Appendix H. Bird and Bat Conservation Strategy

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US Department of the Interior
Bureau of Land Management

Greenlink West Transmission Project

Bird and Bat Conservation Strategy

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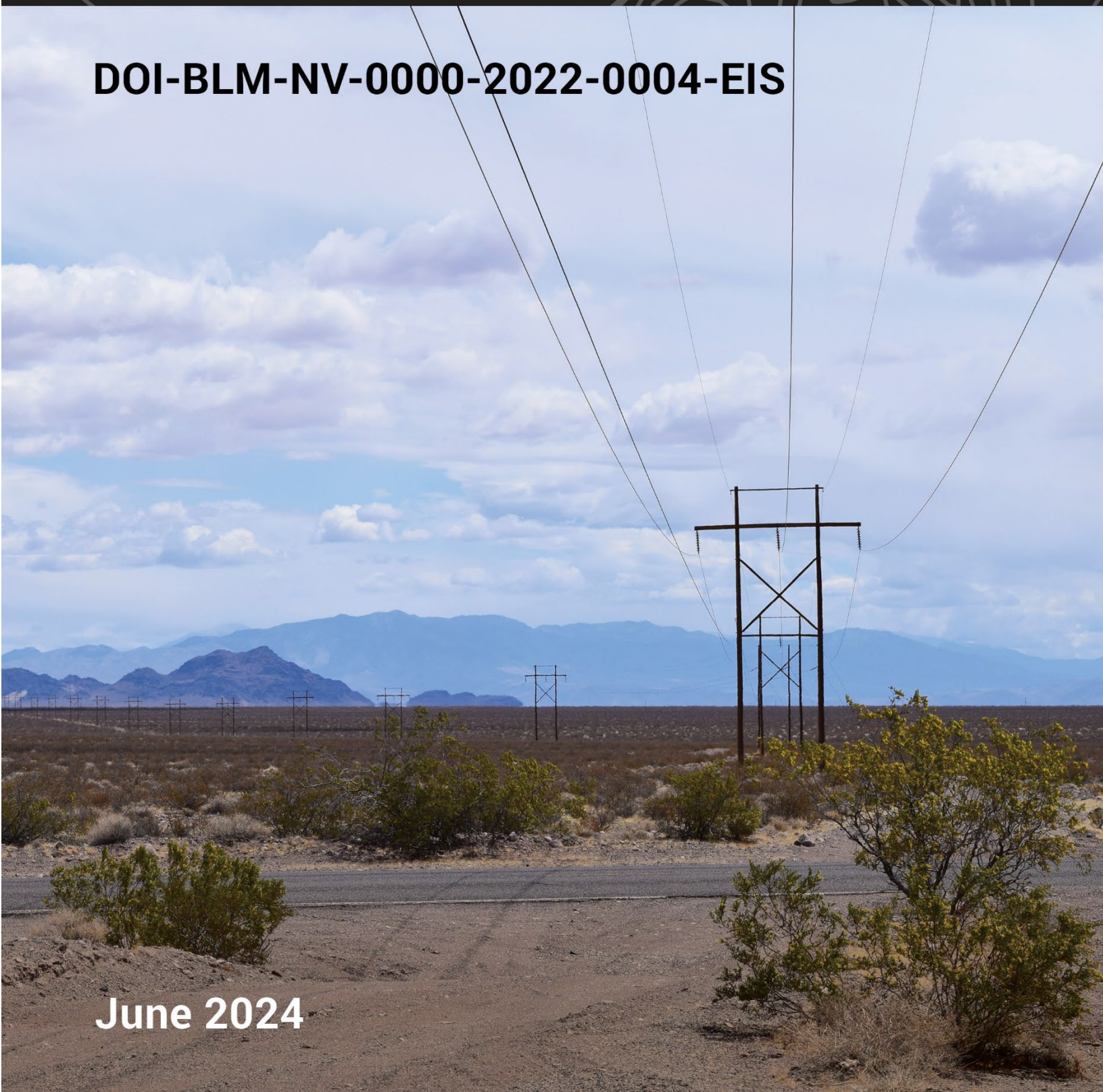

June 2024

Bird and Bat Conservation Strategy

DOI-BLM-NV-0000-2022-0004-EIS

Greenlink West Transmission Project

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
AMM	Avoidance and Minimization Measure
AMSL	Above mean sea level
APLIC	Avian Power Line Interaction Committee
BBCS	Bird and Bat Conservation Strategy
BCC	Birds of Conservation Concern
BGEPA	Bald and Golden Eagle Protection Act
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
Caltrans	California Department of Transportation
CFR	Code of Federal Regulations
DOE	Department of Energy
DOI	Department of Interior
ECP	Eagle Conservation Plan
EIS	Environmental Impact Statement
EMM	Environmental Management Measure
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FLPMA	Federal Land Policy and Management Act
GLWP	Greenlink West Transmission Project
HWI	Hawk Watch International
IBA	Important Bird Area
kV	kilovolt
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
NAC	Nevada Administrative Code
NCA	National Conservation Area
NDNH	Nevada Division of Natural Heritage
NDOW	Nevada Department of Wildlife
NDSL	Nevada Division of State Land

Acronym/Abbreviation	Definition
NEPA	National Environmental Policy Act
NNSA	National Nuclear Security Administration
NPS	National Park Service
NRS	Nevada Revised Statutes
NV	Nevada
NV Energy	Nevada Power Company and Sierra Pacific Power Company
NWR	National Wildlife Refuge
O&M	Operations and Maintenance
POD	Plan of Development
PM	Protected mammal
Project	Greenlink West Transmission Project
ROW	Right-of-way
SGCN	Species of Greatest Conservation Need
SM	Sensitive mammal
SPUT	Special Purpose Utility Permit
SWReGAP	Southwest Regional Gap Analysis Project
TM	Threatened mammal
TUSK	Tule Springs Fossil Beds National Monument
US	United States
USC	United States Code
USFWS	United States Fish and Wildlife Service
UV	ultraviolet
WAPT	Wildlife Action Plan Team
WEAP	Worker Environmental Awareness Program
WMA	Wildlife Management Area

1 INTRODUCTION

Nevada Power Company and Sierra Pacific Power Company, doing business as NV Energy (Proponent), are proposing to build the Greenlink West Transmission Project (GLWP or Project) in western Nevada. The GLWP would be an approximately 487-mile system of new 525-kilovolt (kV), 345-kV, 230-kV, and 120-kV overhead electric transmission facilities, substations, and ancillary Project components constructed between North Las Vegas and Reno, Nevada, in Clark, Nye, Esmeralda, Mineral, Lyon, Storey, and Washoe counties (Figure 1-1). The GLWP would be located predominantly on lands administered by the Bureau of Land Management (BLM) with portions crossing Department of Defense (DOD), Department of Energy (DOE) National Nuclear Security Administration (NNSA), National Park Service (NPS), Bureau of Indian Affairs (BIA), Nevada Division of State Lands (NDSL), and private lands.

This Bird and Bat Conservation Strategy (BBCS) identifies avian and bat species with potential to occur in the Project area and addresses pertinent conservation strategies which would apply to all phases of the GLWP. Implementation of this BBCS by the Proponent is intended to reduce impacts to birds and bats resulting from the construction, operation, maintenance, and decommissioning of the GLWP. Adaptive management techniques and decisions would be developed and implemented to further reduce GLWP impacts to birds and bats.

The BLM Nevada State Office prepared a Final Environmental Impact Statement (EIS) (BLM 2024e) and Biological Assessment (BLM 2024b) for the GLWP. These documents summarize potential impacts the Project may have on birds and bats and identify Environmental Management Measures (EMMs) that would minimize impacts to birds, bats, and other wildlife. The Proponent conservation strategy for birds would also include plans to implement a GLWP-specific Eagle Conservation Plan (BLM 2024c) and a Raven Management Plan (BLM 2024f). This BBCS details additional bird and bat Avoidance and Minimization Measures (AMMs) for the protection of birds and bats which extend beyond those described in the aforementioned documents (see Section 7: Bird and Bat Avoidance and Minimization Measures and Appendix A).

The BLM, as lead federal agency for the GLWP, under the National Environmental Policy Act (NEPA) environmental review process has identified its Preferred Alternative in the GLWP Final EIS (BLM 2024e). The scope of this BBCS is applicable to the BLM's Preferred Alternative. If alternatives selected in the Final EIS differs from the Preferred Alternative included in this BBCS, this document will be updated for the selected alternative in conjunction with the Final EIS.

This BBCS will contribute to the following goals:

- Assist the Proponent in reducing the potential for avian and bat injury or mortality through the development and implementation of Project-specific AMMs.
- Assist the Proponent in identifying where avian and bat mortality occurs or has potential to occur throughout the Project area to address and prevent future incidents.
- Assist the Proponent in establishing a monitoring and reporting system to document avian/bat mortalities that may result from the Project.
- Assist the Proponent in complying with state and federal laws and permits regarding avian and bat species.

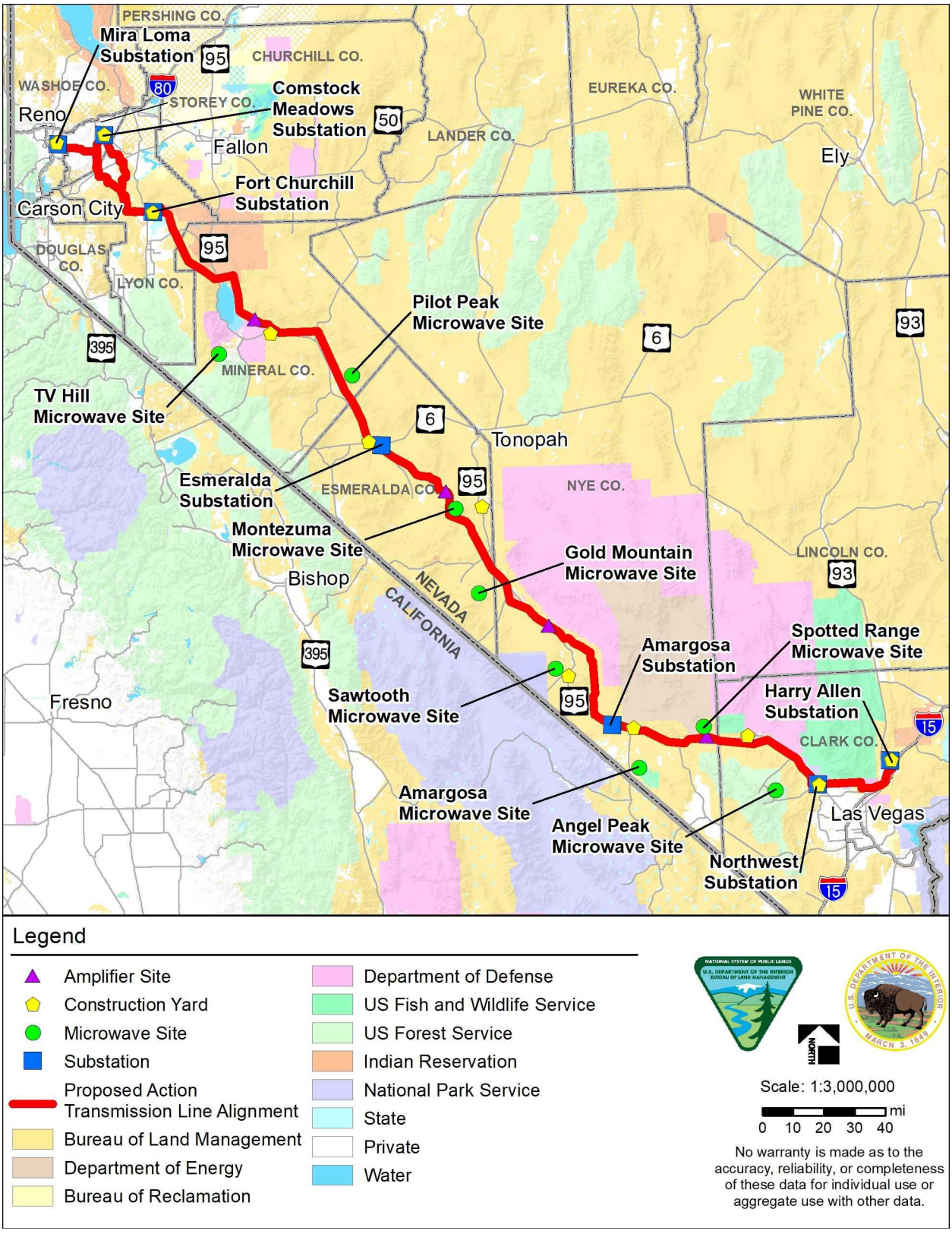

Figure 1-1. Project Components

2 REGULATORY FRAMEWORK

The following provides a summary of the regulatory framework relevant to migratory birds and bats that may be present during construction, operation, maintenance, and decommissioning of the GLWP.

2.1 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918 (16 United States Code [USC] 703-712) is the cornerstone of migratory bird conservation and protection in the United States (US). Through the MBTA, the US Fish and Wildlife Service (USFWS) implements four conservation treaties that provide international protection of migratory birds.

The MBTA is the cornerstone of migratory bird conservation and protection in the United States. The MBTA is a strict liability statute meaning that proof of intent, knowledge, or negligence are not elements taken under consideration by the USFWS when evaluating a potential MBTA violation. The statute's language is clear that actions resulting in *take* or *possession* (permanent or temporary) of a protected species, in the absence of a USFWS permit or regulatory authorization, are a MBTA violation. The MBTA prohibits the take (including kill, capture, sell, trade, and transport) of protected bird species without prior authorization by the USFWS.

Under the MBTA, the word *take* is defined as, "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect" (50 Code of Federal Regulations [CFR] 10.12).

The USFWS maintains a list of over one thousand species of migratory birds protected by the MBTA at 50 CFR 10.13 including eagles and other raptors, waterfowl, shorebirds, seabirds, wading birds, and passerines.

2.2 Bald and Golden Eagle Protection Act

Under authority of the Bald and Golden Eagle Protection Act (BGEPA), enacted in 1940 and amended several times (16 USC 668-668d), bald and golden eagles are afforded additional legal protection beyond the MBTA. The BGEPA prohibits someone to “take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or in any manner, any bald eagle... or any golden eagle, alive or dead, or any part [including feathers], nest, or egg thereof” (16 USC 668-668d). The BGEPA also defines *take* to include "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb," and includes criminal and civil penalties for violating the statute (16 USC 668-668d, 50 CFR 22.6). The term *disturb* is defined as, “to agitate or bother [an eagle] to a degree that causes, or is likely to cause, … 1) injury to an eagle, 2) a decrease in [an eagle’s] productivity … or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior (50 CFR 22.6).

The BGEPA and measures to protect eagles are addressed further in the Eagle Conservation Plan for the GLWP (BLM 2024f).

2.3 Endangered Species Act

The Endangered Species Act (ESA) of 1973 (16 USC 1531 et seq.) directs the USFWS to identify and protect endangered and threatened species, their critical habitats, and to provide a means to conserve their ecosystems. Among its provisions, the ESA requires the USFWS to assess civil and criminal penalties for ESA violations. Section 9 of the ESA prohibits *take* of federally listed species. The ESA defines *take* as, “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct" (16 USC 1532). The term *harm* includes “significant habitat modification or degradation where it actually kills or injures [fish or] wildlife by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering” (50 CFR 17.3). Pursuant to Section 7 of the ESA, projects involving federal lands, funding, or authorizations require consultation between the presiding federal agency and the USFWS.

The ESA, measures to protect species protected under the ESA, and a detailed analysis of impacts of the GLWP on federally listed species are addressed in the GLWP Biological Assessment (BLM 2024b). The forthcoming Biological Opinion for the GLWP may stipulate additional protection measures be implemented for federally listed species impacted by the GLWP. The Biological Assessment includes four federally listed bird species that are protected under the MBTA:

- Distinct Population Segment of Bi-State sage-grouse (*Centrocercus urophasianus*; referred hereafter as Bi-State sage-grouse)
- Southwestern willow flycatcher (*Empidonax traillii extimus*)
- Yellow-billed cuckoo (*Coccyzus americanus*)
- Yuma Ridgway's rail (*Rallus obsoletus [longirostris] yumanensis*)

There are no bat species listed as threatened, endangered, or proposed for listing under the ESA that have the potential to occur within or near the Project area; therefore, there are no bat species addressed in the Biological Assessment (BLM 2024b). In coordination with the BLM, The Proponent would remain informed of any new species listed under the ESA during the GLWP (e.g., little brown bat [*Myotis lucifugus*] which is currently under review for listing under the ESA). If any ESA-listed species not covered in the Biological Assessment and forthcoming Biological Opinion are found to have the potential to be impacted by the GLWP, the BLM would coordinate with the USFWS to determine if reinitiating ESA Section 7 consultation would be required. Additional protection measures would be implemented as needed.

2.4 Federal Land Policy and Management Act

The Federal Land Policy and Management Act (FLPMA) of 1976 (43 USC 1701 et. seq.) is a federal law that governs the way BLM-administered public lands are managed. Section 102 of the FLPMA (43 USC 1701) states:

> …the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy and use.

Section 505 of the FLPMA (43 USC 1765) states:

> …each right-of-way shall contain terms and conditions which will (i) carry out the purposes of this Act and rules and regulations issued thereunder; (ii) minimize damage to scenic and esthetic values and fish and wildlife habitat and otherwise protect the environment; (iii) require compliance with applicable air and water quality standards established by or pursuant to applicable Federal or State law; and (iv) require compliance with State standards for public health and safety, environmental protection, and siting, construction, operation, and maintenance of or for rights-of-way for similar purposes if those standards are more stringent than applicable Federal standards.

2.5 Bureau of Land Management Manual 6840

The BLM Manual 6840 presents policies to protect special status species and the ecosystems upon which they depend on BLM-administered lands (BLM 2008). The BLM list of special status species includes:

- Species listed or proposed for listing under the ESA
- Species that require special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA

All federal candidate species, species proposed for listing, and delisted species (for five years after delisting) will be conserved as BLM Sensitive Species.

2.6 Executive Order 13186

Executive Order (EO) 13186: Responsibilities of Federal Agencies to Protect Migratory Birds was enacted by President Clinton in 2001. This EO directs US federal "executive departments and agencies to take certain actions to further implement the [MBTA]" (EO No. 13186, 2001) and states, "Each federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations is directed to develop and implement, within two years, a Memorandum of Understanding (MOU) with the [USFWS] that shall promote the conservation of migratory bird populations" (EO No. 13186, 2001).

The EO directs agencies with MOUs to:

> …(1) support the conservation intent of the migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions; (2) restore and enhance the habitat of migratory birds, as practicable; (3) prevent or abate the pollution or detrimental alteration of the environment for the benefit of migratory birds, as practicable; (4) design migratory bird habitat and population conservation principles, measures, and practices, into agency plans and planning processes (natural resource, land management, and environmental quality planning.

2.7 BLM and USFWS Memorandum of Understanding

On April 12, 2010, the BLM and the USFWS entered a MOU to promote the migratory bird conservation. It was extended on May 15, 2015, and expired on April 12, 2017. On February 15, 2022, an addendum to the MOU was signed that clarifies and expands on the original MOU and extends the agreement for an additional five years (Attachments 1 and 2 in BLM 2022).

The MOU confirmed that the stated participating agencies will collaborate to enhance migratory bird conservation. For example, the MOU outlines agreement between the BLM and the USFWS to:

- Collaborate to "identify and address issues that affect species of concern… Potential activities could include monitoring abundance of birds and the creation, conservation, and protection of habitats."
- "Promote and contribute migratory bird population and habitat data to interagency partnership databases."
- "Provide training to agency employees on bird population and habitat inventory and monitoring methods, as well as management practices that minimize adverse impacts and promote beneficial proactive approaches to migratory bird conservation."

2.8 State of Nevada Laws and Nevada Division of Natural Heritage

The State of Nevada provides for and authorizes conservation management and protection for many species under Nevada Revised Statutes (NRS), Nevada Administrative Codes (NAC), and various policies and regulations. Laws and authorities addressing wildlife as defined by the State of Nevada are found in NRS chapters 501 through 506 and corresponding NAC chapters 501 through 505. The following list summarizes statues, codes, and ranking systems pertinent to bird and bat AMMs.

- **NRS 501.110: Classification of Wildlife.** General provisions in this revised statute provide for the classification of wildlife as protected with further classifications of sensitive, threatened, or endangered as warranted (State of Nevada 2022).

