adjacent NFS lands beyond the road prism and landing zones. The designated ROS class for NFS lands where these authorized activities occur is predominantly roaded natural and semi-primitive motorized, with only a few activities authorized in the primitive or semi-primitive non-motorized ROS class. The potential exists for effects associated with these activities (aircraft overflights, aircraft landings, troop staging, hiking, orienteering, base camp operations, etc.) to affect the recreation resource (HTNF 2017a).

Similarly, the qualities of a primitive or semi-primitive non-motorized recreation experience are likely impacted by the presence of large motorized vehicle convoys and associated activities such as simulated fire exercises and troop movements. Military convoy exercises introduce noise levels that alter quiet soundscapes, pose visual impacts at a landscape level, and may impede access along narrow travel corridors. The ability for visitors to enjoy a wilderness-like setting in roadless areas may be compromised by the location, frequency, and duration of military activities.

ROS class is defined based on a group of setting indicators including access, remoteness, naturalness, facilities and site management, social encounters, visitor impacts, and visitor management. Remoteness, naturalness, and social encounters as defined in the ROS Primer and Field Guide (USDA 1990; HTNF 2017a) are three indicators most likely to be impacted by military training activities described in both the No Action and Proposed Action alternatives. When considering remoteness, lands classified as Primitive under the ROS system should be “out of sight and sound of human activity.” Whereas within semi-primitive non-motorized settings, the visitor may experience the distant sight or sound of human activity and are no more than a 1/2 hour walk from any motorized form of travel. Overflights and landings by military aircraft

that occur in these ROS classes adversely affect the remote qualities of the landscape by inhibiting visitors from experiencing this kind of recreation setting. Similarly, the anthropogenic disturbances associated with simulated fire trainings, orienteering, base camp operations, and other military maneuvers that occur well away from road and trail prisms also threaten the ability of visitors to experience a landscape “out of sight and sound of human activity” or one in which the sights and sounds of human activity are meant to be a distant disturbance.

The natural character of landscapes classified under primitive and semi-primitive ROS (“naturalness”) may be affected by military training exercises to the extent that they impact visual quality objectives (VQOs). VQOs associated with these ROS classes focus on preservation or retention of a natural-looking landscape. Activities under the No Action and Proposed Action alternatives that create visual disturbances such as temporary structures associated with the installation of COCs and RHUs that are not endemic to the landscape would threaten VQOs. While the convoy training corridors described under the No Action and Proposed Action alternatives occur in semi-primitive motorized ROS class—and are consistent in terms of motorized use—their size and frequency may adversely affect the retention or partial retention of a natural-looking landscape (HTNF 2017a).

The No Action and Proposed Action alternatives may pose measurable adverse effects to ROS characteristics described under the social encounter indicator. For the primitive ROS class, where several landing zones are currently authorized, the prescription indicates no more than six parties should be encountered per day (less than three visible parties seen in a campsite). For both semi-primitive motorized and non-motorized ROS classes, the prescription increases to no more than 15 parties encountered per day with six or fewer parties seen at a campsite. Given the location, extent, and frequency of landing zones, drop zones, and convoy training corridors currently authorized under the No Action Alternative, these activities pose the greatest risk to a visitor’s opportunity for solitude or minimal encounters with other parties within the semi-primitive motorized and non-motorized ROS classes (HTNF 2017a).

User conflicts can be characterized in a variety of ways including but not limited to increased safety concerns, incompatible uses (e.g., noise levels from motorized users interfering with wildlife viewing), and congestion. The military training exercises described in the No Action and Proposed Action alternatives would deliver thousands of military personnel and an army of support vehicles including heavy equipment and aircraft to important recreation destinations throughout the project area annually. Activities such as ambush training, gunfire practice, simulated IEDs, and overflights and landings by MV-22 Osprey aircraft may have adverse effects on recreation pursuits such as hunting, wildlife viewing, camping, fishing, and off-highway vehicle use. The majority of locations in which the training activities are currently authorized or are proposed are situated in remote, hard-to-reach areas of the Bridgeport Ranger District, away from the more concentrated use areas such as Twin Lakes, Virginia Lakes, and Green Creek. However the remote, hard-to-reach portions of the district are coveted by local residents and long-time visitors who seek more primitive recreation opportunities that require a greater degree of self-reliance and that do not provide the comfort and amenities that other visitors require. Their recreation experience may be adversely affected by the military exercises that rely on the very same features that they seek: locations that are remote, isolated, and lack infrastructure and population (HTNF 2017a).