- **NAC 503.050: Protected, Endangered and Sensitive Birds.** This administrative code defines protected, endangered, and sensitive birds as, “Are all species of wild birds protected by the Migratory Bird Treaty Act, as amended, 16 USC 703 et seq., and listed in 50 CFR 10.13, unless such wild birds are migratory game birds as described in subsection 2 of NAC 503.045” (State of Nevada 2018).
- **NAC 503.093: Appropriate License, Permit or Authorization Required to Hunt, Take or Possess Protected Wildlife; Exceptions; Limitation on Possession of Desert Tortoises.** This administrative code states, "… a person shall not hunt or take any wildlife which is classified as protected, or possess any part thereof, without first obtaining the appropriate license, permit or written authorization from the Department” (State of Nevada 2018).
- **NRS 503.610: Protection of Bald Eagle and Golden Eagle; Possession of Golden Eagles in Certain Circumstances; Authority for Commission to Authorize Transportation, Transfer, Possession or Use of Golden Eagles in Falconry; Regulations.** This statute strictly prohibits take or possession of bald and golden eagles, their nests, their offspring, and their eggs without permission (State of Nevada 2018). This statue is consistent with federal law.
- **NRS 503.620: Protection of Birds Included in Migratory Bird Treaty Act.** This statue states, “…it is unlawful for any person to hunt or take any dead or alive birds, nests of birds or eggs of birds protected by … the Migratory Bird Treaty Act … (State of Nevada 2018).
- **EO 2012-09: Establishing a Greater Sage-grouse Advisory Committee**. This EO established the Nevada Sagebrush Ecosystem Council and Sagebrush Ecosystem Program which addresses threats and challenges to the sagebrush ecosystem. The Sagebrush Ecosystem Technical Team was created by this Executive Order with the goals of preventing the federal listing under the ESA of the greater sage-grouse, protecting and enhancing sagebrush landscape (State of Nevada 2021).
- **Nevada Division of Natural Heritage Species Conservation (NDNH) Methods.** The NDNH ranks species to maintain the state’s biodiversity and to support planning decisions regarding land use and conservation. They assign species conservation ranks using a variety of different factors such as population size, occurrence, long- and short-term trends, threats or impacts, rarity, and intrinsic vulnerability in the Wildlife Action Plan Team (WAPT) document (NDOW 2012).

2.9 County and Local Plans and Policies

The following county and city master plans and polices were reviewed for the GLWP and this BBCS. Many of these plans include language regarding energy development (including renewable energy), preservation of public lands, and preservation of wildlife. This BBCS conforms to these plans and policies as they relate to birds and bats:

- Transform Clark County Master Plan (Clark County 2021b)
- Esmeralda County Master Plan (Esmeralda County 2011)
- Lyon County Master Plan (Lyon County 2021)
- Mineral County Master Plan (Mineral County 2010)
- Storey County Master Plan (Storey County 2016)
- Washoe County Master Plan (Washoe County 2010)
- Nye County Master Plan (Nye County 2011)
- City of Las Vegas 2050 Master Plan (City of Las Vegas 2022)
- City of North Las Vegas Comprehensive Master Plan (City of North Las Vegas 2011)
- City of Reno Re-Imagine Reno Masterplan (City of Reno 2017)
- City of Sparks Ignite Comprehensive Plan (City of Sparks 2016)

3 PROJECT DESCRIPTION

The following is a brief description of the BLM Preferred Alternative route and GLWP components. A more detailed description is in the preliminary Plan of Development (POD) (NV Energy 2023b) and the GLWP Final EIS (BLM 2024e).

3.1 Route Description

The GLWP transmission facilities would consist of one 525-kV transmission line and three 345-kV transmission lines and associated facilities. The proposed 525-kV facilities would begin at the new Fort Churchill Substation located approximately ten miles north of Yerington in Lyon County. They would traverse approximately 362.5 miles through portions of Lyon, Mineral, Esmeralda, Nye, and Clark counties and terminate at the Harry Allen Substation approximately ten miles north of North Las Vegas, Clark County (Figure 1-1). The 525-kV transmission lines would generally follow United States (US) Highway 95 for the majority of their length.

The three proposed 345-kV facilities would begin at the Fort Churchill Substation and separate into three separate alignments that would extend through portions of Lyon, Storey, and Washoe counties. Two of the 345-kV transmission lines would terminate at the existing Comstock Meadows Substation located approximately 12 miles northwest of Silver Springs. The third would terminate at the existing Mira Loma Substation approximately seven miles southeast of Reno. The three 345-kV transmission lines would have a combined length of approximately 125.0 miles.

To the extent practicable, the transmission line routes incorporates the Proponent's preference for a 1,000-foot separation distance when paralleling existing high-voltage facilities (NV Energy 2023b). Collocated lines, or transmission lines within a common corridor, are referred to as contiguous ROW or parallel ROWs. Centerline separation for these collocated lines is required to be less than the longest span length of the two transmission circuits at the point of separation or 500 feet, whichever is greater, between the transmission circuits (Institute of Electrical and Electronics Engineers 2017).

3.2 Project Components

The proposed GLWP components consist of transmission and distribution lines, substations, microwave radio facilities, amplifier sites, access roads, and construction yards (Figure 1-1). Detailed descriptions of these components and descriptions of the conductors, insulators, and grounding systems are in the Proponent's preliminary POD (NV Energy 2023b). All poles would be electrically grounded through ground rods. A summarized overview of the GLWP components follows.

The Proponent would need to obtain ROWs[1] from the federal ROW agencies, which include short-term (temporary) ROWs[2] for construction and long-term (permanent[3]) ROWs for operations and maintenance (O&M). The temporary ROWs are 600-feet-wide (1,200 feet in areas with steep terrain) for construction of the 525-kV and 345-kV transmission lines and 100-feet-wide for construction of the distribution lines. The permanent ROWs are 200-foot-wide for O&M and decommissioning of the 525-kV transmission lines, 160-foot-wide for the 345-kV transmission lines, and 50-foot-wide for the distribution lines. While most access roads would be located within the permanent ROWs, some access roads would be outside the permanent ROWs, with the intent to optimize the

[1] The Proponent must obtain legal access to federal lands for construction, O&M, and decommissioning the GLWP. ROWs are a tool used by agencies to grant this access, but other tools may exist for federal land management agencies. For this document, the term ROW is used to refer to the legal access for construction, O&M, and decommissioning the GLWP.
[2] The NPS would issue a special use permit for construction rather than a temporary ROW.
[3] For this document, a *permanent* ROW is 30 years in duration with option to renew, unless otherwise noted.

use of existing roads.

Transmission Lines. The 525-kV transmission structures would consist of steel pole H-frames, steel monopoles, guyed steel lattice structures, and three-pole tubular structures (Table 3-1). Average heights for these structures would range from 100 feet to 180 feet. The 345-kV structures would consist of steel pole H-frames, steel monopoles, or steel three-poles (Table 3-1). Average heights for these structures would range from 75 feet to 180 feet.

Tubular structures would be utilized within designated areas for Mojave desert tortoise (*Gopherus agassizii*) and the Bi-State Distinct Population Segment of the greater sage-grouse (*Centrocercus urophasianus*). Perching and nesting deterrents would be installed on tubular transmission structures (H-frames and monopoles) in the designated areas shown in Figure 3-1 and Figure 3-2. Additional information that describes the tubular structures and deterrents and how they would minimize impacts from predation on these species can be found in the GLWP Raven Management Plan (BLM 2024f) and the Final EIS (BLM 2024e).

Distribution Lines. Distribution lines would supply power for the new Amargosa and Esmeralda substations, microwave radio sites, and amplifier sites. Ten distribution lines are proposed: one distribution line that provides power to the TV Hill microwave site is existing and requires rebuild (2.4 miles), while the remaining would be new distribution lines (20.1 miles). The voltage of the distribution lines is typically 34.5 kV or lower. The poles would be wooden with average heights ranging from 45 feet to 50 feet. Perching and nesting deterrents would be installed on all new distribution lines.

Substations. The GLWP would include two expanded substations, two new substations, and improvements at three substations (Table 3-2). Fiber optic cable and microwave antennae towers for control and operation of the transmission system would be installed at the substations.

Telecommunications. Optical ground wire fiber optic cable would be installed as a component of the 525-kV and 345-kV transmission lines for control and operation of the transmission system. A mix of telecommunications systems would provide secure and reliable communications for control system real-time requirements, protection, and daily O&M. Fiber optic cable would also be installed at each proposed substation, on the distribution lines, and to connect to the amplifier sites.

Microwave Radio Facilities. Microwave radio facilities at existing and new facilities would provide a diverse and redundant telecommunications path pursuant to North American Electric Reliability Corporation reliability standards. The proposed microwave radio facilities would require electric distribution service and installation of a backup generator (Figure 1-1).

Optical Amplifier Sites. The optical data signal degrades with distance as it travels through the optical fiber cable, therefore it would require installation of signal-boosting equipment referred to as amplifier sites. The four amplifier sites would be located within existing or proposed substation sites or within the transmission line ROW (Figure 1-1). The amplifier sites would require electric distribution service and installation of a backup generator. Fiber optic cable would connect to the four amplifier sites and would be constructed underground with an eight-foot-wide ROW. The fiber optic cable would be connected from a splice box located near the bottom of the nearest transmission structure to the amplifier site.

Table 3-1. Miles of Transmission Structure Types

Structure Type	345-kV Line Miles	525-kV Line Miles	Total Miles
Three-pole dead end (tubular)	6.8	2.4	**9.2**
H-frame (tubular)	117.5	178.0	**295.4**
Lattice tower	-	158.5	**158.8**
Monopole (tubular)	0.7	23.7	**24.4**
Total Miles	**125.0**	**362.5**	**487.4**

Table Acronyms: kV – kilovolt

Table 3-2. GLWP Substations

Substation Name	Type	Acres of New or Expanded Area
Fort Churchill	Expansion of existing	360
Esmeralda	New	109
Amargosa	New	110
Northwest	Expansion of existing	22
Harry Allen	Improvements in existing boundary	0
Comstock Meadows	Improvements in existing boundary	0
Mira Loma	Improvements in existing boundary	0
Total Acres		**601**

Table Acronyms: GLWP – Greenlink West Transmission Project

3.3 Project Area

The Project area includes 57,600 acres and consists of temporary ROWs (600-foot-wide and 1,200-foot-wide ROWs for transmission lines, 100-foot-wide ROWs for distribution lines, and 100-foot-wide ROWs for access roads) and the footprint of ancillary facilities such as substations, construction yards, amplifier sites, and microwave sites. The transmission and distribution lines are proposed to be constructed in the center of the temporary ROWs, but the ultimate alignment may shift. To minimize impacts to resources, the temporary ROWs allow for line alignment adjustment during final GLWP siting.

The Project area for this BBCS includes only the transmission and distribution line routes and other components included in the BLM's Preferred Alternative identified in the GLWP Final EIS (BLM 2024e). Other Action Alternatives in the Final EIS are not included in this BBCS.

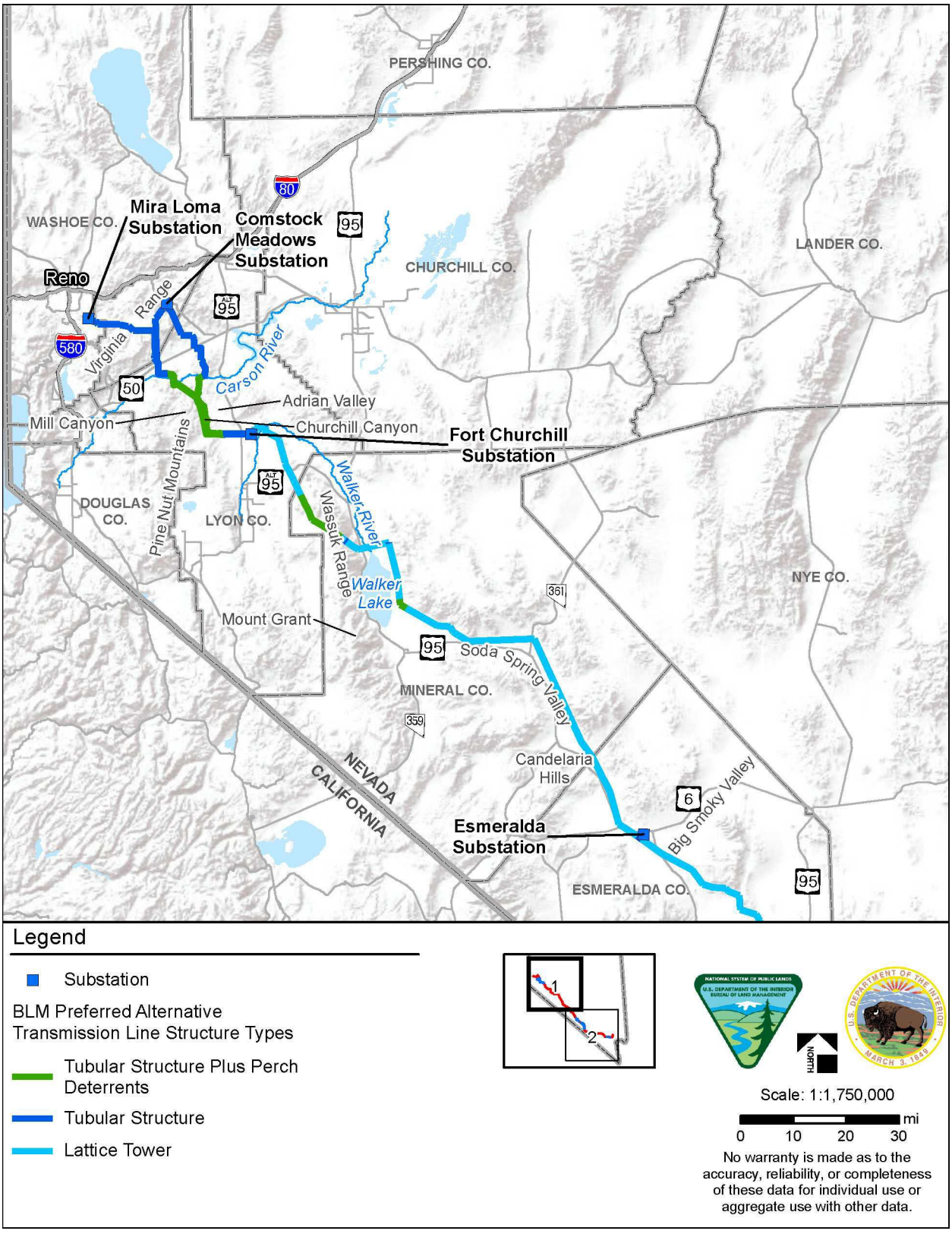

Figure 3-1. Location of Tubular Structures with Perch and Nest Deterrents (1 of 2)

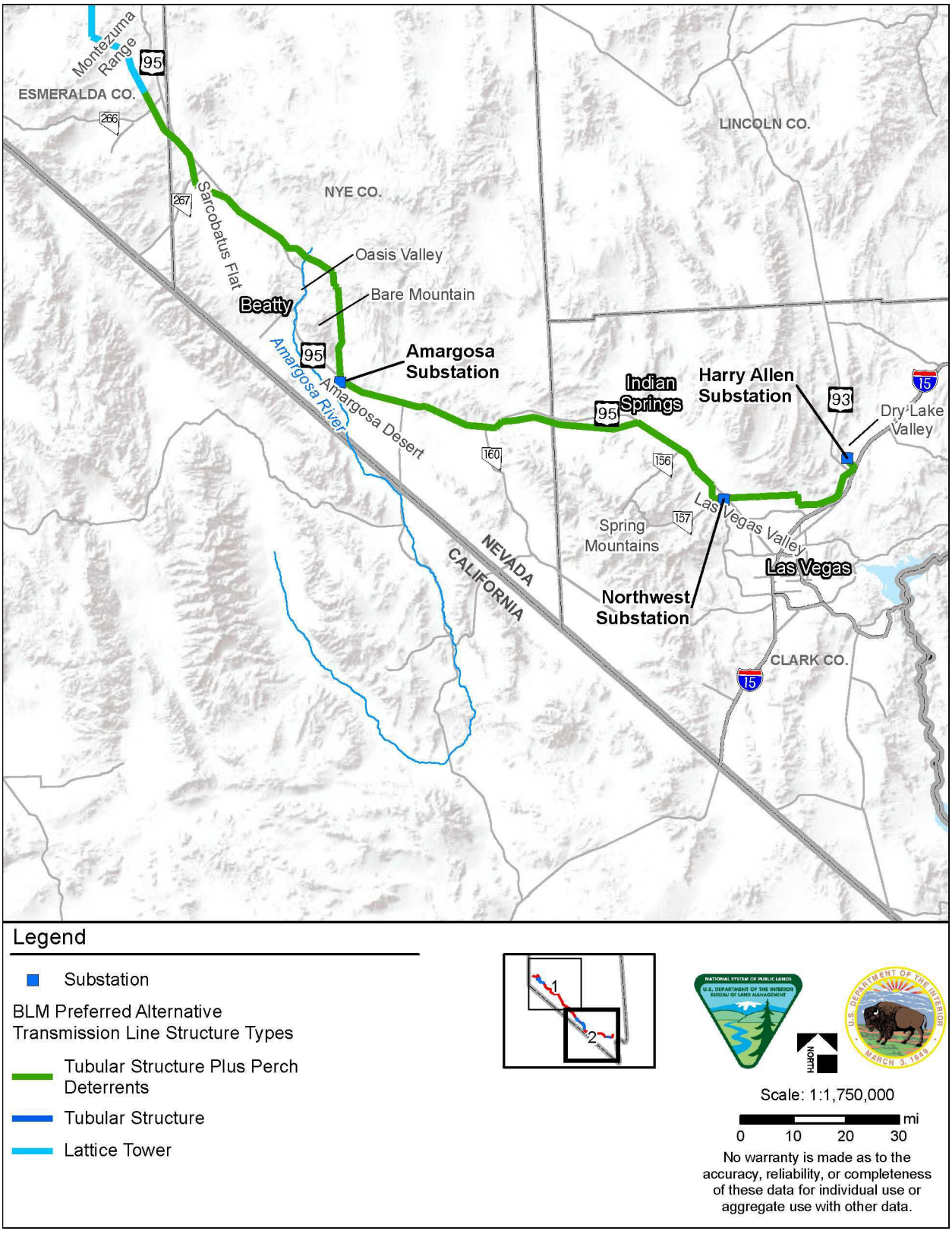

Figure 3-2. Location of Tubular Structures with Perch and Nest Deterrents (2 of 2)

4 PROJECT LANDSCAPE DESCRIPTIONS

4.1 Ecoregions

Ecoregions are geographic areas that share similar characteristics (e.g., geology, soils, vegetation, wildlife, hydrology). In the US there are four levels of ecoregions which range from general (Level I) to granular (Level IV) (EPA 2022). The Project area would include two US EPA Level III ecoregions and five Level IV ecoregions (Figure 4-1). The Level III ecoregions include the Central Basin and Range ecoregion and the Mojave Basin and Range ecoregion:

- The Central Basin and Range ecoregion (northwestern ecoregion) topography is comprised of northerly trending fault-block ranges and intervening drier basins.
- The Mojave Basin and Range ecoregion (southeastern ecoregion) topography contains broad desert basins with scattered mountains that are generally lower, warmer, and drier than the Central Basin to the north (Bryce et al. 2003).

4.2 Vegetation

The predominant vegetation land cover types of the Project area were identified using the Southwest Regional Gap Analysis Project (SWReGAP) data (Lowry Jr. et al. 2005) and include (Table 4-1, Figure 4-2 and Figure 4-3):

- Scrub/shrub: 46,713.7 acres, 93.6 percent
- Conifer forest and woodland: 1,374.9 acres, 2.8 percent
- Sparsely vegetated/barren: 788.1 acres, 1.6 percent
- The remaining two percent of is made up of several land cover types—each of which make up one percent or less of the Project area

A wide variety of common and special status bird and bat species are associated with the vegetation communities and landforms within the Project area and its vicinity. The Project area provides summer/breeding, winter/non-breeding, migratory, and year-round habitat for birds and bats.