In considering the direct and indirect effects of the alternatives on recreation resources, it is important to factor the term of the permitted activities within the context of the analysis. The Marine Corps Warfare Training Center has operated on NFS lands for more than 65 years. Given that significant duration of time, it is difficult to discern precisely how its operations may have impacted the way in which the public recreates on the Bridgeport Ranger District. This is because for most recreational users, the presence of the

Marine Corps base has been the norm and accepted as an integral feature to the region for as long as they have been visiting the national forest. It would be reasonable to assume, however, that under either the No-Action Alternative or the Proposed Action, over the course of a 40-year permit, the nature of the direct and indirect effects would be similar as to what has occurred over the last 65 years. Over the term of the permit, it is likely that some visitors may continue to feel displaced and adjust their destinations and activities based on avoiding Marine Corps activities. It is also likely that other visitors may continue to pursue their recreational activities without regard to Marine Corps activities because given the timing and location of their preferred experiences, the likelihood of encountering a military training exercise is minimal for that visitor (HTNF 2017a).

3.9.4.1 No-Action Alternative

Inventoried Roadless Areas

Under the No Action alternative, the Marine Corps would continue to utilize currently authorized LZs, DZs, and training areas. Although most of the training exercises originate outside of roadless areas along system routes, they remain proximate to them and in many cases result in personnel and equipment, including aircraft, migrating into IRAs due to the nature of the activities. ROS classifications overlap these IRA boundaries. Under the No Action alternative, the majority of currently authorized training activities occur in the semi-primitive motorized ROS class. Only a very small handful of training activities occur in the primitive ROS class and these are limited to landing zones (five of the total 56 LZs currently authorized). Activities occurring within the semi-primitive non-motorized ROS class are limited to LZs and DZs (with the one exception being Lucky Boy Pass and convoy training operations; this motorized route is included within the semi-primitive non-motorized ROS class (HTNF 2017b).

Most of the training activities described under the No Action alternative include a motorized component (either motor vehicle use as with the convoy training corridors or aircraft support). With the exception of convoy training operations, the bulk of exercises are concentrated along the Highway 108 corridor near the Marine Corps Mountain Warfare training Center. Although this region serves as a significant destination for outdoor recreation enthusiasts in both summer and winter seasons, the public is well informed they are sharing the area with an active military training center and regulate their expectations for wilderness-like primitive recreation opportunities (quiet and solitude) accordingly. Despite this acknowledgement, however, existing Marine Corps training activities somewhat adversely impact the potential for a wilderness-like recreation experience in adjacent roadless areas (specifically Iceberg-Mill Creek, Iceberg Wolf Creek Lake, and Hoover North IRAs) due to their proximity to training exercises and the visual and noise impacts those exercises create (HTNF 2017b).

Outside the Highway 108 corridor, however, the recreation characteristic of roadless areas is more measurably affected given the proximity of training activities to very remote, more wilderness-like settings. Currently authorized convoy training corridors along Kirman Lake, Burcham Flat, Lucky Boy Pass, and Masonic Roads are frequented by recreation enthusiasts seeking a more isolated, primitive experience. Dispersed camping, sightseeing, wildlife viewing, and hunting are all popular recreation activities in these areas. Although the presence of motorized vehicles in these locations is consistent with ROS class and Forest Plan direction, the scale and scope of a convoy operation hinders opportunities for solitude and quiet (HTNF 2017b).

The longstanding use of the same IRAs in a relatively consistent and predictable manner by the MCMWTC, the localized and intermittent nature of the activities, public noticing of military activities, the accessibility of alternative locations that can provide the desired recreation experiences away from MCMWTC activities in surrounding NFS lands, and the ability of the USFS under the existing permits to designate areas off-

limits to training if necessary to protect recreational uses, all indicate that IRA values and characteristics would not be significantly impacted under the No-Action Alternative.