Table 4-1. Vegetation Land Cover Types within the Project Area

Vegetation Land Cover Types[a]	Acres in Project Area[b]	Percentage of Project Area
Altered or disturbed	**386.8**	**0.8**
Invasive Annual and Biennial Forbland	207.2	0.4
Invasive Annual Grassland	178.7	0.4
Invasive Perennial Grassland	0.8	0.0
Invasive Southwest Riparian Woodland and Shrubland	0.2	0.0
Emergent herbaceous wetland	**23.9**	**0.0**
North American Arid West Emergent Marsh	23.9	0.0
Conifer forest and woodland	**1,374.9**	**2.8**
Great Basin Pinyon-Juniper Woodland	1,344.6	2.7
Inter-Mountain Basins Subalpine Limber-Bristlecone Pine Woodland	7.5	0.0
Rocky Mountain Dry-Mesic Mixed Conifer Forest and Woodland	4.8	0.0
Rocky Mountain Montane Mesic Mixed Conifer Forest and Woodland	1.6	0.0
Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest and Woodland	11.5	0.0
Rocky Mountain Subalpine Mesic Spruce-Fir Forest and Woodland	4.9	0.0

Vegetation Land Cover Types[a]	Acres in Project Area[b]	Percentage of Project Area
Grassland/herbaceous	**35.1**	**0.1**
Inter-Mountain Basins Semi-Desert Grassland	33.4	0.1
North Pacific Montane Grassland	1.7	0.0
Other	**400.5**	**0.8**
Agriculture	332.3	0.7
Developed, Medium - High Intensity	25.7	0.1
Developed, Open Space - Low Intensity	38.6	0.1
Open Water	3.9	0.0
Scrub/shrub	**46,731.7**	**93.6**
Great Basin Semi-Desert Chaparral	0.8	0.0
Great Basin Xeric Mixed Sagebrush Shrubland	3,238.9	6.5
Inter-Mountain Basins Big Sagebrush Steppe	6.6	0.0
Inter-Mountain Basins Big Sagebrush Shrubland	4,181.3	8.4
Inter-Mountain Basins Greasewood Flat	693.2	1.4
Inter-Mountain Basins Mixed Salt Desert Scrub	22,195.1	44.5
Inter-Mountain Basins Montane Sagebrush Steppe	268.3	0.5
Inter-Mountain Basins Semi-Desert Shrub Steppe	1,114.6	2.2
Mojave Mid-Elevation Mixed Desert Scrub	1,739.5	3.5
Sonora-Mojave Creosotebush-White Bursage Desert Scrub	12,030.5	24.1
Sonora-Mojave Mixed Salt Desert Scrub	1,258.2	2.5
Sonora-Mojave-Baja Semi-desert Chaparral	4.7	0.0
Sparsely vegetated/barren	**788.1**	**1.6**
Barren Lands, Non-specific	4.2	0.0
Inter-Mountain Basins Active and Stabilized Dune	31.7	0.1
Inter-Mountain Basins Cliff and Canyon	73.1	0.1
Inter-Mountain Basins Playa	263.3	0.5
North American Warm Desert Bedrock Cliff and Outcrop	48.2	0.1
North American Warm Desert Pavement	1.0	0.0
North American Warm Desert Playa	347.4	0.7
North American Warm Desert Volcanic Rockland	0.8	0.0
Recently Burned	0.4	0.0
Recently Mined or Quarried	7.4	0.0
Sierra Nevada Cliff and Canyon	10.6	0.0
Riparian woodland and scrub	**176.7**	**0.4**
Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland	127.6	0.3
North American Warm Desert Lower Montane Riparian Woodland and Shrubland	2.5	0.0
North American Warm Desert Riparian Mesquite Bosque	1.4	0.0
North American Warm Desert Wash	45.2	0.1
Total Acres	**49,917.9**	

Table Notes: [a] Land cover types includes the SWReGAP land cover types categorized into general land cover classes.
[b] 2,766.1 acres or 4.6 percent of the total Project area are existing roads that do not require improvements.
Table Source: (Lowry Jr. et al. 2005)

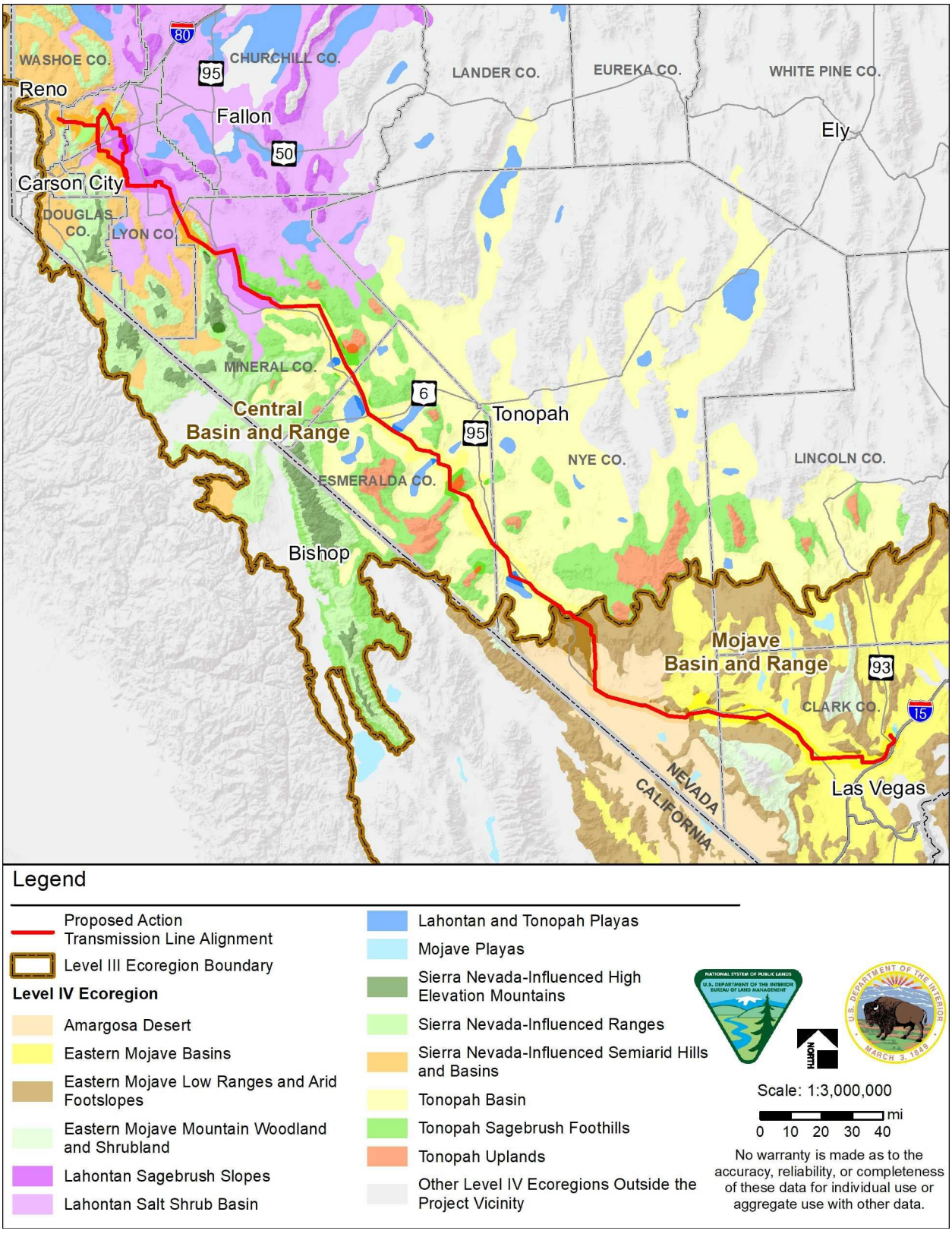

Figure 4-1. Ecoregions in the Project Area

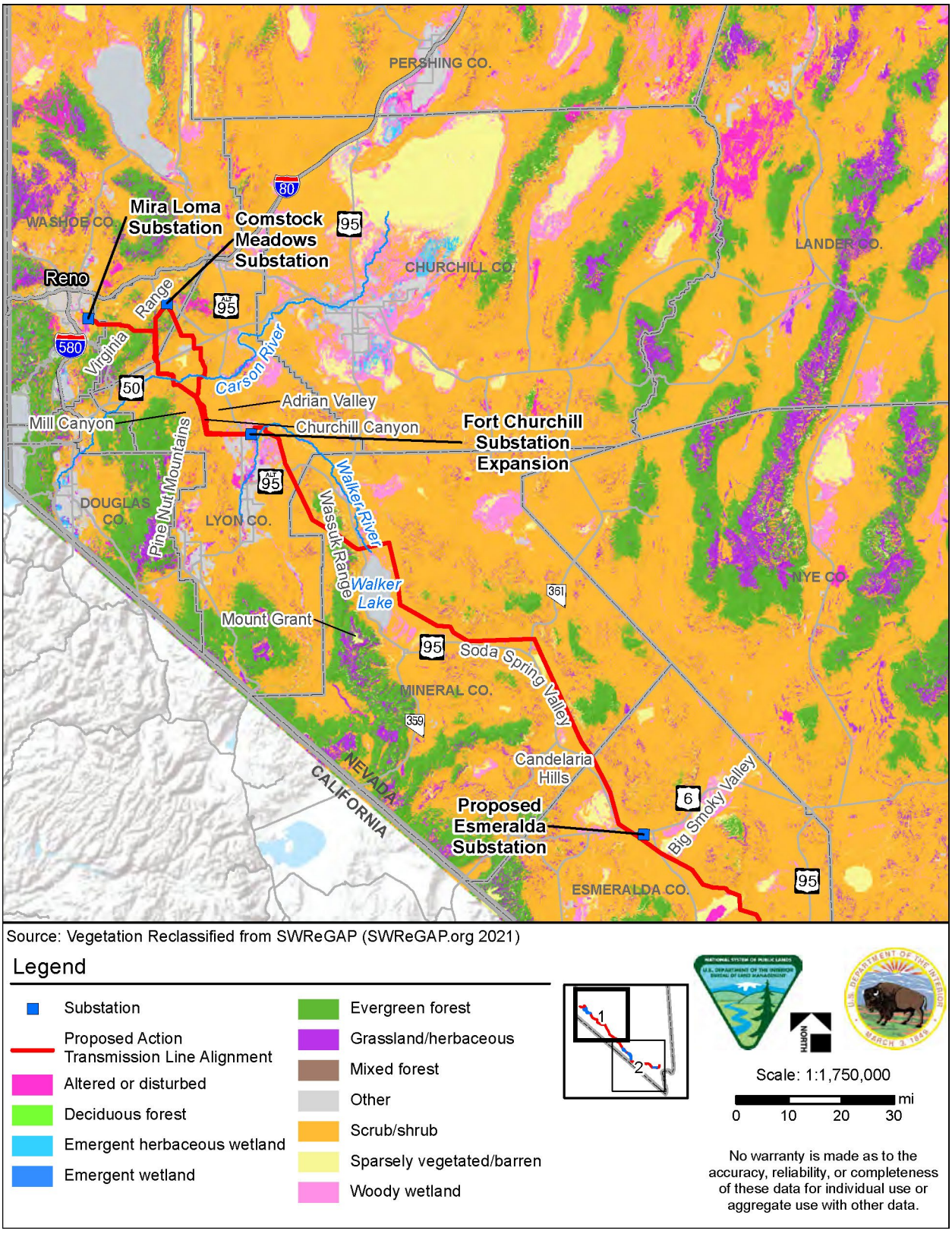

Figure 4-2. Vegetation in the Project Area (1 of 2)

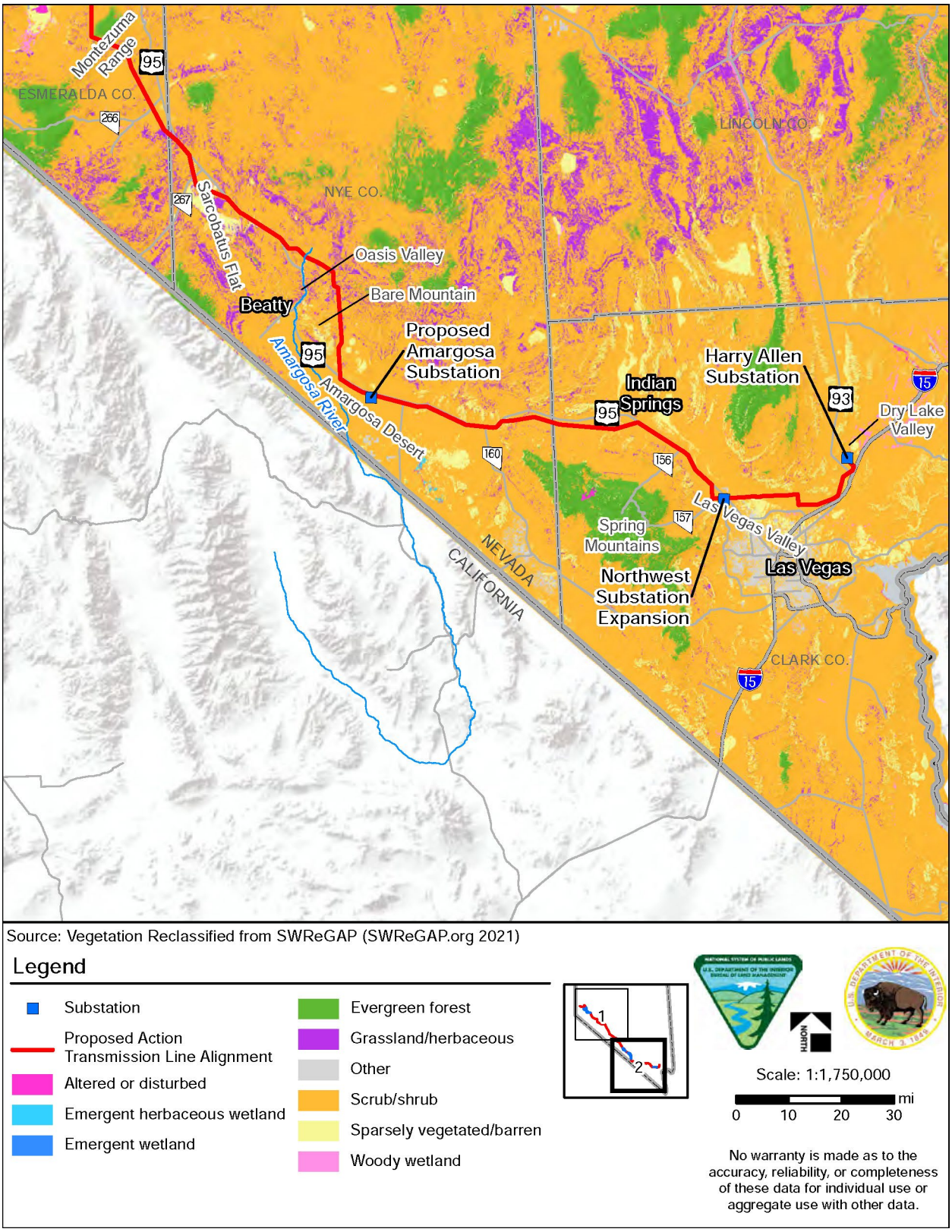

Figure 4-3. Vegetation in the Project Area (2 of 2)

5 SPECIES OF CONCERN

Nevada landscapes are rich with suitable habitat for birds and bats. Throughout the state, there are mountain ranges, riparian areas, Audubon-designated Important Bird Areas (IBAs), conservation areas, and refuges that birds and bats use for functions such as migratory stopover sites, breeding grounds, and natural resource reserves.

5.1 Bird and Bat Habitats

In Nevada and throughout the desert southwest, many landscapes provide high-quality habitat for avifauna and bats. Bat-roosting habitats for hibernation, daily use, migratory stopovers, and maternity vary widely among the 23 species known to frequent Nevada (Bradley et al. 2006). For example, canyon bats (*Parastrellus hesperus*), pallid bats (*Antrozous pallidus*), spotted bats (*Euderma maculatum*), and Brazilian (Mexican) free-tailed bats (*Tadarida brasiliensis*) utilize physical landscape features such as cliffs, crevices, and talus fields. Raptors associate with cliffs and suitable nesting habitat therein. Birds and bats also utilize woodlands and riparian bosques with tree species such as cottonwood (*Populus* spp.), willow (*Salix* spp.), and alder (*Alnus* spp.).

Riparian areas, especially those with flowing surface water, are relatively rare in desert landscapes. Their physical and hydrological features and relative rarity often mean they are a highly valued natural resource for wildlife. There is often more diversity and abundance of birds and bats observed in riparian areas.

For the Project area, vegetation communities and land cover types that provide habitat for common and special status bird and bat species were reviewed using SWReGAP data (Lowry Jr. et al. 2005) and EPA ecoregions (Bryce et al. 2003) (see Table 4-1, Figure 4-1, Figure 4-2, and Figure 4-3). The results of this analysis indicate the Project area includes approximately 291.2 acres of high-quality habitat suitable for bird and bat species (1.2 percent of the total Project area). This includes (refer to Table 4-1):

- 23.9 acres of emergent herbaceous wetland (0.04 percent of the total Project area)
- 3.9 acres of open water where the power lines would span over rivers and streams (0.02 percent of the total Project area)
- 131.5 acres of riparian vegetation (0.3 percent of the total Project area)
- 131.9 acres of cliff and canyon habitat (0.3 percent of the total Project area)

These habitat types represent rare and unique habitats where bird and bat species abundance are generally greater; however, various birds and bats can be found in almost any habitat type across the landscape and are expected to occur throughout the Project area.

5.1.1 Birds of Conservation Concern

The USFWS identifies avian species, subspecies, and populations of all non-migratory and migratory non-game birds that, without additional conservation actions, are likely to become candidates for listing under the ESA (USFWS 2021a). These species are designated as Birds of Conservation Concern (BCC).

The BCC species are designated according to their status in Bird Conservation Regions. The Project area is within Bird Conservation Regions 9 (Great Basin) and 33 (Sonoran and Mojave Deserts). Table 5-3 lists BCCs with potential to occur in the Project area by their relevant Bird Conservation Region.

5.1.2 The Pacific Flyway and Goshute Mountains

The Project area is within the Pacific Flyway for North American bird migration. Many bird species use this flyway to migrate through the Project area in fall and spring. Ducks, geese, shorebirds, wading birds, raptors, and neotropical migrants travel through Nevada to use breeding and non-breeding habitats. Many bird species breed

and overwinter in Nevada. Nevada-based migration stopover sites provide birds with foraging and resting opportunities, as well as fuel (NDOW 2012).

Since 1980, HawkWatch International (HWI) has monitored Nevada's Goshute Mountains for the seasonal passage of migratory birds (2024). Annually, the organization counts between 10,000 and 25,000 migratory raptors across 18 distinct species (HawkWatch International [HWI] 2024).

Scientists understand that the physical landscape features of the Goshute Mountains and Nevada's other mountain ranges support raptors on their migratory journeys (NDOW 2012). Such features enable daily generation of thermals which raptors use to fly easier and for longer distances.

Little research has been conducted on passerine migration through Nevada. However, significant numbers and diversity of passerines pass through the state. Passerines rely on environments such as springs, seeps, streams, and lakeshores to migrate through the desert (NDOW 2012).

5.1.3 Special Management Areas

Throughout Nevada, there are Special Designation Areas including National Conservation Areas (NCA), Wildlife Management Areas (WMA), and National Wildlife Refuges (NWR). Section 3.11 (Special Designation Areas) of the GLWP Final EIS (BLM 2024e) provides descriptions and analysis for the subset of these areas listed below. These areas are also mapped in Figure 5-1 and Figure 5-2.

Audubon Important Bird Areas

Important Bird Areas are sites that provide essential habitat to one or more bird species during part of the year (e.g., nesting areas, crucial migration stopover sites, wintering grounds). The National Audubon Society is the US partner for BirdLife International (the parent organization for the IBA program) which designates IBAs of state, continental, and global significance in the US (National Audubon Society 2023b). Five Important Bird Areas designated by the National Audubon Society occur within 0.5 mile of the GLWP (Table 5-1, Figure 5-1, and Figure 5-2).

Table 5-1. Audubon Important Bird Areas within or in Proximity to the Project Area

IBA	County	IBA Summary
Spring Mountains	Clark Nye	• Contains a high number of vegetation zones that support a high level of biological diversity
Oasis Valley	Nye	• Within an important north/south migration corridor and a riparian corridor • Contains springs, wetlands, and farm ponds
Mount Grant	Lyon Mineral	• Has not been grazed in over 80 years and, as a result, supports very high-quality habitat for a high diversity of upland and riparian bird species
Walker Lake	Mineral	• Riparian, wetland, riverine, and desert-lake ecosystem • Provides habitat for listed species, Species of Conservation Concern, and over 10,000 water birds
Carson River Delta	Lyon	• Contains high-quality cottonwood-willow riparian forest—a habitat type that is rare in northwestern Nevada

Table Acronyms: IBA – Important Bird Area
Table Source: (National Audubon Society 2008a, 2008b, 2013a, 2013b, 2013c)

Desert National Wildlife Refuge

With 1.615 million acres of Mojave Desert, the Desert NWR is the largest NWR in the nation. It provides valuable wildlife habitat to diverse wildlife populations including birds and bats. A total of 2,294 acres of the Desert NWR

are within the half-mile buffer of the GLWP. The Project area does not occur within any portion of the Desert NWR but lies adjacent to the NWR.

Mason Valley Wildlife Management Area

The Mason Valley WMA is located approximately 75 miles southeast of Reno and is managed by the Nevada Department of Wildlife. The area provides for the preservation, protection, management, and restoration of wildlife (including birds and bats) and wildlife habitats at the state level. A total of 1,266 acres of the WMA are within the half-mile buffer of the GLWP; 78.5 acres are within the Project area (5.2 acres of which are existing access roads that do not require improvements).

Red Rock Canyon National Conservation Area

The Red Rock NCA encompasses 195,819 acres and is located 17 miles west of Las Vegas. It provides people with opportunities for recreational activities including wildlife viewing. It also provides seasonal habitat for various common- and special status avian species. There are 3,688 acres within a half-mile of the GLWP; 87.7 acres are within the Project area (17.1 acres of which are existing access roads that do not require improvements).

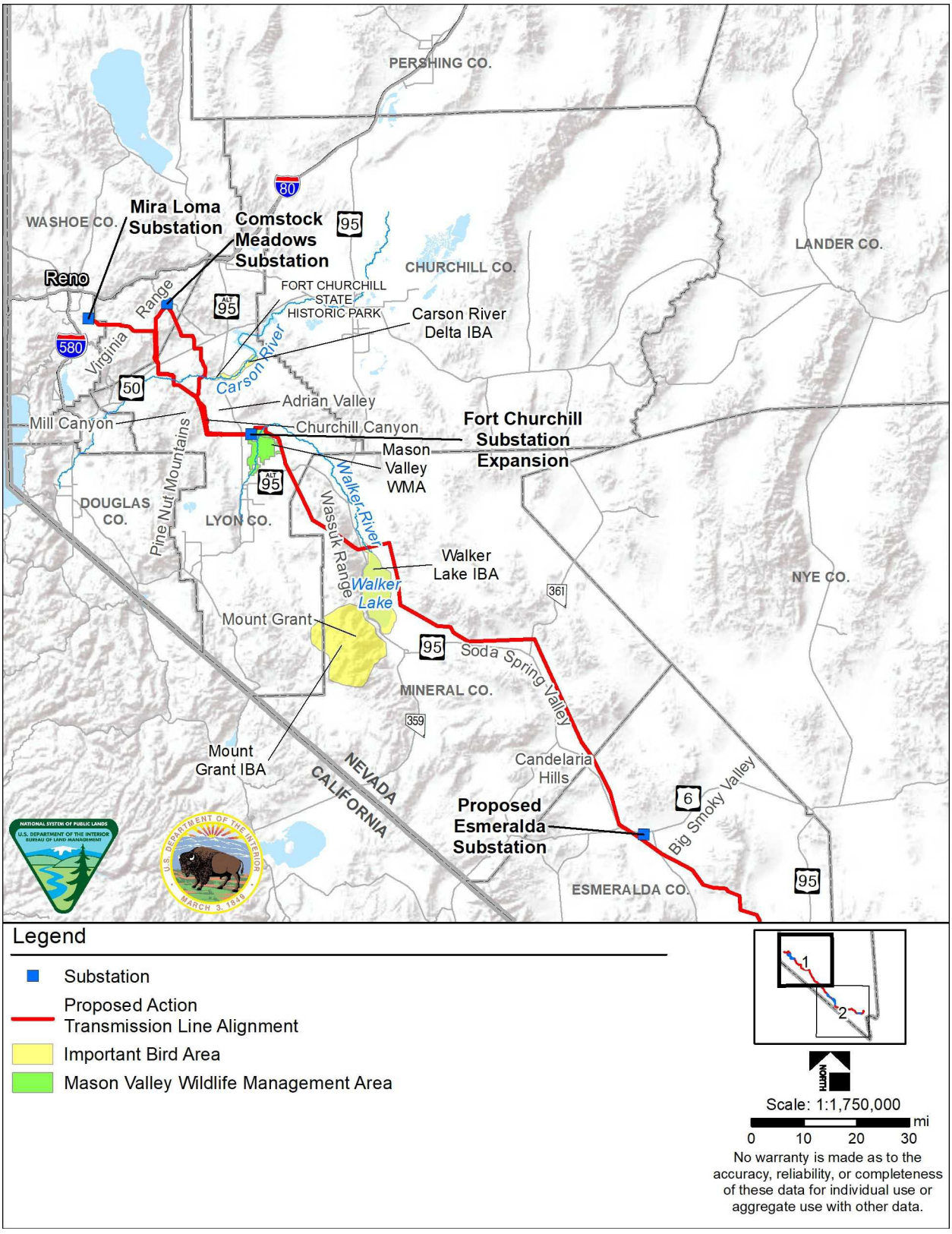

Figure 5-1. Special Wildlife Habitat Areas (1 of 2)

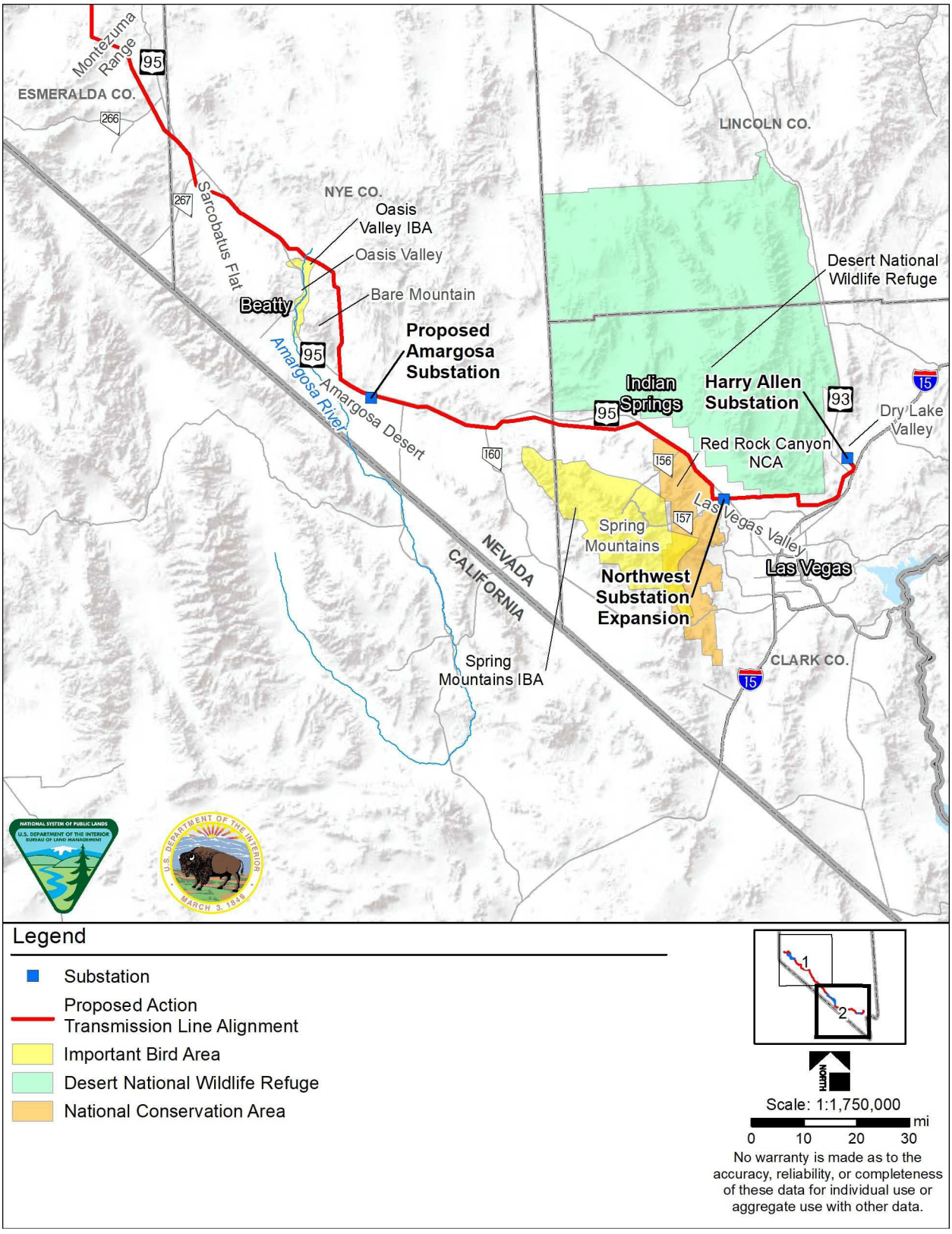

Figure 5-2. Special Wildlife Habitat Areas (2 of 2)

5.2 Bird and Bat Species with Potential to Occur in the Project Area

The following is a list of protected bird and bat species considered in this BBCS:

- Species protected under the MBTA
- Bald and golden eagles protected under the BGEPA
- Bird and bat species protected in the State of Nevada under NAC 503.030, NAC 503.045, NAC 503.050, and Nevada Board of Wildlife Commissioners (2022)
- Species of Greatest Conservation Need (SGCN) designated in the Nevada State Wildlife Action Plan (NDOW 2012)
- Birds identified by the USFWS as BCC (USFWS 2021a)
- BLM Sensitive Species (BLM 2024a)
- Species federally listed and proposed under the ESA

A discussion of these species and an analysis of impacts that the GLWP would have on these species is contained within the GLWP Final EIS in Sections 3.1: Federally Listed Species, 3.3: Special Status Species, 3.4: Bald and Golden Eagles, and 3.5: General Wildlife (BLM 2024e). Bald and golden eagles are further addressed in the GLWP Eagle Conservation Plan (BLM 2024c). Species which are federally listed or proposed for listing under the ESA are discussed in further detail and analyzed in the GLWP Biological Assessment (BLM 2024b).

5.2.1 Bat Species

There are 23 documented species of bats in Nevada (Bradley et al. 2006). They occupy a variety of habitat types including but not limited to cliffs, crevices, talus, mines, caves, trees, bridges, and other human-made structures. Ten of the 23 bat species are migratory; those not known to migrate may temporally shift their use areas throughout the year (Bradley et al. 2006). The number of species in Nevada represents almost half of the total bat species found in the US. While historical numbers and distributions of bat species are not generally known, many of these species are considered to have patchy distributions and to have declined or be vulnerable to decline in the future.

The Mojave Desert in southern Nevada represents the northernmost extension of the range for several bat species including Allen's big-eared bat (*Idionycteris phyllotis*), big free-tailed bat (*Nyctinomops macrotis*), California leaf-nosed bat (*Macrotus californicus*), and greater bonneted bat (*Eumops perotis*). With the emergence of white-nose syndrome, many of the more common bat species may be vulnerable and may experience significant mortality events. Additionally, as renewable energy production rises, large-scale wind farms may significantly amplify bat mortality—especially in migratory species (NDOW 2012).

The following table (Table 5-2) summarizes BLM Sensitive bat species documented in the Carson City, Battle Mountain, and Southern Nevada District Offices (BLM 2024a). It includes the state protection status, season of occurrence, and preferred habitats for each species (NAC 503.030).

Table 5-2. Special Status Bat Species with Potential to Occur in the Project Area

Common Name	Scientific Name	BLM Sensitive District Office Occurrence	State Protection Status[1]	Season of Occurrence	Habitat
Allen's big-eared (lappet-browed) bat	*Idionycteris phyllotis*	Battle Mountain Southern Nevada	NV PM SGCN	Year-round/ Summer migrant	High-elevation pine forest, oak woodland, riparian woodland; winters in lower-elevation creosote bush, pinyon-juniper habitats
Big brown bat	*Eptesicus fuscus*	Battle Mountain Carson City Southern Nevada	NV PM	Year-round	Pinyon-juniper, blackbrush, creosote bush, sagebrush, agricultural areas, and urban habitats; day-roosts in caves, trees, mines, buildings
Big free-tailed bat	*Nyctinomops macrotis*	Battle Mountain Southern Nevada	NV PM SGCN	Summer migrant	Canyon lands, arroyos, floodplains, scrub desert, riparian areas, and low-elevation woodlands; day-roosts in crevices in cliff faces, buildings, and caves
Brazilian (Mexican) free-tailed bat	*Tadarida brasiliensis*	Battle Mountain Carson City Southern Nevada	NV PM SGCN	Summer migrant/ year-round in southern Nevada	Low desert, high mountain habitats 690-8,370 feet AMSL; day-roosts in cliff faces, mines, caves, buildings, bridges, and hollow trees
California leaf-nosed bat	*Macrotus californicus*	Southern Nevada	NV PM SGCN	Year-round	690-2,260 feet AMSL in creosote, Mojave scrub, and riparian areas; night-roosts in buildings and bridges
California myotis	*Myotis californicus*	Battle Mountain Carson City Southern Nevada	NV PM	Year-round	Desertscrub, forest at elevations 680 – 6,000 feet AMSL; roosts in crevices in rocks, mines, caves, buildings, hollow trees, and under exfoliating bark
Canyon bat (western pipistrelle)	*Pipistrellus hesperus*	Battle Mountain Carson City Southern Nevada	NV PM	Year-round	Sonoran Desert habitats of blackbrush, creosote, salt scrub, and sagebrush 690–8,400 feet AMSL in NV; day-roosts in rock crevices, mines, caves
Fringed myotis	*Myotis thysanodes*	Battle Mountain Carson City	NV PM SGCN	Year-round	Low desertscrub, high-elevation coniferous forest 1,400-7,000 feet

Common Name	Scientific Name	BLM Sensitive District Office Occurrence	State Protection Status[1]	Season of Occurrence	Habitat
		Southern Nevada			AMSL; roosts in mines, caves, trees, and buildings
Greater bonneted (western mastiff) bat	*Eumops perotis*	Battle Mountain	NV SM	Year-round/ Transient	Low desertscrub to high-elevation coniferous forest 1,400-7,000 feet AMSL; roosts in mines, caves, trees, and buildings
Hoary bat	*Lasiurus cinereus*	Battle Mountain Carson City Southern Nevada	NV PM SGCN	Year-round	Forested uplands, riparian gallery-forest zones, agricultural habitats, Rocky Mountain juniper; day-roosts in coniferous and deciduous trees
Little brown myotis [bat][a]	*Myotis lucifugus*	Battle Mountain Carson City Southern Nevada	NV PM SGCN	Year-round	Requires nearby water source; roosts in caves, mines, rock outcrops, hollow trees, and buildings
Long-eared myotis	*Myotis evotis*	Battle Mountain Carson City Southern Nevada	NV PM SGCN	Year-round	Coniferous forests, sagebrush, desertscrub, and ponderosa pines; roosts in hollow trees, under exfoliating bark, and in crevices in small rock outcrops, mines, and caves
Long-legged myotis	*Myotis volans*	Battle Mountain Carson City Southern Nevada	NV PM	Year-round	Pinyon-juniper, Joshua tree woodland, montane coniferous forest, Mojave, salt desertscrub, blackbrush, mountain shrub, and sagebrush
Pallid bat	*Antrozous pallidus*	Battle Mountain Carson City Southern Nevada	NV PM	Year-round	Pinyon-juniper, blackbrush, creosote scrub, sagebrush, and salt scrub
Silver-haired bat	*Lasionycteris noctivagans*	Battle Mountain Carson City Southern Nevada	NV PM SGCN	Summer migrant	Mature forests, higher elevations and latitudes, riparian corridors, pinyon-juniper, white fir, limber pine, aspen, cottonwood, and willow
Spotted bat	*Euderma maculatum*	Battle Mountain Carson City Southern Nevada	NV TM SGCN	Year-round	Rocky cliffs, low-elevation desertscrub to high-elevation coniferous forest, pinyon-juniper, sagebrush, and riparian areas

Common Name	Scientific Name	BLM Sensitive District Office Occurrence	State Protection Status[1]	Season of Occurrence	Habitat
Townsend's big-eared bat	*Corynorhinus townsendii*	Battle Mountain Carson City Southern Nevada	NV SM	Year-round	Pinyon-juniper, mahogany, white fir, blackbrush, sagebrush, salt desert scrub, agricultural areas, urban habitats; strongly associates with caves and mines
Western red bat	*Lasiurus blossevillii*	Battle Mountain Carson City Southern Nevada	NV SM SGCN	Year-round/ Summer migrant	Wooded habitats, mesquite bosques, and cottonwood/willow riparian areas; day-roosts in tree foliage and leaf litter on the ground
Western small-footed myotis	*Myotis ciliolabrum*	Battle Mountain Carson City Southern Nevada	NV PM SGCN	Year-round	Desertscrub, grasslands, sagebrush steppe, blackbrush, greasewood, pinyon-juniper woodlands, pine-fir forests, and agriculture fields
Yuma myotis	*Myotis yumanensis*	Battle Mountain Carson City Southern Nevada	NV PM	Year-round	Sagebrush, saltscrub, agricultural fields, playas, riparian corridors; common in urban areas

Table Acronyms: AMSL – above mean sea level; BLM – Bureau of Land Management

[1]*Status Definitions:* NV PM – State of Nevada Protected Mammal (NAC 503.030.1); NV SM – State of Nevada Sensitive Mammal (503.030.3); NV TM –State of Nevada Threatened Mammal (503.030.2); SGCN – Species of Greatest Conservation Need (NDOW 2012)

Table Notes:

[a] Under review for listing under the Endangered Species Act.

Table Sources: (BLM 2024a; Bradley et al. 2006; NatureServe Explorer 2023; NDOW 2012, 2024)

5.2.2 Migratory Bird Species

Avian diversity in Nevada is a function of geography, topography, vegetation, water, and migratory behaviors. According to the Great Basin Observatory, 493 bird species have been recorded in Nevada (Great Basin Bird Observatory 2021). The Nevada Bird Records Committee Report (2018) indicated the number of species in Nevada was at 489 species. The BLM Southern Nevada Bird Management Plan (BLM 2019) identified that of the 487 species in Nevada at the time of the document, approximately 129 species occur irregularly throughout the state as accidentals or vagrants (i.e., birds that are well-outside the recognized range for their species). Of the remaining 338 species, 275 are known to breed in Nevada (Floyd et al. 2007). A small percentage of the total bird species are year-round state residents. The remainder migrate through Nevada in spring and/or fall or are present in winter (NDOW 2012). Refer to Section 5.1: Bird and Bat Habitats for a discussion of bird habitats.

Table 5-3 presents special status avian species, including raptors, with potential to occur in the Project area, their season of occurrence, and their state ranking. This list is primarily based on the BLM Sensitive Species List (BLM 2024a), and also includes state protection status (NDOW 2012) of these species. The table only includes those species on the BLM Sensitive Species List that occur within the BLM District Offices for which the GLWP occurs (i.e., Carson City, Battle Mountain and Southern Nevada District Offices) (BLM 2024a). The table also includes common raptor species due to the seasonal and spatial avoidance measures typically implemented to protect their *in-use*[4] nests. These species have potential to occur during the summer/breeding, migration, winter/non-breeding seasons, and to be present as year-round residents.

Habitat loss and habitat degradation impact most bird species in Table 5-5. Species deemed particularly susceptible to effects associated with habitat fragmentation are listed. In general, species that require large expanses of a particular habitat type are more affected by habitat fragmentation than habitat generalists.

Most avian species are vulnerable to the effects of climate change. Species in Table 5-3 were evaluated using the National Audubon Society (National Audubon Society 2019) climate change report Survival by Degrees: 389 Bird Species on the Brink in which species' predicted vulnerability to climate change is ranked as high, moderate, low, or stable; these ranks are also listed.

[4] An in-use nest is defined as a nest characterized by the presence of one or more egg, dependent young, or adult bird on the nest.

Table 5-3. Special Status Bird Species with Potential to Occur in the Project Area

Common Name	Scientific Name	BLM (District)/ ESA Status	State Protection	Season of Occurrence	Climate Vulnerability	Habitat
American avocet	*Recurvirostra americana*	None	SGCN	Summer/breeding Migration	Stable	Lowland marshes, mudflats, ponds, alkaline lakes, and estuaries with shallow waters
American bittern	*Botaurus lentiginosus*	None	SGCN	Summer/breeding Migration	Low	Large freshwater; brackish marshes; pond and lake edges with cattails, sedges, and bulrushes
American crow	*Corvus brachyrhynchos*	None	Game Birds	Year-round Winter/non-breeding	Low	Forages in open country including agricultural lands, urban areas, orchards, and tidal flats
American kestrel	*Falco sparverius*	None	-	Year-round	Stable	Open/partly open prairies, deserts, wooded streams, burned forests, agricultural lands with scattered trees, along roads
American white pelican	*Pelecanus erythrorhynchos*	None	SGCN	Summer/breeding Migration	Low	Roost on islands and peninsulas of rivers, lakes, reservoirs, estuaries, and bays
Arizona Bell's Vireo	*Vireo bellii arizonae*	BLM Sensitive (Southern Nevada, Battle Mountain)	SGCN	Summer/Breeding Migration	Low	Dense, shrubby vegetation in early successional staged riparian area, brushy fields, young second growth forest or woodlands.
Bald eagle[1]	*Haliaeetus leucocephalus*	BLM Sensitive (Battle Mountain, Carson City, Southern Nevada)	Endangered SGCN	Winter Year-round	Low	Lakes, reservoirs, rivers, marshes, and coasts (nest in tall trees or on cliffs near bodies of water)
Bank swallow	*Riparia riparia*	BLM Sensitive (Southern Nevada, Battle Mountain, Carson City)	SGCN	Summer/breeding Migration	Stable	Near water where they nest in steep sand, dirt, or gravel banks
Barn owl	*Tyto alba*	None	-	Year-round resident	Stable	Grasslands, deserts, marshes, and agricultural fields
Bell's sparrow	*Artemisiospiza belli canescens*	None	-	Summer/Breeding Migration	Stable	Shrubby, open flats; sagebrush plains; Joshua tree woodland; nests in- or under low shrubs such as saltbush and sagebrush
Bell's vireo	*Vireo bellii*	None	SGCN	Summer/breeding Migration	Low	Willow thickets, streamside thickets, scrub oak, and mesquites near water
Bendire's thrasher	*Toxostoma bendirei*	BLM Sensitive (Southern Nevada)	-	Summer/breeding	Low	Deserts where open areas meet tall vegetation such as cholla, creosote bush, and yucca; juniper woodland; Joshua tree woodland