Recreational Opportunities

No changes to recreation would occur with the implementation of the No-Action Alternative. The public would continue to be able to access and use the Humboldt-Toiyabe National Forest areas as they have in the past and are currently doing. As listed in Section 2.1.6, the 40-year SUP provides several design features intended to protect recreational resources and the recreating public. These design features include preventing vehicles from being driven on Forest Service designated trails, preventing landing of aircraft when the general public or private vehicles are present, and disallowing the closure of any publically used areas for military training unless previously approved by the Forest Service. The design features also state that no military training will occur on the PCT, and military training is not allowed at other public recreational facilities such as campgrounds, day use sites, and other facilities in the area. There would be no training, including no landing of aircraft, within designated wilderness areas. Furthermore, because training activities or landing of aircraft would not occur in designated wilderness areas, are not allowed by laws and regulations governing activities within wilderness areas, and all wilderness areas are outside the SUP permit area, there would be no effect on wilderness characteristics.

The overall tempo, numbers of personnel, vehicle use and training activities would vary as it has historically in response to need, but would is not expected to increase or decrease as a result of the No-Action Alternative. The MCMWTC would continue to use roads, LZs and DZs, small arms live fire-ranges, and aircraft in a manner similar to historic levels. Given the relative predictability of MCMWTC activities and the accessibility of large unaffected areas within and outside of the training areas where visitors would usually be able to find similar recreation experiences in alternative locations, potential conflicts with recreation are relatively minor and can be managed within the existing SUP framework. In particular, the USFS retains the ability to designate off-limits areas under the existing SUP if necessary to protect recreational uses of NFS lands.

Given that the co-occurring recreation special uses have co-existed for over 65 years with MCMWTC activities, the potential for adverse effects to existing recreation special use permit operations is minimal. The two large recreation events occur over multiple days on system roads and trails and involve the use of OHVs. Both events have historically occurred for at least the last 8 to 10 years and are well known in the local community, drawing a large number of participants and spectators alike (HTNF 2017a).

The Marine Corps also engage in stream fording practice with up to 150 personnel. Current design features included in the special use permit require personnel to cross in groups no larger than 25 individuals. While military personnel wading through trout angling streams may disrupt recreationists' experiences and result in outfitter and guides shifting their activities to different locations, it is likely most if not all outfitting and guiding operations are already aware of the Marine Corps' currently approved stream crossing locations. Therefore, this activity poses little effect to these kinds of recreation special uses activities. Similarly, some mountaineering outfitters and guides' operations may be impacted by the sights and sounds of military activities near the start of their trips (nearer Leavitt Meadows and State Route 108) but overall would likely have little overlap with Marine Corps training exercises as the majority of their trips focus on the High Sierra and Hoover Wilderness. In general, little impact to permitted outfitting and guiding activities is anticipated under the No Action Alternative, or under the Proposed Action.

For the above reasons, direct and indirect impacts to recreational resources would be less than significant under the No-Action Alternative.

3.9.4.2 Proposed Action

Inventoried Roadless Areas

For most of the activities associated with the Proposed Action, the same analysis and conclusions reached for the No-Action Alternative apply. The longstanding use of the same IRAs in a relatively consistent and predictable manner by the MCMWTC, public noticing of military activities, the localized and intermittent nature of the activities, the accessibility of alternative locations that can provide the desired recreation experiences away from MCMWTC activities in surrounding NFS lands, and the ability of the USFS under the proposed new permit to designate areas off-limits to training if necessary to protect recreational uses, all indicate that IRA values and characteristics would not be significantly impacted under the Proposed Action.

Under the Proposed Action, the presence of COCs and RHUs would increase on the landscape (no longer limited to within an LZ boundary) and another route would be added to the approved convoy training corridors. The proliferation of COCs and RHUs outside of LZ boundaries would have limited impacts to the Iceberg-Mill Creek and Hoover North IRAs, both of which lack primitive wilderness characteristics due to significant existing uses, numerous motorized routes within the IRAs, and inholdings. Elsewhere, including more remote roadless areas beyond the congested Highway 108 corridor, the potential is greater for impact to primitive recreation characteristics due to the establishment of temporary encampments outside existing LZs (HTNF 2017b).

The addition of Lobdell Lake Road as an approved convoy training corridor would also result in adverse effects to the more primitive, remote recreation settings currently found in the Fales, Long Meadow, Wild Horse Mountain, Sweetwater, and Fourth of July Spring roadless areas. Recreation opportunities in those IRAs may approach a wilderness-like experience. The use by convoys of Lobdell Lake Road, which, while outside an IRA, cuts through otherwise roadless areas, would deliver military personnel and a fleet of support vehicles including heavy equipment and noisy aircraft up to six times per year to the area. Activities such as ambush training, gun fire practice, simulated IEDs, and overflights and landings by MV-22 Osprey aircraft and the visual and noise impacts they generate would significantly degrade the wilderness-like characteristics of the adjacent roadless areas.