Common Name	Scientific Name	BLM (District)/ ESA Status	State Protection	Season of Occurrence	Climate Vulnerability	Habitat
Black-chinned sparrow	*Spizella atrogularis*	None	-	Summer/breeding	High	Chaparral, sagebrush, arid scrub on gentle hillsides to steep, rocky slopes, or in brushy canyons
Black-necked stilt	*Himantopus mexicanus*	None	SGCN	Summer/breeding Migration	Stable	Grassy marshes, wet savannas, shallow ponds, flooded fields, borders of salt ponds and mangrove swamps
Black-throated Gray Warbler	*Setophaga nigrescens*	BLM Sensitive (Southern Nevada, Battle Mountain, Carson City)	SGCN	Summer/breeding Migration	Moderate	Juniper-pinyon oak scrub on foothills, canyons, slopes, fir forests, and edge clearings.
Black rosy-finch	*Leucosticte atrata*	BLM Sensitive (Battle Mountain, Carson City)	-	Winter	High	Grassy areas, cliffs above timberline, fields, cultivated lands, and brushy areas
Black tern	*Chlidonias niger*	None	SGCN	Summer/breeding	Low	Breeds in riparian areas, wetlands, mixture of emergent vegetation and open water
Bobolink	*Dolichonyx oryzivorus*	None	-	Summer/breeding Migration	High	Breeds in tall grass, prairie, and agricultural areas
Brewer's sparrow[2]	*Spizella breweri*	BLM Sensitive (Battle Mountain, Carson City, Southern Nevada)	Sensitive	Summer/breeding Migration	High	Openings in pinyon-juniper woodland, desertscrub habitats consisting mainly of saltbush and creosote, and sagebrush
Broad-tailed hummingbird	*Selasphorus platycercus*	BLM Sensitive (Southern Nevada, Battle Mountain)	-	Summer/breeding	High	Pine woodland such as pine-oak, pine-juniper, and conifer-aspen associations
California gull	*Larus californicus*	None	-	Summer/breeding migration Winter/non-breeding	Moderate	Seacoasts, bays, estuaries, mudflats, marshes, irrigated fields, lakes, ponds, dumps, cities, and agricultural land
California quail	*Callipepla californica*	None	Game Birds	Year-round	Low	Brushy, grassy vegetation; sagebrush; cultivated lands; forest edges; chapparal
Calliope hummingbird	*Selasphorus calliope*	None	-	Summer/breeding Migration	High	Mountain meadows; willow, alder thickets; and shrubby montane forests
Canvasback	*Aythya valisineria*	None	SGCN	Winter/breeding	low	Marshes, ponds, lakes, rivers, and bays
Cassin's finch	*Haemorhous cassinii*	None	-	Year-round	high	Open coniferous forest, deciduous woodland, scrub, brushy areas, and partly open areas with scattered trees (during migration and wintering)
Chukar	*Alectoris chukar*	None	Game Birds	Year-round	N/A	Rocky slopes in sagebrush grasslands where water is available

Common Name	Scientific Name	BLM (District)/ ESA Status	State Protection	Season of Occurrence	Climate Vulnerability	Habitat
Cinnamon teal	*Spatula cyanoptera*	None	SGCN	Summer/breeding Migration	Moderate	Fresh waters of shallow lakes, ponds, reed beds, lagoons, and sluggish streams
Clark's grebe	*Aechmophorus clarkii*	None	SGCN	Summer/breeding Migration	Low	Marshes, lakes, bays, along rivers (nests among tall plants growing in water on edge of large areas of open water)
Common black hawk	*Buteogallus anthracinus*	None	-	Summer/breeding	N/A	Lowland forests, swamps, and mangroves near water (nests in tall gallery trees such as cottonwoods)
Common loon	*Gavia immer*	None	SGCN	Migration	Moderate	Winters in coastal marine habitats, lakes, and rivers
Common nighthawk	*Chordeiles minor*	BLM Sensitive (Southern Nevada, Battle Mountain, Carson City)	SGCN	Summer/breeding Migration	Stable	Mountains, plains of open and semi-open areas, coniferous forests, savannas, grasslands, fields, and vicinities of cities and towns
Cooper's hawk	*Accipiter cooperii*	None	-	Year-round	Stable	Riparian woodlands, open woodlands, woodland edges, mature forest (coniferous, deciduous, mixed); nests in tall trees
Costa's hummingbird[2]	*Calypte costae*	None	SGCN	Summer/breeding Migration	Stable	Desert, semi-desert habitat, washes, arid brushy foothills, and chaparral; winters in adjacent mountains, open meadows, and gardens
Crissal thrasher	*Toxostoma crissale*	BLM Sensitive (Battle Mountain, Southern Nevada)	-	Year-round	Low	Dense mesquite thickets, brush along desert streams, sparse brush in open areas, and dense chaparral in mountains; Joshua tree woodland
Dusky grouse	*Dendragapus obscurus*	-	Game Birds SGCN	Year-round	High	Coniferous forests, mixtures of deciduous trees and shrubs
Evening grosbeak	*Coccothraustes vespertinus*	None	-	Winter/non-breeding	High	Coniferous forests (primarily spruce and fir), mixed coniferous-deciduous woodland, second growth, and parks
Ferruginous hawk	*Buteo regalis*	BLM Sensitive (Battle Mountain, Carson City, Southern Nevada)	SGCN	Year-round Winter Migration	Moderate	Sagebrush, saltbush and greasewood flats, pinyon-juniper woodland, desert; Joshua tree woodland; may winter in agricultural areas
Flammulated owl	*Psiloscops flammeolus*	BLM Sensitive (Battle Mountain, Carson City, Southern Nevada)	-	Summer/breeding	N/A	Open montane forest, coniferous forests containing pine (especially ponderosa and Jeffrey pine), mature growth with open canopy; avoids dense, young stands

Common Name	Scientific Name	BLM (District)/ ESA Status	State Protection	Season of Occurrence	Climate Vulnerability	Habitat
Forster's tern	*Sterna forsteri*	None	SGCN	Summer/breeding Migration	Stable	Bays, estuaries, rivers, and lakes; nests on inland lakes, fresh and saltwater marshes along coasts
Franklin's gull	*Leucophaeus pipixcan*	None	-	Migration	High	Prairies, inland marshes, estuaries, coasts, oceans, flooded pastures, inland lakes
Gilded Flicker	*Colaptes chrysoides*	BLM Sensitive (Southern Nevada)	SGCN	Year-round Migration	High	Stands of large cacti, riparian groves of cottonwoods, and tree willows in warm desert lowlands and foothills; Joshua tree woodland
Golden eagle[1]	*Aquila chrysaetos*	BLM Sensitive (Battle Mountain, Carson City, Southern Nevada)	-	Year-round	Moderate	Deserts, shrublands, grasslands, coniferous forests, farmland, and riparian corridors
Grace's warbler[2]	*Setophaga graciae*	None	-	Summer/breeding	High	Open pine forest, pine-oak woodlands, pine savanna, spring and clover mountains, and the desert national wildlife refuge
Gray-crowned rosy-finch	*Leucosticte tephrocotis*	BLM Sensitive (Battle Mountain, Carson City)	-	Winter	High	Winters in open country, mountain meadows, shrublands, roadsides, towns, and cultivated areas
Gray partridge	*Perdix perdix*	None	Game Birds	Year-round	N/A	Cultivated regions, steppes, and meadows
Great Basin willow flycatcher[2]	*Empidonax traillii adastus*	BLM Sensitive (Battle Mountain, Carson City, Southern Nevada)	SGCN	Migration	Moderate	Montane, lowland riparian habitat, and inundated areas such as aspen stands or wet meadows (prefers willows but will use other shrubs)
Great horned owl	*Bubo virginianus*	None	-	Year-round	Stable	Deciduous or evergreen lowland forests, open temperate woodlands, second-growth forests, orchards, riverine forests, brushy hillsides, and deserts
Greater sage-grouse[2]	*Centrocercus urophasianus*	BLM Sensitive (Battle Mountain, Carson City)/ESA PT (Bi-State DPS)	Game Birds SGCN	Year-round	High	Sagebrush steppe near meadows and aspen stands; leks in clear areas, broad ridgetops, grassy swales, dry lakebeds, and burned areas
Lawrence's goldfinch	*Spinus lawrencei*	None	-	Summer/breeding	High	Oak woodland, chaparral, riparian woodland, pinyon-juniper woodlands, and weedy areas in arid regions
Least bittern	*Ixobrychus exilis*	BLM Sensitive (Battle Mountain, Carson City)	SGCN	Summer/breeding Migration	Stable	Cattails, sedges, bulrushes, and common reeds; breeds in tall, emergent vegetation in freshwater marshes

Common Name	Scientific Name	BLM (District)/ ESA Status	State Protection	Season of Occurrence	Climate Vulnerability	Habitat
Least sandpiper	*Calidris minutilla*	None	SGCN	Migration	Moderate	Mudflats; wet meadows; flooded fields; shores of pools and lake; river sandbars and sandy beaches
LeConte's thrasher	*Toxostoma lecontei*	BLM Sensitive (Battle Mountain, Southern Nevada)	-	Year-round	High	Desertscrub; particularly creosote bush, saltbush flats, and wash systems; Joshua tree woodland
Lesser yellowlegs	*Tringa flavipes*	None	-	Migration	High	Marshes, ponds, wet meadows, lakes, and mudflats
Lewis's woodpecker	*Melanerpes lewis*	BLM Sensitive (Battle Mountain, Carson City)	SGCN	Summer/breeding Migration	Moderate	Pine woodlands, logged or burned conifer woodlands, deciduous riparian woodlands dominated by aspen or cottonwood
Little willow flycatcher[2]	*Empidonax traillii brewsteri*	None	SGCN	Summer/breeding	Moderate	Dense riparian habitats
Loggerhead shrike	*Lanius ludovicianus*	BLM sensitive (battle BLM Sensitive (Battle Mountain, Carson City, Southern Nevada)	Sensitive	Year-round	Stable	Deserts, savannas, scrublands, riparian areas, agricultural fields, old orchards, and mowed areas along roadsides where fences are available for perches; Joshua tree woodland
Long-billed curlew	*Numenius americanus*	BLM Sensitive (Battle Mountain)	SGCN	Summer/breeding Migration	High	Breeds in native dry grassland, sagebrush prairie, lightly grazed pastures, or agricultural fields
Long-billed dowitcher	*Limnodromus scolopaceus*	None	SGCN	Migration	High	Marshes; shores of ponds and lakes; mudflats; and flooded fields
Long-eared owl	*Asio otus*	None	-	Year-round	Low	Riparian areas, orchards, wooded parks, and farm woodlots
Marbled godwit	*Limosa fedoa*	None	-	Migration	Moderate	Marshes, floodplains, ponds, lakes, and agricultural fields
Merlin	*Falco columbarius*	None	-	Winter/non-breeding	Moderate	Deserts, seacoasts, coastal lakes, lagoons, open woodlands, and fields
Mississippi kite	*Ictinia mississippiensis*	None	-	Summer/breeding	Stable	Breeds in open woodlands, prairies, shelterbelts, wooded areas around lakes or streams, and semiarid rangeland
Mountain quail	*Oreortyx pictus*	BLM Sensitive (Battle Mountain, Carson City)	Game Birds	Year-round	Low	Pine-oak woodland, coniferous forest, chaparral, pinyon-juniper woods, scrub at lower elevations
Northern goshawk	*Accipiter gentilis*	BLM Sensitive (Battle Mountain, Carson City)	Sensitive SGCN	Year-round Winter	High	Forages in forest, along riparian corridors, and in more open habitats
Northern harrier	*Circus hudsonius*	None	-	Year-round	Low	Prairies, marshes, and open terrain; Joshua tree woodland

Common Name	Scientific Name	BLM (District)/ ESA Status	State Protection	Season of Occurrence	Climate Vulnerability	Habitat
				Winter/non-breeding		
Northern pintail	*Anas acuta*	None	SGCN	Year-round Winter Migration	Moderate	Lakes, rivers, marshes, ponds in grasslands, brackish waters
Northern pygmy-owl	*Glaucidium gnoma*	None	-	Year-round	High	Forests, open woodlands in foothills, mountains, adjacent meadows
Northern saw-whet owl	*Aegolius acadicus*	None	-	Year-round Winter/non-breeding	Moderate	Mixed forests, cedar groves, alder thickets, swamps, and tamarack bogs
Olive-sided flycatcher	*Contopus cooperi*	None	SGCN	Year-round Migration	High	Mountainous forests, riparian areas, and open habitats with a mixture of woods clearings
Osprey	*Pandion haliaetus*	None	-	Summer/breeding	Stable	Rivers, lakes, reservoirs, and seacoasts (nests on live/dead trees and utility poles)
Peregrine falcon	*Falco peregrinus*	BLM Sensitive (Battle Mountain, Carson City, Southern Nevada)	Endangered SGCN	Year-round Migration	Stable	Cliffs, open country, Mojave desertscrub, pinyon-juniper woodland, great basin/Sierra mixed conifer, wetlands, desertscrub, grasslands, and urban areas
Phainopepla	*Phainopepla nitens*	BLM Sensitive (Battle Mountain, Southern Nevada)	-	Summer/breeding	Stable	Deserts, riparian woodlands, and chaparral (relies on mistletoe-infested mesquite or pinyon-juniper for foraging)
Pinyon jay	*Gymnorhinus cyanocephalus*	BLM Sensitive (Battle Mountain, Carson City, Southern Nevada)/ESA under review	-	Year-round	Moderate	Pinyon-juniper woodland, sagebrush, scrub oak, chaparral communities, and pine forests; Joshua tree woodland
Prairie falcon	*Falco mexicanus*	None	-	Year-round	Low	Open areas of steppes, plains, prairies, and mountainous areas
Redhead	*Aythya americana*	None	SGCN	Summer/breeding Winter Migration	Stable	Lakes, lagoons, rivers, bays, and large marshes; winters in brackish waters of marine lagoons and bays
Red-breasted sapsucker	*Sphyrapicus ruber*	None	SGCN	Winter/breeding	High	Coniferous forests and aspen associations; humid coastal lowlands; open woodlands and parks (during migration)
Red-necked phalarope	*Phalaropus lobatus*	None	SGCN	Migration/non-breeding	High	During migration can be found on lakes, ponds, open marshes, estuaries, and in bays
Red-shouldered hawk[2]	*Buteo lineatus*	None	-	Year-round	Stable	Upland deciduous conifer forests, riparian areas, lowlands near water, and open country scattered with large trees

Common Name	Scientific Name	BLM (District)/ ESA Status	State Protection	Season of Occurrence	Climate Vulnerability	Habitat
Red-tailed hawk	*Buteo jamaicensis*	None	-	Year-round	Stable	Open woodlands and country where trees area scattered; Joshua tree woodland
Ring-necked pheasant	*Phasianus colchicus*	None	Game Birds	Year-round	N/A	Grassy steppe, desert oases, riverside thickets, forests, and cultivated areas
Rough-legged hawk	*Buteo lagopus*	None	-	Winter/non-breeding Migration	High	Grasslands, fields, marshes, sagebrush flats, and open cultivated areas
Rufous hummingbird	*Selasphorus rufus*	None	SGCN	Migration	High	Coniferous forests, second-growth, thickets, brushy hillsides, and meadows with abundant nectar-rich flowers
Sage thrasher[2]	*Oreoscoptes montanus*	BLM Sensitive (Battle Mountain, Carson City, Southern Nevada)	Sensitive	Summer/breeding Winter/non-breeding Migration	High	Arid or semiarid open country with scattered bushes, grasslands, open pinyon-juniper woodlands, sagebrush flats, and Joshua tree woodland
Sagebrush sparrow[2]	*Artemisiospiza nevadensis*	BLM Sensitive (Southern Nevada, Battle Mountain, Carson City)	SGCN	Summer/breeding Year-round Winter	High	Shrubby, open flats; sagebrush plains; Joshua tree woodland; nests in- or under low shrubs such as saltbush and sagebrush
Sandhill crane	*Antigone canadensis*	BLM Sensitive (Battle Mountain, Carson City)	SGCN	Migration	Moderate	Open wetland habitats surrounded by shrubs or trees; irrigated croplands; pastures; and grasslands
Scott's oriole	*Icterus parisorum*	BLM Sensitive (Southern Nevada, Battle Mountain)	SGCN	Summer/breeding Migration	Stable	Foothills, desert slopes of mountains, and elevated semi-arid plains; associates with yucca and pinyon-juniper
Sharp-shinned hawk	*Accipiter striatus*	None	-	Year-round Winter/non-breeding	Moderate	Open woodlands; coniferous-, mixed-, or deciduous forests
Short-eared owl	*Asio flammeus*	BLM Sensitive (Battle Mountain, Carson City)	SGCN	Year-round Winter/non-breeding	Moderate	Prairies, grasslands, marshes, dunes, farmland, wet meadows, grazing lands, sagebrush; winters also in stubble fields, small meadows, shrubby areas
Snowy plover	*Charadrius nivosus*	BLM Sensitive (Battle Mountain, Carson City, Southern Nevada)	SGCN	Summer/breeding Migration	Stable	Dry mud or salt flats; sandy shores of rivers, ponds, and lakes; beaches
Sooty grouse	*Dendragapus fuliginosus*	None	Game Birds	Year-round	High	Open coniferous forests in mountain areas with pockets of grasses and shrub habitats
Southwestern willow flycatcher[2]	*Empidonax traillii extimus*	BLM Sensitive (Battle Mountain, Southern	SGCN	Summer/breeding Migration	Moderate	Dense riparian areas; will nest in thickets of non-native tamarisk and Russian olive and in native riparian vegetation

Common Name	Scientific Name	BLM (District)/ ESA Status	State Protection	Season of Occurrence	Climate Vulnerability	Habitat
		Nevada)/ESA Endangered				
Swainson's hawk	*Buteo swainsoni*	BLM Sensitive (Battle Mountain, Carson City, Southern Nevada)	SGCN	Summer/breeding Migration	Stable	Hay and alfalfa fields, pastures, grain crops, row crops, and grasslands; require trees adjacent to foraging habitat for nesting; Joshua tree woodland
Tricolored blackbird	*Agelaius tricolor*	None	-	Summer/breeding Migration	Moderate	Breeds in freshwater marshes of cattails, tule, bulrush, and sedges
Verdin	*Auriparus flaviceps*	BLM Sensitive (Southern Nevada, Battle Mountain)	-	Year-round	Stable	Deserts and arid brush with mesquite and creosote
Virginia's warbler[2]	*Leiothlypis virginae*	None	-	Summer/breeding Migration	Moderate	Arid montane woodlands, oak thickets, pinyon-juniper, coniferous scrub, and chaparral
Western burrowing owl	*Athene cunicularia hypugaea*	BLM Sensitive (Battle Mountain, Carson City, Southern Nevada)	SGCN	Year-round	Stable	Prairie, grassland, pasture, desert, shrub-steppe, and airfields; often associates with desert tortoise burrows
Western grebe	*Aechmophorus occidentalis*	None	SGCN	Summer/breeding Migration	Low	Marshes, sloughs, freshwater lakes; winters in sheltered bays, coastal estuaries, freshwater lakes
Western sandpiper	*Calidris mauri*	None	-	Migration	High	Mudflats, beaches, lake and pond shores, shallow lagoons, artificial salt ponds, and flooded fields
Western screech-owl	*Megascops kennicottii*	None	-	Year-round	Stable	Riparian areas with vegetation such as oaks and other shrubs; can also be seen in moist coniferous forest and woodlands
Western yellow-billed cuckoo[2]	*Coccyzus americanus*	BLM Sensitive (Battle Mountain, Carson City, Southern Nevada), ESA Threatened	SGCN	Summer/breeding Migration	Stable	Large blocks of riparian woodlands with native broadleaf trees and shrubs (most commonly associates with cottonwood/willow-dominated vegetation)
White-faced ibis	*Plegadis chihi*	None	SGCN	Summer/Breeding Migration	Low	Ponds, river, swamps, and marshes (mainly freshwater)
White-headed woodpecker	*Dryobates albolarvatus*	None	SGCN	Year-round	High	Coniferous forests with mature pine species that produce large cones and seeds
White-tailed kite	*Elanus leucurus*	None	-	Year-round	Moderate	Savannas, open woodland, marshes, partially cleared lands, and cultivated fields
White-throated swift	*Aeronautes saxatalis*	None	SGCN	Summer/breeding Migration	Low	mountainous cliffs and canyons; will forage over forest canopies

Common Name	Scientific Name	BLM (District)/ ESA Status	State Protection	Season of Occurrence	Climate Vulnerability	Habitat
Willet	*Tringa semipalmata*	None	SGCN	Summer/breeding Migration	Stable	Marshes, lake margins, sandy/rocky shores, and open grasslands
Wilson's phalarope	*Phalaropus tricolor*	None	-	Summer/breeding Migration	Low	Lake shores, mudflats, salt- and freshwater marshes, and alkaline ponds
Yuma Ridgway's rail	*Rallus obsoletus yumanensis*	BLM Sensitive/ESA Endangered	SGCN	Year-round	Stable	Freshwater marshes dominated by cattails and bulrushes with a mix of riparian trees and shrubs along shoreline

Table Acronyms: BLM – Bureau of Land Management; DPS – Distinct Population Segment; ESA – Endangered Species Act; NAC – Nevada Administrative Code; NCA – National Conservation Area; N/A – Not Applicable; PT – ESA Proposed Threatened; SGCN – Species of Greatest Conservation Need; USFWS – US Fish and Wildlife Service

Table Notes:

[1] Protected under the BGEPA

[2] Species/subspecies particularly susceptible to effects from habitat fragmentation.

Table Sources: (Animal Diversity Web 2024; Birds of the World 2024; BLM 2024a; Clark County 2021a; eBird 2023; Great Basin Bird Observatory 2023; National Audubon Society 2019, 2023a; NatureServe Explorer 2023; NDOW 2012; USFWS 2021a, 2023)

5.3 Bird Field Studies

In preparation for the GLWP, Western EcoSystems Technology conducted raptor nest surveys in the Project area. They conducted the surveys in winter 2021 (December 2021 –January 2022) and spring 2022 (March – April) (Moqtaderi et al. 2023). Additional surveys were conducted in February 2023 and again in March – April 2023 to survey alternatives that were added since the 2021/2022 surveys. The 1,507,568-acre survey area included a two-mile Project area buffer. Both the winter surveys and the spring surveys in 2021/2021 covered most of the survey area with the exception of 20,147 acres that was surveyed in 2023.

The surveys' primary focus was to document nests potentially occupied by golden eagles. Surveying methods were consistent with procedures described in the 2010 golden eagle survey protocol (Pagel et al. 2010) using a combination of aerial and ground methods. While the focus of the surveys was to document golden eagle nests, the survey data includes a full inventory of raptor nests. Nest occupancy status is categorized as *occupied active*, *occupied inactive*, *inactive*, or *unknown* in the survey report (Moqtaderi et al. 2023) using the following parameters[5]:

- **Occupied Active.** A nest was marked *occupied active* if any of the following were observed:
    - An adult in an incubating position
    - Eggs
    - Nestlings or fledglings
    - Presence of adults or subadults
- **Occupied Inactive.** An *occupied inactive* nest is a nest that does not have eggs, chicks, or incubating adults present but has signs of recent use that include:
    - A newly constructed or refurbished stick nest in the area where territorial behavior of a raptor was observed earlier in the breeding season
    - A recently repaired nest with fresh sticks or fresh boughs on top and/or molted feathers on the rim or underneath
- **Inactive.** A nest was marked *inactive* if only one survey was conducted at the nest and the nest was not in use at the time of the survey, but surveyors did not conduct a follow-up survey to confirm occupancy status. Inactive nests are primarily nests that were first detected during the second round of surveying (March to April 2022) and not revisited to confirm occupancy status.
- **Unoccupied.** A nest was marked as *unoccupied* if it was not in use during both of the two surveys spaced at least 30 days apart.
- **Unknown.** A nest was marked *unknown* if the occupancy status could not be confirmed.

Surveyors documented two *occupied active* and three *occupied inactive* golden eagle nests in 2022 (Table 5-4). There were no bald eagle (*Haliaeetus leucocephalus*) nests documented. Additional *occupied active* raptor nests noted include:

- Eight red-tailed hawks (*Buteo jamaicensis*)
- One peregrine falcon (*Falco peregrinus*)
- Three great horned owls (*Bubo virginianus*)
- Two common ravens (*Corvus corax*)

[5] The terms *occupied active* and *occupied inactive* are terms used in the referenced survey report (Moqtaderi et al. 2022) but are different than the nesting status terms used throughout this BBCS. *Occupied active* is equivalent to the term *in use* as defined in Section 5.2.2. The term *occupied inactive* refers to an unoccupied nest with signs of recent use but which was not revisited to confirm *in-use* status.

The surveyors also identified 24 *occupied inactive* raptor nests, 204 *unoccupied* raptor nests, and 116 *inactive* raptor nests; a total of 365 nests were documented (Table 5-4 and Table 5-5). *Occupied active* and *unoccupied* nests are spaced throughout the Project area. Refer to the raptor nest survey report (Moqtaderi et al. 2023) for further details and maps depicting the nest locations.

Table 5-4. Nests Documented During Aerial and Ground-Based Surveys

Status	Number of Nests
Occupied active (raptor)	13
Occupied active (corvid)	3
Occupied inactive (raptor)	24
Inactive	116
Unoccupied	204
Unknown	5
Totals	**365**

Table Source: (Moqtaderi et al. 2023)

Table 5-5. Occupied Nests Documented During Aerial and Ground-Based Surveys

Species	Occupied Active	Occupied Inactive	Total Nests
Golden eagle	2	3	5
Red-tailed hawk	7	2	9
Peregrine falcon	1	0	1
Great horned owl	3	0	3
Common raven	3	0	3
Unidentified raptor	0	19	19
Totals	**16**	**24**	**40**

Table Source: (Moqtaderi et al. 2023)

5.4 Bat Field Studies: Tule Springs

Tule Springs Fossil Beds National Monument (TUSK) requested acoustic bat surveys for the portions of the Project area on TUSK land because the Monument includes distinct habitat and had not been previously surveyed for bats. Surveyors conducted acoustic bat surveys in the portions of the GLWP that reside in the Monument. The acoustic bat surveys on TUSK are summarized in this document, but results are isolated to this study area and not representative of the entire GLWP (Bishop-Boros and Moqtaderi 2023). Acoustic bat surveys were not conducted for the entire Project area because it is assumed that bat species identified in Section 5.2.1: Bat Species can occur throughout the GLWP. To protect bats, the AMMs provided in Section 7 of this document would be applied throughout the Project area.

The TUSK survey area includes 91.5 acres where the GLWP transmission line would traverse the southern border of the Monument. The surveyors' objectives were to

- Assess temporal and spatial variation in bat activity within the Project area on the Monument.
- Evaluate species community composition to determine if bat species of concern may occur in the Project area during the summer maternity period, and the spring- and fall migratory periods.

Surveyors conducted acoustic surveys nightly, from March 25 to October 31, 2022, at two fixed monitoring stations in desert shrub/scrub habitat (the Project area's main land cover type). The surveyors deployed two full-spectrum Song Meter SM3BAT ultrasonic detectors (SM3; Wildlife Acoustics, Maynard, Massachusetts)—one at each of two monitoring locations. Surveyors placed the two detectors approximately 1,740 feet apart: one in a large desert wash system and the second between east-west-running short, rocky cliffs. Surveyors chose these locations for

their land cover types and topography which they deemed to be representative of the Project area. Each detector was equipped with one ultrasonic microphone positioned ten feet above ground level (Bishop-Boros and Moqtaderi 2023).

The acoustic data collected indicates that canyon bats (*Parastrellus hesperus*) are the most common species at TUSK. During the study period, bat activity was relatively consistent; it peaked July 25 to July 31, 2022, with 193 bat passes recorded per detector-night. During this peak week, the canyon bat remained the most common bat species identified however, the surveyors also identified hoary bat and Brazilian (Mexican) free-tailed bat activity (Bishop-Boros and Moqtaderi 2023).

Overall, surveyors confirmed the presence of nine bat species in the TUSK study area; they are listed here in order of most-to-least common based on the number of bat activity recorded during acoustic surveys (Bishop-Boros and Moqtaderi 2023):

- Canyon bat (*Parastrellus hesperus*): 70.5 percent
- Species not identified: 26.7 percent[6]
- Hoary bat (*Lasiurus cinereus*): 1.4 percent
- Brazilian (Mexican) free-tailed bat (*Tadarida brasiliensis*): 1.1 percent
- California bat (*Myotis californicus*): 0.1 percent
- Silver-haired bat (*Lasionycteris noctivagans*): less than 0.1 percent
- Yuma bat (*Myotis yumanensis*): less than 0.1 percent
- Big brown bat (*Eptesicus fuscus*): less than 0.1 percent
- Pallid bat (*Antrozous pallidus*): less than 0.1 percent
- Western small-footed bat (*Myotis ciliolabrum*): less than 0.1 percent

During the TUSK bat activity survey, no federally listed threatened or endangered bat species were documented in the TUSK survey area. However, surveyors could not confirm some detected bat calls to species.

[6] Of the bat activity not identified to species, most were unidentified high frequency and low frequency bats (8.9% and 8.4% of the total, respectively), followed by hoary bat and Mexican free-tailed bat group (4.3% of total), then big brown bat or silver-haired bat group (2.9% of total). The remaining 2.3% of the total bat activity were varying species of myotis or other unidentified bats Bishop-Boros, L., and Moqtaderi, C. (2023). *Bat Acoustic Activity Surveys, Greenlink West Project, Tule Springs Fossil Beds National Monument, Clark County, Nevada*. March 25 – October 31, 2022. Western EcoSystems Technology, Inc. Laramie, Wyoming..

6 TYPES OF POTENTIAL PROJECT IMPACTS

This section summarizes how the GLWP may impact birds and bats. This section is not intended to identify all the potential impacts the GLWP may have on birds and bats, but provide a brief list of the impacts that may occur to provide context for the AMMs in Section 7: Bird and Bat Avoidance and Minimization Measures. The AMMs are designed to minimize Project impacts to birds and bats. An analysis of the environmental consequences of the GLWP on birds and bats and a complete list of AMMs that would minimize impacts to resources can be found in the GLWP Final EIS (BLM 2024e).

Habitat loss describes changes to (loss of) environments which are currently used or could be used in the future by birds and bats for activities such as nesting, roosting (including day roosts, maternity roosts, and hibernacula), foraging, and migration. Changes associated with habitat loss cause affected areas to *no longer be suitable for* their previous use.

The GLWP would result in habitat loss primarily due to:

- Permanent habitat removal associated with the construction of transmission and distribution structures, substations, new access roads, and associated facilities
- Temporary habitat removal from vegetation management work and creation of laydown yards, pull sites, and other temporary work areas

Habitat degradation and habitat fragmentation describes changes to (decline in) environments which are currently used or could be used in the future by birds and bats. Changes associated with habitat degradation cause affected areas to become *less suitable for* their previous use. Examples of how habitat degradation affects birds and bats include reductions in breeding success, increases in predation, nutritional deficiencies, dehydration, and increases in susceptibility to disease.

The GLWP may cause habitat degradation by increasing nighttime lighting, noise, and human presence; altering vegetation structure or species composition; altering hydrology; introducing and/or spreading invasive plants and/or noxious weeds; and increasing nesting and/or perching opportunities for predatory birds (e.g., raptors, ravens) which can enable them to negatively impact other bird species. Extreme cases of habitat degradation can result in habitat loss even if the affected habitat is not physically removed.

When combined, habitat loss, degradation, and fragmentation may change spatial and temporal quality and availability of landcover; shift ecosystem dynamics; and impact individual species, groups of species, and species diversity.

Injury and direct mortality to birds and bats may result from crushing by equipment, earthworks, and personnel; vehicle strikes; in-use nest destruction; entombment of bats at roost sites; entombment of burrowing owls in burrows; collisions with powerlines; and electrocutions.

7 BIRD AND BAT AVOIDANCE AND MINIMIZATION MEASURES

This section describes GLWP-specific AMMs, strategies, and supporting rationale that the Proponent would implement. These measures were developed according to information and guidance presented in the BLM Southern Nevada District Bird Management Plan (BLM 2019), the Nevada Bat Conservation Plan (Bradley et al. 2006), and the California Department of Transportation's (Caltrans) guidance document titled Caltrans Bat Mitigation: A Guide to Developing Feasible and Effective Solutions (Caltrans 2019) (with revisions and additions specific to the GLWP). Although not a participating agency in the GLWP, Caltrans' guidance represents the most applicable bat protection recommendations currently available.

The Proponent's Environmental Services Department would be responsible for implementing and overseeing these measures and would designate one or more qualified individuals (i.e., biologists familiar with the birds and/or bats of western Nevada and associated field methodologies) to implement measures that call for an avian or bat biologist. A bulleted list of bird and bat AMMs is in Appendix A.

In addition to these measures, all phases of the GLWP would incorporate components and procedures that would minimize impacts to birds, bats, and other wildlife. A detailed description of Project components and procedures is contained in the Proponent's preliminary POD (NV Energy 2023c). Additional measures would be implemented to protect bird and bat species listed under the ESA and BGEPA. A detailed discussion of these topics is in the GLWP Biological Assessment (BLM 2024d), the GLWP Raven Management Plan (BLM 2024f), and the GLWP Eagle Conservation Plan (BLM 2024b). Additionally, there are specific training requirements in order to become a qualified biologist for some ESA species to perform surveys, research, and/or monitoring. Any specific requirements for federally protected species can be obtained from the USFWS and would be a requirement for any work involving a federally listed species, regardless of the AMMs included in this BBCS. A list of additional Environmental Management Measures (EMMs) for the protection of general wildlife, which would also benefit birds and bats, are described in Appendix C of the GLWP Final EIS (BLM 2024e).

Potential negative Project impacts to birds and bats can be avoided and minimized through implementing structural design features, physical deterrents and exclusion methods, and avoidance procedures. The AMMs described in this section are divided into these categories:

- **Structural design features** can minimize long-term Project impacts by siting features in areas where birds and bats are less likely to be affected using component types that present a lower risk (e.g., utilizing structure types that reduce electrocution risk by discouraging raptor nesting).
- **Deterrents and exclusion methods** can minimize Project impacts over the short-term by excluding birds and bats from areas where they may be harmed.
- **Avoidance procedures** are a means to prevent disturbance to birds/bats during certain time periods or within areas where birds and bats may be present.

Structural design features, physical deterrents and exclusion methods, and avoidance procedures may be implemented at any stage of the GLWP (design, construction, O&M, or decommissioning), as appropriate. Personnel training procedures are critical to the successful implementation of deterrent/exclusion methods and avoidance procedures (discussed in Section 8: Training) and adhering to regulatory requirements, such as reporting. Over the operational life of the GLWP, an adaptive management approach would be used to leverage successes and ameliorate failures.

7.1 Project Design Features to Protect Birds and Bats

The Edison Electric Institute and APLIC have prepared comprehensive studies and strategies to prevent electrocutions and avian collisions with powerlines and associated facilities (e.g., substation equipment, fences). The following documents are incorporated by reference:

- Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006 (APLIC 2006)
- Reducing Avian Collisions with Power Lines: State of the Art in 2012 (APLIC 2012)

The GLWP would be designed and constructed in accordance with APLIC-suggested practices (APLIC 2006, 2012) to reduce impacts to avian species. Any changes to the Project's design requested by federal, state, and/or local jurisdictions, or the Proponent would be in accordance with APLIC-suggested practices. Project personnel would coordinate with applicable federal ROW agencies and NDOW for the implementation of protective design features.

Deflectors, line markers, and other APLIC-suggested measures designed to reduce bird collisions would be installed on transmission lines and guyed wires within 1,000 feet on either side of the Walker River, Carson River, Amargosa River, Las Vegas Wash, Walker Lake, Mason Valley WMA, Perk Slough, and Joggles Slough (note that there are no distribution lines proposed in these areas). Deflectors and line markers may also be utilized at other locations identified during construction, monitoring, and O&M when evaluating risk areas following review of monthly reporting during construction and annual reporting following construction (refer to Section 9: Adaptive Management and Section 10: Reporting). Additionally, the Proponent would coordinate with the federal ROW agencies, NDOW, and the USFWS to identify any additional areas where measures to reduce bird collisions should be considered during pre-construction.

Recommendations and best practices described by APLIC (APLIC 2006, 2012) may also benefit bats, especially where line-marking devices are installed (Manville II 2016). If new, improved bat-specific strategies to prevent collisions and electrocutions with powerlines and associated facilities are published during GLWP development, pertinent recommendations would be incorporated into the Project design to the extent practicable.

The Proponent would implement additional Project-specific measures beyond the APLIC-suggested practices to further minimize impacts to birds. These features include designing all flat surfaces of transmission structures to have nesting and perch deterrents in special status species habitat (in Mojave desert tortoise habitat and Bi-State sage-grouse habitat in the areas shown in Figure 3-1 and Figure 3-2). Recent research indicates that ultraviolet (UV) light on line-marking products may be effective in reducing sandhill crane (*Grus canadensis*) and Canada goose (*Branta canadensis*) collisions with powerlines (Baasch et al. 2022; Dwyer et al. 2019). Application of UV-light bird-deterrent methods would be considered in high-risk areas when/where there are concentrations of sandhill crane and Canada goose (e.g., Walker River and Carson River corridors). Since UV-light-related impacts to bats are not currently known, decisions regarding the use of UV light to deter bats would be made in coordination with a qualified bat biologist. Additionally, other nonlethal avian deterrents, such as lasers (Blackwell et al. 2002; Werner and Clark 2006) may be considered for repelling birds and bats during adaptive management of the Project (see Section 9: Adaptive Management).

Project design features to minimize impacts to birds and bats include minimizing/avoiding artificial nighttime lighting which may attract insect prey to Project facilities and may interfere with animals' nighttime migrations. The use of non-flashing warning lights on transmission towers should be avoided to the extent practicable, and only white or red flashing lights with regards to the minimum number of lights, minimum intensity (< 2,000 candela), and minimum number of flashes per minute (i.e., longest duration between flashes and "dark phase") should be used at night to reduce bird and bat collisions (USFWS 2021b). Permanent outdoor lighting at substations and telecommunications sites would be limited to areas required for O&M, safety, and security. The

lighting would be anti-glare, shielded, and directed downward to the extent possible. Where applicable, highly directional, light-emitting diode fixtures (or other fixtures that meet the criteria specified) would be used. As appropriate, switches or photocells would be used on outdoor lighting to allow for the use of lighting only when needed. Lighting techniques would include directional lights that do not allow light to shine into the sky, screening lights, using timers and motion detectors so that lights are only on when necessary, and systems that minimize lighting to only meet functional requirements (NV Energy 2023a). Additional EMMs to minimize artificial lighting are described in Appendix C of the GLWP Final EIS (BLM 2024e).

7.2 Physical Deterrents and Exclusion Methods for Birds

Physical deterrents and exclusion methods, either on their own or in combination, can effectively discourage birds from nesting or utilizing areas that would be disturbed by construction, O&M, or decommissioning of the GLWP. Deterrents can reduce the potential for Project-related injury or mortality to birds. Specific locations for the use of deterrent devices and exclusion methods in the Project would be determined in coordination with a qualified biologist. The Proponent personnel would install, maintain, and remove bird-deterrent devices according to product specifications, as directed by an avian biologist. Additionally, perch and nesting deterrents would be installed on all distribution line structures and within the areas identified in Figure 3-1 and Figure 3-2 on transmission line structures located in Mojave desert tortoise habitat and Bi-State sage-grouse habitat.

7.2.1 Visual Deterrents

Visual deterrents frighten and/or cause discomfort to birds; they can dissuade birds from using an area. A wide range of manufactured visual deterrents can discourage birds from nesting in an area; these range from predator decoys (e.g., plastic owls) to reflective ribbon and colored gravel.

Colored gravel placed in disturbance areas and maintained long-term (e.g., yards and substations) can be effective in discouraging ground-nesting birds from using Project areas. Ground-nesting bird eggs are typically camouflaged against natural substrates such as soil or pebbles. By covering the ground surface with colored gravel that contrasts sharply with the color of eggs, Project personnel can effectively discourage ground-nesting birds from nesting in Project locations. The applicable federal ROW agency must approve any visual deterrents and their use in the Project to ensure other resources are also considered, such as meeting applicable Visual Resource Management requirements and ensuring the measures do not attract predators, like ravens, in sensitive areas).

7.2.2 Waste Management

It is important to reduce the potential for waste from Project activities to attract opportunistic avian predators and scavengers. Because food waste is an attractive resource for some birds, it increases the likelihood of birds nesting near areas where food waste is present. To manage for this, Project personnel would implement proper waste-management procedures throughout all phases of the Project. The GLWP Raven Management Plan (BLM 2024f) describes these procedures in detail.

7.2.3 Tarps

To further exclude birds from suitable nesting sites within Project areas, Project personnel can cover equipment and stored materials such as straw waddles, pipes, and partially constructed facilities with tarps. (Mesh netting is not recommended for this purpose due to the risk of entangling birds, bats, and other wildlife.) To increase the effectiveness as a bird-nesting deterrent, tarps must completely enclose covered items (i.e., no openings), be secured against strong winds, and not be open at the bottom since birds may use openings as access points.

The Proponent personnel would inspect tarps at least once weekly to identify and repair any rips or gaps that allow birds to pass and to look for trapped wildlife. If personnel find openings in intentionally placed tarps, they would

inspect the covered items for trapped wildlife before resecuring them. During construction, if personnel find wildlife inside tarps they would immediately contact onsite biological compliance monitors. During normal operations when biological compliance monitors are not present at the Project site, personnel who find wildlife inside tarps would promptly contact the Proponent Environmental Services Department.

Project personnel would maintain a monthly Bird and Bat Monitoring Report and document any instances of animal entrapment in it; they would share this report with the applicable federal ROW agencies (for more information, see Section 10.1: Bird and Bat Monitoring Report in this document).

7.2.4 Bird Spikes

Bird spikes are typically stainless steel or UV-resistant polycarbonate spikes placed on physical structures to prevent birds from landing and gaining a foothold. As birds cannot comfortably land on surfaces covered with spikes, the likelihood that birds would attempt to build a nest where bird spikes are present is low.

Bird spikes are designed to be affixed to structures and to act as long-term deterrents to birds. Therefore, it may be practical to use bird spikes in the Project area to deter birds from nesting on structures like substations and buildings. Bird spikes are not generally practical for use on towers because there is a potential that nests could be constructed on the spikes, though the potential is low, and there are other more effective perch and nesting deterrents available. Bird spikes are also not generally practical at equipment, material storage areas or construction yards because equipment is mobile and storage areas and construction yards these are temporary work areas. The amount of time and energy required to maintain bird spikes is low because they are affixed to structures; however, these devices do require periodic inspection and/or replacement per product specifications to maintain effectiveness.