Under the Proposed Action, the impact of new activities and locations to IRA values and characteristics would be limited by the public noticing of military activities, the localized and intermittent nature of the activities, the accessibility of alternative locations within surrounding areas that can provide the desired recreation experiences to users wishing to avoid MCMWTC activities, and the ability of the USFS to designate areas off-limits to training in order to protect recreational uses in the event of an otherwise irresolvable conflict. As a result, no significant impact to IRA values and characteristics is anticipated under the Proposed Action.

Recreational Opportunities

Design features that apply to the baseline conditions at MCMWTC, developed by the USMC and the Forest Service to avoid or minimize potential effects associated with MCMWTC operations, are described in Section 2.1.6 and documented in the AOP, 40-year SUP, and four existing temporary SUPs (refer to Appendix A) and would continue to apply to the Proposed Action.

For the same reasons discussed under the No-Action alternative, no significant impacts to recreational opportunities are expected with the continuation of longstanding training activities under the Proposed Action. The public would continue to be able to access and use these areas as they do currently.

Over the course of the 40-year SUP, military training would still not be allowed on the PCT. The three new proposed training activities would not occur on or near the PCT. The existing training activities that occur within TA-8, TA-10, and TA-11 near the PCT would occur at the same frequency and in the same locations as described in Section 3.9.2.1, *Existing Conditions*. There would be no training, including no landing of aircraft, within designated wilderness areas. Furthermore, because training activities or landing of aircraft would not occur in designated wilderness areas, are not allowed by laws and regulations governing activities within wilderness areas, and all wilderness areas are outside the SUP permit area, there would be no effect on wilderness characteristics.

The Proposed Action would have no effect on the recreational uses of designated wilderness areas, other than occasional and distant noise from the small arms ranges in TA-11 and TA-6, as shown on Figure 3.8-4. Small arms range R1100 in TA-11 would only be used in the winter and noise reaching the wilderness areas would be less than 87 dB. Small arms range R601 in TA-6 would be used year-round, and noise reaching the wilderness area would be less than 87 dB as well.

Regarding aircraft takeoff/landing and overflight noise, the closest established Forest Service recreational amenities to the EAF are the Sonora Bridge Meadow Picnic site and the Sonora Bridge campground to the east, and the Leavitt Meadows Campground and Leavitt Meadows trailhead to the west (Forest Service 2016b). All of these facilities are completely out of the EAF potential aircraft noise contours as shown in Figure 3.8-4. Additionally, as discussed in Section 3.8.4.2, recreational users could potentially be annoyed by aircraft noise associated with LZ use. The MV-22 is slightly noisier (1 to 4dB) than the CH-46 when operating at LZs in 'helicopter-mode' so there is the potential for slight increases in percent of time audible to the users if they are within 1 mile of the LZ being used. However, the MV-22 is slightly quieter (2 to 4dB) than the CH-46 during overflights, so percent of time audible for the proposed MV-22 events would be shorter and cover less area of land. Both the small increases in audible sound at LZs and small decreases during transitory overflights are expected to have a negligible overall effect on visitor annoyance from aircraft noise so no indirect impacts would be anticipated under the Proposed Action.

Existing roads and trails would continue to be used to access the sites. No roads would be constructed, reconstructed, or modified as a part of the Proposed Action. Sites without existing roads would be accessed either by foot or helicopter. There would be no construction activities, and operation of the sites would be confined to the immediate site location; therefore, no indirect or spill-over effects would reach wilderness areas.

The addition of Lobdell Lake Road, which is classified as semi-primitive motorized, to the approved list of convoy training corridors described in the Proposed Action would intermittently degrade ROS characteristics, i.e. remoteness, naturalness, social encounters. This new training corridor would allow up to 200 personnel and 20 vehicles to utilize Lobdell Lake Road over the course of six separate training events, each occurring over 5 days (for a total of 30 days). Based on the description provided in Section 2.2.3 of the EA and the project record, these training exercises would involve upwards of 150 trips for some support vehicles during the Mountain Training exercise. Motorized equipment such as armored vehicles, tracked vehicles, backhoe loaders, and troop transport vehicles would be authorized during the exercises as well as air support. Procedures to maintain civilian access through and around the training corridor while it is in use are included in Section 2.2.3.5 minimizing impacts on access. Dispersed camping along the affected segment of Lobdell Lake Road would not be prevented, but may be less appealing when exercises are occurring. The availability of alternative camping locations throughout surrounding areas indicates that this impact would not be significant.