If used in the Project, Proponent personnel must install and maintain the bird spikes according to manufacturer specifications.

7.2.5 Removal of Unoccupied Nests

Under the MBTA, biological compliance monitors can remove unoccupied bird nests that would be directly impacted by Project activities. Only unoccupied nests subject to direct impact are eligible for removal. For example, an unoccupied nest on nearby vegetation not directly impacted by Project activities may not be removed. Additionally, unoccupied nests will be left undisturbed that would not place birds that may inhabit the nest at risk due to their location on electrical lines or infrastructure and are not located in a place that poses an electrical reliability and safety risk.

Removing unoccupied nests can eliminate the possibility that birds reuse an unoccupied nest, therefore preventing potential impacts from Project activities to nesting birds. Nests of federally listed species and bald and golden eagles are protected year-round regardless of activity and typically may not be disturbed. In exceptional circumstances, permitted personnel with a current USFWS permit may remove eagle nests; this applies to scenarios where eagle safety is under threat (e.g., eagles are nesting atop an active power line).

The MBTA specifically protects migratory bird nests from possession, sale, purchase, barter, transport, import, export, and take. Based on the Migratory Bird Permit memorandum issued by the USFWS on April 15, 2003, “the MBTA does not contain any prohibition that applies to the destruction of a bird nest alone (i.e., without birds or eggs), provided that no possession occurs during the destruction.” Unoccupied nests that are removed would not be collected or taken off-site because this would be a violation of the MBTA.

The following sections describe unoccupied-nest removal procedures for raptors, burrowing owls, colonial bird species, and other non-listed, non-game native birds. Methods to locate nests and determine nest status (i.e., whether the nest is unoccupied) are described in Section 7.3.2: Spatial Avoidance.

Raptor Nest Removal
All existing raptor nests and/or other large nests found during preconstruction surveys would be preserved in place if possible, or relocated if necessary. No nests would be relocated until after consultation with the applicable ROW agency and the USFWS. In-use nests would not be relocated. Unoccupied raptor nests (excluding eagle nests) that may be impacted by Project activities may be removed after an avian biologist confirms their unoccupied status. Following nest removal, the avian biologist would dismantle the nest and scatter the nesting materials in the immediate area.

Burrowing Owls: Burrow Inspections and Burrow Collapse
All burrows, holes, crevices, and/or other cavities identified during pre-disturbance surveys of burrowing owl habitat (see Section 7.3.3: Pre-Disturbance Nest Surveys) would be thoroughly inspected by an avian biologist prior to disturbance. If no burrowing owls or other species (e.g., Mojave desert tortoise, which may only be determined by an authorized tortoise biologist) are found using a burrow, the qualified personnel may collapse the burrow.

Other non-protected species found using burrows (e.g., rattlesnakes) would be relocated prior to collapsing burrows, as described in the GLWP Final EIS (BLM 2024e). Qualified Project personnel would collect and relocate non-protected wildlife in accordance with NDOW regulations (NDOW 2019a, NDOW 2019b).

Colonial Species
Based on the Migratory Bird Permit Memorandum (USFWS 2003), colonial nesting birds (which include swifts, swallows, and pinyon jays) are highly vulnerable to disturbance and/or destruction of their unoccupied nests during- or near the nesting season. Outside the nesting season, Project personnel would consult with the federal ROW agency and the USFWS about the removal of colonial bird species' unoccupied- and partially built nests. Qualified personnel may remove and/or collapse unoccupied nests of colonial bird species only with USFWS approval.

Non-Listed, Non-Game Species
After an avian biologist confirms a nest is unoccupied and does not belong to a federally listed species, qualified personnel may remove unoccupied nests for non-listed, non-game species other than raptors. They would remove the nests and scatter them onsite. As mentioned earlier in this report, personnel can only remove unoccupied nests that would be directly impacted by the Project activities.

When unoccupied nests are removed in compliance with federal and state regulations, the USFWS does not require notification before qualified personnel remove them. Qualified personnel would document the locations where nests are removed and dismantled. The monthly Bird and Bat Monitoring Report would include the number, location, species, unoccupied status rationale, and removal justification for all unoccupied nests that are removed. An avian biologist would subsequently monitor these sites for any re-nesting attempts.

7.3 Avian Avoidance Procedures

Throughout the GLWP, qualified Project personnel would implement measures to control for- and mitigate potential impacts to birds. Such measures would include forms of temporal and spatial avoidance of birds and their nests; pre-disturbance surveys for birds and their nests/burrows; bird nest monitoring; and implementation of avoidance buffers.

7.3.1 Temporal Avoidance

Birds

The avian breeding season generally occurs from February 15 through August 31. Some species (e.g., great horned owl, eagles) may begin breeding activities as early as December. In Nevada, the golden eagle breeding season is from December 15 to July 31—for courtship through post-fledgling dependency. The Bi-State sage-grouse uses the time frame from March 1 to June 30. Additionally, breeding seasons for each species may vary geographically across the state, with seasons in northern Nevada generally slightly later in season than in southern Nevada. In accordance with best practices, Project personnel would conduct activities outside of the bird breeding seasons as much as possible (BLM 2024e:Appendix C) in coordination with the applicable federal ROW agency, NDOW, and USFWS.

To avoid in-use bird nests, Project personnel would clear, grub, remove, and/or modify vegetation or other nesting substrates outside the breeding season, to the extent practicable. They would also conduct helicopter work, including take-off and landing, outside the breeding season when practicable.

Work activities conducted outside the avian breeding season would not be subject to pre-disturbance nest survey requirements, pending confirmation by an avian biologist. However, disturbances within burrowing owl habitat are subject to pre-disturbance burrowing owl survey requirements during all times of the year.

In advance of proposed work in the Project area, an avian biologist would determine the potential for early nesting species to be present within a given disturbance area. Associated disturbances in the Project area would be timed to accommodate early nesting species as needed.

Tortoises

It should be noted that construction, operation, and maintenance activities in Mojave desert tortoise habitat would also be subject to timing restrictions. To the extent possible, these activities would be scheduled when the tortoise is least active, which is generally from November 1 – February 28.

7.3.2 Spatial Avoidance

When Project personnel cannot implement temporal avoidance measures to avoid birds, they would implement spatial avoidance measures. For example, to avoid impacts to in-use bird nests, vegetation removal, equipment operation, helicopter work, and other disturbances would be limited to approved work areas. Similarly, watering of Project areas for dust control would be spatially constrained so as to avoid watering an in-use nest.

When Project personnel could not avoid breeding-season disturbance to Project areas that can support in-use bird nests (e.g., woody vegetation, grasslands, agricultural fields, bridges, cliffs, embankments), personnel would implement the following pre-disturbance nest surveys and wildlife protection protocols. Spatial avoidance measures would adhere to the avoidance buffers listed by species identified in Table 7-1.

7.3.3 Nest Surveys

During all phases of the GLWP including construction, O&M, and decommissioning, all vegetation and other nesting substrates that would be modified or removed during the breeding season must be surveyed for nests by an avian biologist prior to initiating disturbance. Surveys would be coordinated with the applicable federal ROW agency, NDOW, and USFWS prior to implementation. Survey areas would include all areas within 300 feet of a planned physical disturbance. Surveys must be conducted within a maximum of three days prior to site disturbance and are valid for only three days. If three days from the time of a survey pass, the planned disturbance area must be surveyed again (BLM 2019).

If any newly-identified nests of endangered, threatened, or sensitive species are documented at any stage of Project implementation, Project personnel must report them to the federal ROW agencies and the USFWS within 24 hours (BLM 2019) and immediately cease work in the buffered area (Table 7-2) until the USFWS and federal ROW agencies determine a course of action for the situation. In addition, survey for burrowing owl and pinyon jays would adhere to the following protocols.

Burrowing Owls

In southern Nevada, burrowing owls nest in burrows and are mostly non-migratory; they may occupy burrows year-round. Within suitable burrowing owl habitat (as determined by an avian biologist), where ground-disturbing activities could occur, a pre-disturbance planning-level burrowing owl survey would be conducted in accordance with the methodology described by the California Burrowing Owl Consortium (1993). Specifically, an avian biologist would survey a planned disturbance area and a 250-foot buffer around it for burrows, owls, and signs of owls by walking transects spaced no greater than 100 feet apart. Planning-level surveys to identify areas where burrowing owls could be present can be conducted more than 30 days prior to a site disturbance. If these surveys are conducted more than 30 days prior to disturbance, additional pre-construction surveys to determine burrowing owl presence/absence would be conducted no more than 30 days prior to the ground-disturbing activity. The additional pre-construction survey would include burrow inspection (aided with a fiber-optic scope when appropriate) and could be conducted in conjunction with the pre-disturbance survey for all migratory birds conducted within three days prior to site disturbance.

Pinyon Jays

Pinyon jays are listed as BLM Sensitive and are currently under review for listing under the ESA. As such, Project personnel would implement additional measures to protect this species.

Pinyon jays are colonial nesters that often nest within the same general geographic area each year (Great Basin Bird Observatory 2019). Prior to the start of planned work activities, qualified Project personnel would conduct nest surveys in suitable pinyon-juniper habitat during the pinyon jay breeding season (March 1 through May 30) to identify areas warranting year-round protection. In accordance with recommendations from the Great Basin Bird Observatory (Great Basin Bird Observatory 2019), personnel would protect pinyon jay nest sites (e.g., nesting colonies) and associated foraging habitat from disturbance with a 0.7-mile avoidance buffer (Table 7-1). This buffer is sufficient to accommodate annual shifts in colony location. No disturbance would occur within the buffer during the pinyon jay breeding season. No vegetation would be removed from the buffer area during any time of year, to the extent practicable. If complete avoidance within a 0.7-mile buffer is not practicable, Project personnel would notify the applicable ROW agency and disturbance within the buffer would be limited to the minimum amount necessary.

7.3.4 Determining Nest Activity

In most cases, a nest is considered *in use* as soon as construction of a new nest reaches the stage where an egg can be held in it, or when the use of an existing nest commences. In most cases, a previously in-use nest becomes unoccupied when it no longer contains viable eggs and/or living young and is not being used by a bird as part of the reproductive cycle. Nest activity status would be determined via direct observation by a qualified avian biologist according to the following methodology.

Raptors

Raptor nests are considered to be in-use throughout periods of courtship and nest-building, egg laying, incubation, brooding, fledging, and post-fledgling dependency. To determine whether a raptor nest is in-use, an avian biologist would observe it for four consecutive hours over two successive days. If, based on these observations, the avian biologist determines that the nest is unlikely to be in-use, the avian biologist would confirm whether the nest is unoccupied by viewing the nest contents. If the avian biologist is unable to directly view the nest contents due to

safety concerns (e.g., nest located on energized transmission and distribution line structures), the Proponent would provide personnel to directly inspect the nest to determine its contents. The Proponent personnel would use equipment such as bucket trucks or drones to achieve a vantage point above the nest and would document the contents of the nest through video or photographs. Using the video or photographic documentation, the avian biologist would then confirm if the nest is in use or unoccupied.

Burrowing Owls

A pre-construction survey for burrowing owls would occur no more than 30 days prior to ground disturbance (this may be conducted in conjunction with the migratory bird pre-disturbance survey conducted three days prior to site disturbance). All burrows, holes, crevices, or other cavities located incidentally or during pre-disturbance surveys would be thoroughly inspected by an avian biologist for burrowing owls and fresh sign of owls. Planning-level surveys to determine occupancy of potential burrowing owl burrows may be conducted more than 30 days before ground disturbance, but an additional survey would need to be conducted no more than 30 days prior to disturbance to show burrowing owl presence/absence. If fresh sign of an owl is observed but no owls are present, the avian biologist would conduct additional site inspections until the occupancy status of the burrow can be determined (California Burrowing Owl Consortium 1993).

Other Bird Species

To determine if a nest is unoccupied, avian biologists would be required to either observe the nest activity or directly view the nest contents:

- An avian biologist would observe the nest of interest for a required minimum of one uninterrupted hour in suitable conditions while situated at an appropriate distance from the nest to prevent avian avoidance of the nest due to human presence; or
- An avian biologist may confirm a nest's status by viewing its contents. Direct observations of nest contents would be conducted in such a way as to minimize disturbance to nesting birds. For example:
    - Nest observations would be conducted as quickly as possible and would avoid flushing incubating- or brooding adults.
    - The biologist and qualified observers would take care to avoid walking the same path on each visit to a known nest to avoid forming trails that potential predators may use to access the nest.
    - To prevent force-fledging, nest observers would avoid approaching nests when nestlings are near the fledgling stage.

7.3.5 In-Use Nest Protection

All in-use nests, including those found outside the breeding season, would be protected until the nest is no longer in-use. Known raptor nests located near disturbance areas, as determined by buffer distances in Table 7-1 would also be protected. Regardless of activity status, nests of federally listed species and eagle nests are always protected. Species-specific protections for pinyon jays are described later in this section. Procedures for emergency nest removals are also discussed later in this section.

To protect nesting birds, Project personnel would establish standard avian species-specific Project activity exclusion buffers around occupied nests and nesting sites (see Table 7-1). Buffer distances are determined by species biology, susceptibility to disturbance, and known temperament (BLM 2019). Buffer boundaries would be clearly marked at a nesting site's perimeter. Within the buffer, human activity (except for the avian biologist's nest-monitoring activity) such as vegetation removal and modification, equipment operation, pedestrian and vehicular travel, and earthworks would be excluded. To prevent alerting predators to occupied nests, buffer markings should be placed in a manner sufficient to clearly mark the buffer but not to draw attention to the nest.

Table 7-1. Spatial Avoidance Distances for Nesting Bird Species (Not Exhaustive)

Avian Group	Example Species	Horizontal Buffer
Hummingbirds	Anna's hummingbird, Costa's hummingbird	100 feet
Passerines (bridge, culvert, building, understory, and thicket nesters)	Say's phoebe, house finch, spotted towhee, Brewer's sparrow, sagebrush sparrow, northern rough-winged swallow, gray vireo, green-tailed towhee, black-chinned sparrow, American goldfinch	100 feet
Passerines (cavity, crevice, ground, open habitat, shrub, tree, open scrub nesters)	Ash-throated flycatcher, canyon wren, juniper titmouse, horned lark, Cassin's kingbird, verdin, blue-gray gnatcatcher, black-throated sparrow, house finch, black-tailed gnatcatcher, rock wren, Bewick's wren, white-breasted nuthatch, western meadowlark, western kingbird, bushtit, black-throated gray warbler, great-tailed grackle, northern mockingbird, Brewer's blackbird	150 feet
Passerines (shrub, tree, open scrub nesters)	Loggerhead shrike, Bendire's thrasher, phainopepla, lesser goldfinch, cactus wren, LeConte's thrasher, Scott's oriole	300 feet
Doves	Mourning dove	150 feet
Nightjars	Lesser nighthawk, common poorwill	150 feet
Quail	Gambel's quail	150 feet
Corvids	Common raven	150 feet
Corvids (species-specific)	Pinyon jay	0.7 mile
Waterfowl	Canada goose, bufflehead, cinnamon teal, common goldeneye	150 feet
Woodpeckers	Ladder-backed woodpecker	150 feet
Raptors	American kestrel, barn owl, great horned owl, western screech-owl	200 feet
Raptor (burrow occupier)	Burrowing owl[1,2]	250 feet[2]
Raptors	Northern harrier, Swainson's hawk, sharp-shinned hawk, flammulated owl, Cooper's hawk, merlin, barred owl	400 feet
Raptors	Red-tailed hawk[3], turkey vulture	0.33 mile
Raptor (species-specific)	Prairie falcon	0.5 mile
Raptors	Peregrine falcon, ferruginous hawk	1.0 mile
Raptors	Bald eagle, golden eagle	1.0 mile[4]
Shorebirds	Killdeer	200 feet
Shorebirds (species-specific)	Long-billed curlew	600 feet
Swifts	White-throated swift	200 feet
Roadrunners	Greater roadrunner	300 feet

Table Notes: [1] If avoidance of burrowing owl burrow sites is not practicable, burrowing owls may be relocated by a qualified company, agency, or organization possessing the necessary USFWS permits.
[2]Buffers apply to all occupied burrows regardless of nesting status. Burrows may be occupied year-round.
[3]Buffer may be reduced to 250 feet for nests on adjacent power lines within designated utility corridors if the nest is not within line-of-sight of project activities, and in coordination with the applicable federal ROW agency.
[4]Buffer may be reduced to ½ mile if nest is not within line-of-sight of project activities. For additional information on eagle protection, see the GLWP Eagle Conservation Plan (BLM 2024c).
Table Source: (BLM 2019)

During Project activities conducted outside of the buffer area, an avian biologist would periodically monitor protected nests to determine their status and monitor them for signs of stress in attending birds. The avian biologist may stop Project work and/or increase buffer distances around nests if the biologist believes Project activities are negatively impacting a nest's success.

Conversely, an attending avian biologist may reduce a nest's buffer distance once:

- The biologist determines the stage of nesting activity;
- The biologist understands the temperament of the nesting birds; and
- The biologist is certain the Project activity would not negatively impact the nest's success.

The avian biologist must submit any reductions to nest buffer distances for BLM, Tribal, or NPS sensitive and federally listed species in writing to the applicable federal ROW agencies in the form of a Nest Buffer Justification form. Project personnel would also submit copies of requests for reductions to nest buffer distances for federally listed species to the USFWS; reductions for such species should not occur without agency and USFWS approval.

Requests to reduce nest buffer distances would be reviewed on a case-by-case basis and the applicable federal ROW agency would respond to requests within 48 hours of their submission. For federally listed species, the USFWS would also need to respond to requests for nest buffer reductions during this same time period. If the agency/USFWS requests additional information from the avian biologist before implementing a buffer reduction, the biologist would provide it prior to reducing the size of any buffer. If the avian biologist does not receive a response from the presiding agencies within the allotted time frames, the avian biologist would use field observations and bird behavior to determine an appropriate buffer reduction and report the new size of the implemented buffer to the agency/USFWS within 24 hours of implementation (however, nest buffer reductions should not be applied to federally listed species without USFWS approval). The biologist would continue to monitor nests with reduced buffers. If, after buffer reduction, Project activities cause or contribute to nesting birds exhibiting stress-related behavior, Project personnel would reinstate the initial buffer distance and the avian biologist would reevaluate the nesting situation.

Extreme weather can increase the likelihood of nest failure. Combining extreme weather with stress from nearby Project activity may cause an otherwise successful nest to fail. On unseasonably hot or cold days, Project personnel may need to temporarily increase species-specific buffers. An avian biologist would promptly implement any required increases in nest buffers and would report them in the monthly Bird and Bat Monitoring Report (see Section 10.1: Bird and Bat Monitoring Report). It is presumed Project activities would not take place during heavy storm events. All nest failures of special status species shall be reported to the applicable federal ROW agency within 24 hours.

Nest monitoring can be discontinued when nesting activity ceases (e.g., in the event of nest failure, after nestlings fully fledge) or when Project activities in the vicinity of the nest end—whichever occurs first. Except in the vicinity of pinyon jays (colonial nesters), once a nest is unoccupied, Project personnel or the avian biologist would remove all flagging and other buffer markings around it.

Once initial Project disturbance has occurred and the Project is underway, non-listed species that initiate nesting in areas adjacent to active work areas, access roads, or within operating yards and substations do not require activity exclusion buffers—as long as there has been no lull in Project activity. This is because the birds begin to nest at the already-increased Project activity level. In the case where an avian biologist determines one cannot assume nesting birds are acclimated to the Project activity, such as when there are major changes to Project activity levels or activity types, the biologist may determine it is appropriate to conduct pre-disturbance surveys and/or to

implement activity exclusion buffers. At any stage of operations, it would not be permitted to directly remove nests or an in-use nest's substrate.

Special Protection for Pinyon Jays

As recommended by the Great Basin Bird Observatory (Great Basin Bird Observatory 2019), pinyon jay nest sites within 0.7-mile of the nest site and associated foraging habitat within the 0.7-mile buffered area would be protected from direct- and indirect disturbances that may lead to colony abandonment. This buffer is sufficient to accommodate annual shifts in colony location. No disturbance would occur within the buffer during the pinyon jay breeding season (March 1 – May 30). No vegetation would be removed from the buffer area during any time of year, to the extent practicable. If complete avoidance with a 0.7-mile buffer is not practicable, Project personnel would notify the applicable federal ROW agency and disturbance within the buffer would be limited to the minimum amount necessary.

Emergency Nest Removal

The Proponent maintains a system-wide (not GLWP specific) federal permit through the USFWS, called the Special Purpose Utility (SPUT). This permit authorizes the Proponent to possess and/or transport sick, injured, or dead birds as it relates to activities conducted for utility services. The permit also authorizes unoccupied nest relocation, temporary possession, transporting, depredation, and salvage/disposal of unoccupied nests (except for eagle nests). In-use nests, excluding eagle nests, may be destroyed in instances of emergency situations only. An emergency situation is defined as:

- The safety of the migratory birds, nests, or eggs is at risk; or
- The migratory birds, nests, or eggs pose a threat of serious bodily injury or a risk to human life, including a threat of fire hazard, mechanical failure, or power outage.