There would be no increase in the MCMWTC coverage area or increase in training operations tempo associated with the Proposed Action. There would be three new training events added to the existing 18 training events, as described in Section 2.1.2, which would take place on specific river and creek crossings and within the training corridors (refer to Figure 2.2-1). During training exercises related to deployment of the JAB or MGB there is a potential for guided fishing expeditions to encounter military personnel and equipment at one of the proposed stream crossings as described in the Proposed Action alternative. Both the JAB and MGB training exercises would result in temporary changes to the recreation setting (e.g., large temporary bridge structures impacting the viewshed and increased noise disturbances associated with the presence of military vehicles and up to 40 personnel). The localized, temporary, and infrequent nature of these impacts, coupled with abundant alternative locations along the creeks, indicate that these new training events would not significantly impact recreational/guided fishing.

Per the 2010 BWRA Management Plan (Forest Service 2010), “winter recreationalists note that there are few conflicts with MCMWTC activities.” When training activities are underway, safety measures would include notifying recreational users and posting lookouts. Small arms live-fire training would continue to occur within the BWRA, as it has occurred over the previous 50 years with no documented conflicts, major injuries, or deaths (Forest Service 2010).

Management goals for the BWRA include reducing potential user conflicts in the BWRA, provide for MCMWTC training activities as allowed under the 40-year SUP, and providing “a model for sustainable multiple-use winter recreation management” (Forest Service 2010). Strategies to achieve these goals would continue to include: requiring permits for all winter users; providing information on the location and timing of MCMWTC training activities on trailhead kiosks and the BWRA website (on the day of training or as needed to prevent reasonable conflicts and meet permit requirements); and developing informational materials (maps, brochures, etc.) detailing winter use areas, restrictions, and safety considerations.

In addition, design features would be implemented to protect recreational resources and users from potential impacts due to training activities. Design features in the 40-year SUP (Section 2.1.6) and proposed design features (Section 2.2.5.13) would protect recreational resources and the recreating public. These design features include preventing vehicles from being driven on Forest Service designated trails, preventing landing of aircraft when the general public or private vehicles are present, and disallowing the closure of any publically used areas for military training unless previously approved by the Forest Service. The design features also state that no military training will occur on the PCT, and military training is not allowed at other public recreational facilities such as campgrounds, day use sites, and other facilities in the area.

Therefore, with the proposed design features, management goals, and strategies, direct and indirect impacts to recreational resources would be less than significant under the Proposed Action.

3.9.5 Cumulative Effects

In addition to the direct and indirect environmental consequences already discussed, additional considerations required by NEPA include the potential cumulative effects of the Proposed Action. Potential cumulative effects could occur when the effects of the Proposed Action are combined with other past, present, and reasonably foreseeable projects (Appendix E). The cumulative impact analysis ROI for recreation and socioeconomic resources would include the land areas within and adjacent to the MCMWTC boundaries, as well as the local towns and county that comprise the local economy. Cumulative effects from the Proposed Action were assessed when added to: (1) the existing environmental conditions as a proxy for the impacts of past actions (refer to Section 3.9.2); (2) the “MCMWTC Operations and Training

Baseline Project” as described in Appendix E; and (3) other past, present, and reasonably foreseeable projects in the ROI.

In addition to existing recreation special use authorizations, there is potential for effects from the No Action and Proposed Action alternatives to new uses proposed in the project area. Future recreation special uses proposals received on the Bridgeport Ranger District would be screened per regulations found at 36 CFR 251.54 and considered in the context of existing uses, including the MCMWTC activities. The need to accommodate existing uses, including the MCMWTC and currently permitted recreational uses, could constrain future special use permit applications seeking to use the same area. However, alternative locations or the means to de-conflict with established uses are likely to be available.

The Proposed Action would not result in significant impacts to land use and recreation. The Proposed Action is not expected to significantly impact roadless areas and it would be consistent with applicable land use management plans and policies. The ongoing operations and training activities have and would continue to have minimal impacts to land use and recreation. Recreational activities and special uses would similarly be required to be consistent with applicable land use plans and policies. Therefore, no significant cumulative impacts would occur to land use and recreation with implementation of the Proposed Action along with past, present, and reasonably foreseeable projects in the ROI.

CHAPTER 4

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