Removal of in-use nests are not authorized under the SPUT permit for birds that cause a nuisance or inconvenience. In-use and unoccupied eagle nests shall not be removed at any time without an incident specific eagle take permit. Additionally, the Proponent shall not remove federally listed species nests without prior coordination and approval from the applicable federal ROW agency and the USFWS.

7.4 Bat Avoidance Procedures

Throughout the GLWP, qualified Project personnel would implement measures to control for and mitigate potential impacts to bats. Such measures would include pre-disturbance surveys for bats and their roosts, forms of temporal and spatial avoidance of bats and their roosts, roost monitoring, and implementation of avoidance buffers.

7.4.1 Bat Roost Surveys

For all bat-related surveys conducted for the GLWP, qualified bat biologists would consult and adapt survey guidelines and methodologies including preliminary surveys, acoustic surveys, and roost site investigations (i.e., dusk emergence surveys) as described in the Nevada Bat Conservation Plan (Bradley et al. 2006). Two levels of surveys would be conducted to identify bat roost and hibernacula that may be impacted by the Project: preliminary bat surveys and pre-disturbance bat surveys.

Preliminary Bat Surveys

To identify potentially active bat roosts and hibernacula that may be impacted during construction of the GLWP, a qualified bat biologist would conduct preliminary daytime surveys in suitable habitat (e.g., forests, cliffs, canyons, abandoned mines and structures) within 150 feet of planned ground disturbance. The bat biologist would coordinate with the federal ROW agencies, NDOW, and the USFWS, as appropriate, to identify specific areas

suitable for surveying. The bat biologist and these agencies would use remote data and existing information such as known bat roost locations and habitat preferences to identify areas for survey efforts.

Preliminary surveys would be conducted prior to the final Project siting and design so that, where feasible, bat roost sites and hibernacula may be avoided during GLWP construction. Micro-siting of Project facilities would enable personnel to avoid direct impacts to roost sites and hibernacula, where feasible. Prior to new disturbances within suitable bat-roosting habitat, preliminary surveys would be conducted during O&M and decommissioning. Prior to site disturbance, personnel must compile survey reports documenting the surveys, survey results, and relevant recommendations and deliver them to the applicable federal ROW agency for their approval (see Section 10.1: Bird and Bat Monitoring Report).

During the hibernation season (winter[7]) and maternity season (spring/summer[8]), Project personnel would carefully minimize survey-related disturbance to bats; human disturbance may cause roost abandonment and/or reductions to energy reserves that lower survival in hibernating bats. Qualified personnel would conduct preliminary surveys by searching for bat signs (including guano and urine staining) and/or deploying acoustic bat detectors to determine roost-site occupancy. If personnel identify potential active roost sites during preliminary daytime surveys, surveyors would conduct supplemental dusk emergence surveys to determine the bat species, number of bats present, and roost type (e.g., maternity, hibernacula). Some roost sites may require additional visits to determine seasonal patterns of roost-site occupancy.

To determine seasonal use of potential roost sites, qualified personnel would conduct daytime visits during the spring/summer maternity season, fall and spring migration, winter hibernation, and as needed (depending on elevation, geographic location, habitat type, and species likely to be present). Specific seasonal survey requirements for potential roost sites would be determined through reference of the Nevada Bat Conservation Plan (Bradley et al. 2006), collaboration with the federal ROW agency, and by the recommendations from the lead qualified bat biologist.

Pre-Disturbance Bat Surveys
To identify new potentially active bat roosts and hibernacula for bats that may have moved in since the preliminary bat surveys and may be impacted by the GLWP, a qualified bat biologist would conduct daytime surveys in suitable habitat (e.g., forests, cliffs, canyons, abandoned mines and structures) within 150 feet of planned ground-disturbing activities. Surveys must be conducted within a maximum of three days prior to site disturbance and are only valid for three days. If three days from the time of a presence/absence survey pass, the planned disturbance area must be surveyed again. These surveys would be conducted in conjunction with the pre-disturbance nest surveys.

7.4.2 Spatial and Temporal Avoidance of Active Roosts

Whenever possible, the bat biologist would determine and implement appropriate avoidance buffers around bat roost sites and hibernacula found within or adjacent to Project disturbance areas during the bat preliminary surveys. Buffer distances would be determined by a qualified bat biologist in coordination with the applicable federal ROW agency, NDOW, and the USFWS (as appropriate); buffers would vary by roost type, species, and Project disturbance type.

Caltrans (2019) recommends bat roost buffer distances range from 65 feet to 400 feet, depending on a project's disturbance type and species affected (Table 7-2). Although intended for transportation projects in California,

[7] Hibernation usually occurs in the winter from late fall through early spring when temperatures are low.
[8] The specific timing of the maternity season varies among different climatic regimes, with hot desert areas ranging from March to June and cold climate areas from May to August.

these avoidance-buffer recommendations are generally appropriate for the GLWP, which would utilize some of the same equipment types (e.g., construction trucks, heavy equipment) and impact a similar suite of bat species. For projects constructed during daylight hours, Caltrans (2019) considers a spatial avoidance buffer of 150 feet sufficient to avoid most disturbance to day-roosting bats.

Within a buffer, temporary disturbances such as human activity (except for a bat biologist's monitoring activity, see below), equipment operation, and pedestrian and vehicular travel would be excluded during seasons when a roost is active. Where feasible, permanent disturbances such as vegetation removal and earthworks would always be excluded from a roost buffer. Buffer boundaries would be placed at the perimeter and should be placed in a manner to clearly mark the buffer but not draw attention to the roost itself.

Table 7-2. Spatial Avoidance Buffer Distances for Day- and Night-Roosting Bats by Activity Type

Bat species	Construction Trucks and Heavy Equipment	Small Vehicles	Drilling, Trenching, and Small Equipment	Light Source without Shielding	Pedestrian Traffic	Stationary Diesel/ Gasoline Exhaust Sources
Pallid bat, Townsend's big-eared bat	120	90	150	400	65	250
Other bat species	100	65	150	300	65	250
Yuma myotis, Brazilian (Mexican) free-tailed bat	90	65	150	250	65	250

Table Notes: All units are in feet.
Table Source: (Caltrans 2019)

During adjacent Project activities, a qualified bat biologist would monitor protected roosts periodically to determine roost activity status and to monitor for signs of indirect impacts to bats. The bat biologist may stop work and/or increase buffer distances around a roost if the biologist believes Project activities would negatively impact the roost. In certain circumstances, qualified personnel may reduce roost buffer distances according to the protocol described for avian nest buffer distances in Section 7.3.5: In-Use Nest Protection. Roost monitoring can be discontinued when a roost becomes inactive (e.g., bats emerge from hibernacula, maternity colonies disperse) or Project activities in the vicinity of the roost end—whichever occurs first. Once a roost is inactive, Project personnel would remove flagging and all other buffer markings around it. If a roost is abandoned or otherwise impacted by adjacent Project activities, personnel would notify the applicable federal ROW agency, NDOW, and the USFWS (as applicable) within 24 hours.

If direct impacts to bat roost sites and/or hibernacula cannot be avoided, the Proponent would coordinate with the applicable federal ROW agency and NDOW to determine a course of action to minimize impacts. Remedial actions would vary by species and location and could include seasonal restrictions to planned disturbance, construction or installation of alternate roost sites, installation of exclusionary devices, and restoration of roost characteristics after work is complete.

To enable the federal ROW agencies to track the success of Project AMMs and to provide the agency with opportunities for adaptive management, Project personnel would deliver a monthly roost-monitoring report to the applicable agency. For more information, see Section 10.1: Bird and Bat Monitoring Report.

8 TRAINING

Prior to the start of construction and/or O&M activities, all supervisory and onsite personnel would attend a Bird and Bat Preconstruction Awareness Training coordinated by a qualified biologist. The Training would cover topics discussed in this BBCS such as:

- Applicable agency/company regulations
- Deterrents to minimize Project impacts to birds and bats
- Avian/bat avoidance procedures
- Location and reporting of avian/bat mortalities and injuries
- Identification and reporting of nests on Project structures
- Roles and responsibilities relating to the protection of birds and bats

The Bird and Bat Preconstruction Awareness Training would be delivered separately or as part of the Proponent's Worker Environmental Awareness Program (WEAP).

If new Project personnel are added during construction and/or O&M activities that had not previously attended the Bird and Bat Preconstruction Awareness Training, they would attend the Bird and Bat Preconstruction Awareness Training before starting work.

Following construction and during O&M, personnel training would be conducted annually. Training would be provided to all utility personnel, including managers, supervisors, line crews, engineers, dispatch, and design personnel. The training would provide:

- The informational resources necessary to improve knowledge and awareness of protection of birds
- Information on applicable laws and regulations, including the MBTA, ESA, and BGEPA
- Information on the consequences of not complying with the MBTA, ESA, and BGEPA
- Procedures for reporting of bird and bat mortalities (see Section 10 Reporting)
- How to schedule and coordinate corrective actions
- Information on the types of corrective actions and APLIC-suggested practices for retrofitting structures (APLIC 2006, 2012)
- Disposal of bird carcasses
- Reporting of eagle incidents (requires immediate reporting)

The O&M training described above represents the Proponent's existing training program that applies to all transmission and distribution lines operated and maintained by the Proponent. For the GLWP, the Proponent would also include in their annual training procedures for protecting bats and reporting of bat mortalities and injures. Additionally, to enhance employee awareness about increased potential for avian/bat mortalities and injuries in riparian areas, the annual training would also emphasize the importance of riparian corridors and surface waters as resources for birds and bats.

9 ADAPTIVE MANAGEMENT

Success of a long-term BBCS would require flexibility and willingness to adopt new or experimental methods and measures to protect birds and bats. In cooperation with the USFWS, NDOW, and the applicable federal ROW agencies, the Proponent would review the successes and failures of bird and bat AMMs. These reviews would occur immediately following the monthly monitoring reports during construction activities and immediately following the annual reports during O&M (refer to Section 10 for more details on reporting). These reviews would enable Project personnel to determine the effectiveness of applied conservation strategies such as physical deterrents, exclusion methods, nest and roost surveys, and avoidance buffers. Personnel would address any deficiencies in conservation protocols by adapting protocols, materials, and/or monitoring regimes and observing the effectiveness of any changes they make.

Project personnel would assess the effectiveness of bird and bat AMMs using data collected during the pre-construction/pre-disturbance surveys conducted prior to and during construction and comparing those results with information and data collected during the O&M annual inspections and O&M reporting. Additionally, data and information collected during the raven monitoring (monthly and yearly) discussed in the Project Raven Management Plan (BLM 2024f) would also be assessed. The O&M annual inspections are described in the preliminary POD (NV Energy 2023a), where the Proponent personnel would conduct annual visual inspections of the lines and substations via helicopter, all-terrain vehicles, or line trucks. Approximately every ten years, personnel also would conduct climbing inspections of structures. The Proponent personnel would also access the lines, as needed, to maintain structures or in the event of an emergency. Personnel would provide O&M incident reports of avian mortalities, injuries, and nests they discover during O&M Project activities and during the annual inspections (see Section 10: Reporting).

The Proponent would coordinate with the applicable federal ROW agencies, NDOW, and USFWS following evaluation of the findings during construction and O&M in the various reports (described in Section 10: Reporting) to discuss effectiveness of AMMs, determine if additional AMMs should be considered to continue the protection of birds and bats, and collaborate on opportunities to conduct research on effectiveness of the AMMs and reporting procedures. Multi-agency collaboration is vital to protect and mitigate harm to birds and bats. All phases of the GLWP would require consistent collaboration and regular communication between the Proponent, the federal ROW agencies, NDOW, the USFWS, and any relevant third-party contractors. To the extent practicable, it should be a priority for all GLWP collaborators to protect birds and bats throughout the Project area for the life of the Project.

This BBCS is a living document and will be revised and updated as innovative solutions develop to minimize impacts to birds and bats; as agency guidance adjusts; and as conditions of the Project warrant. At any time, additional Project-specific AMMs may be required to minimize impacts to birds and bats.

10 REPORTING

Implementation of this BBCS would require Project personnel to report on Project activities and the AMMs implemented to protect and manage for birds and bats in the GLWP. The following is a summary of the required reports discussed in this BBCS. The reporting requirements listed here specify the context for each report and the location in this BBCS where it is described. This section also includes a table (Table 10-1) summarizing the reports, the contexts of their requirements, the agencies who would receive them, and general timelines for their delivery.

- The Proponent would maintain a Bird and Bat Monitoring Report with comprehensive documentation pertaining to the AMMs in this BBCS (see Section 10.1: Bird and Bat Monitoring Report).
    - An initial report would be provided to the applicable federal ROW agencies 48 hours prior to initial Project construction.
    - A monthly report will be delivered to the applicable federal ROW agencies for the duration of construction.
- The monthly Bird and Bat Monitoring Report would include information about:
    - Instances of animal entrapments (see Section 7.2.3: Tarps)
    - Pre-disturbance nest/roost survey findings (see Section 7.3.3: Nest Surveys, Section 7.4.1: Bat Roost Surveys)
    - Nest/roost details and monitoring updates (see Section 7.3.4: Determining Nest Activity, 7.4.2: Spatial and Temporal Avoidance of Active Roosts)
    - Failed nests/roosts
    - Unoccupied nest removal
    - Collapsed animal burrows
    - Avian/bat mortalities and injuries
    - Site-specific nest/roost buffers (see 7.3.5: In-Use Nest Protection, 7.4.2: Spatial and Temporal Avoidance of Active Roosts)
- If any newly identified nests/roosts of endangered, threatened, or sensitive species are documented at any stage of Project implementation, Project personnel must report them to the applicable federal ROW agencies, NDOW, and the USFWS within 24 hours (see Section 7.3.3: Nest Surveys, Section 7.4.1: Bat Roost Surveys).
- Project personnel shall report all nest failures of special status species to the applicable federal ROW agency, NDOW, and USFWS within 24 hours (see 7.3.5: In-Use Nest Protection).
- The avian biologist must submit, in writing, any requests for reductions to nest buffer distances for BLM, Tribal, or NPS sensitive and federally listed species to the applicable federal ROW agency in the form of a Nest Buffer Justification form (see 7.3.5: In-Use Nest Protection).
- The Proponent would report avian mortalities according to the protocol described below under O&M Reporting.
- The Proponent would provide an annual report summarizing avian and bat mortalities/injuries recorded along the GLWP to the applicable federal ROW agencies (see Section 9: Adaptive Management).
- If complete avoidance of pinyon jay nests with a 0.7-mile buffer is not practicable, Project personnel would notify the applicable federal ROW agency and NDOW; disturbance within the buffer would be limited to the minimum amount necessary (see 7.3.5: In-Use Nest Protection).
- If a bat roost is abandoned or otherwise impacted by adjacent Project activities, personnel would notify the federal ROW agency and NDOW within 24 hours (see Section 7.4.2: Spatial and Temporal Avoidance of Active Roosts).

- If Project personnel must collect and relocate non-protected wildlife (e.g., rattlesnakes using burrowing owl burrows), they would do so in accordance with NDOW regulations (NDOW 2019a, 2019b). Reporting requirements are associated with these regulations.

Operations and Maintenance Reporting

All avian mortalities/injuries and bat mortalities/injuries, as well as bird nests located on Project structures, would be reported to the Proponent's Environmental Services Department by the Proponent that discovers the injury/mortality or nest, or their immediate supervisor. Reporting would be a key component in identifying and reducing impacts on avian electrocutions and collisions and identifying areas of risk. The injury/mortality or nest would be reported in an electronic incident reporting system, and would include the following information:

- Date/time injury/mortality was discovered
- Location (GPS coordinates, directions)
- Pole/structure number and/or facility name
- Reporting party contact information
- Photographs of the bird/carcass, pole/facility, and the surrounding environment (if possible)

Following reporting, the Proponent's Environmental Services Department would conduct a site investigation to determine the cause of mortality/injury and/or identify corrective actions for nests (see Section 7.3 and Section 7.4 for more details on corrective actions for nests). In-use nests, bird injuries, and any incidences involving eagles would be reported immediately to the Proponent's Environmental Services Department upon discovery and reported to the USFWS within 48 hours.

The Proponent would also develop an annual report summarizing avian/bat mortalities and injuries documented in the Project area, and provide it to the federal ROW agencies, NDOW, and USFWS. These annual reports would be provided for the life of the Project during O&M and decommissioning. Information on avian/bat mortalities and injuries would be used to identify problem areas where corrective actions would be taken to prevent future bird and bat collisions and electrocutions, and to assist in developing additional AMMs during Adaptive Management (see Section 9).

Table 10-1. Reporting Requirements Outline in the BBCS

Report	Context	Project Stage	Agency	Reporting Timeline
Bat Roost Abandonment	Bat roosts which are believed to have been abandoned or impacted via Project activities	Construction, O&M, decommissioning	Applicable federal ROW agency, NDOW, USFWS (listed species)	• As needed, within 24 hours of finding
Bird and Bat Monitoring Report	Animal entrapments, site-specific nest buffers, pre-disturbance nest/roost survey findings, nest/roost details and monitoring updates, failed nests/roosts, unoccupied-nest removal, collapsed animal burrows, avian/bat mortalities and injuries	Construction, ground disturbance and vegetation removal activities during O&M, decommissioning	Applicable federal ROW agencies, USFWS	• 48 hours before initial Project construction • Monthly during construction activities
Commercial Collection of Unprotected Wildlife	Relocation of non-protected wildlife prior to collapsing otherwise unoccupied burrows	Pre-construction, construction, O&M, decommissioning	Applicable federal ROW agency, NDOW	• As needed, in accordance with NDOW reporting requirements for this issue

Report	Context	Project Stage	Agency	Reporting Timeline
Nest Buffer Justification	Reductions to nest buffers for BLM, BIA, or NPS sensitive and federally listed species	Construction, O&M, decommissioning	Applicable federal ROW agencies, USFWS	• As needed • For necessary, unapproved reductions: within 24 hours of implementation
Nest Failures of Special Status Species	Nest failures of special status avian species	Construction, O&M, decommissioning	Applicable federal ROW agencies, NDOW, USFWS	• Within 24 hours of finding
O&M Annual Report	Avian and bat mortalities in the GLWP during O&M of the Project	O&M	Applicable federal ROW agencies, USFWS	• Annually
O&M Incident Reporting	Avian and bat mortalities, injuries, nest depredation (emergency situations only), eagle incidents	O&M	USFWS	• Mortalities reported in the Proponent internal incident reporting system upon discovery • Injuries, in-use nest depredation, and any eagle incident reported within 48 hours of finding
Pinyon Jay Nest Buffer Adjustments	Justification and planned buffer implementation if a 0.7-mile pinyon jay nest buffer is not practicable for Project activities	Construction, O&M, decommissioning	Applicable federal ROW agencies, BLM	• As needed
Pre-Disturbance Nest Survey Findings and Bat Roost/Hibernacula Findings for Special Status Species	Survey findings regarding threatened, endangered, and/or sensitive bird/bat species	pre-construction, construction	Applicable federal ROW agencies, NDOW, USFWS (as applicable)	• Within 24 hours

Table Acronyms: BBCS – Bird and Bat Conservation Strategy; BIA – Bureau of Indian Affairs; BLM – Bureau of Land Management; GLWP – Greenlink West Transmission Project; NDOW – Nevada Department of Wildlife; NPS – National Park Service; NV – Nevada; O&M – Operations and maintenance; ROW – Right-of-way; USFWS – United States Fish and Wildlife Service

10.1 Bird and Bat Monitoring Report

Project personnel would develop and deliver an initial pre-construction Bird and Bat Monitoring Report and monthly follow-up Bird and Bat Monitoring Reports throughout the duration of the Project. The report would allow the federal ROW agencies to track Project compliance and buffer adequacy for birds and bats, the success or failure of Project AMMs and provide agencies with opportunities for adaptive management.

The initial pre-construction report would include details about:

- In-use nests or roosts that personnel discover during pre-disturbance surveys
- Proposed site-specific protective measures (e.g., physical deterrents, avoidance measures) for birds and bats

The Proponent would deliver the initial Bird and Bat Monitoring Report to the federal ROW agencies at least 48 hours before commencing Project construction.

Once construction starts, Personnel would submit an updated report monthly to the applicable federal ROW agencies. The report would provide a summary of each nest/roost identified in the GLWP and include information about each nest's/roost's

- Attending species
- Type
- Location
- Proximity to areas of active disturbance and disturbance type
- Status and stage with pertinent transition dates
- Reactions of birds/bats to adjacent project activities
- Buffer information
- Outcome (success or failure)
- Dates and rationale for initiating and discontinuing monitoring

For failed bird nests, personnel would report their determination for the cause of nest failure and supporting evidence for the determination (e.g., photos, nest activity prior to failure, Project activity prior to- and at time of failure).

For all unoccupied bird nests that are removed, the Bird and Bat Monitoring Report would also include the:

- Number of nests removed
- Location of nests
- Species
- Unoccupied status rationale
- Removal justification

In-use nests in the Project vicinity, but outside of prescribed buffer distances, do not require reporting.

The monthly Bird and Bat Monitoring Report would also detail all instances of collapsed animal burrows, bird/bat mortalities/injuries, and animal entrapment in Project areas (e.g., under tarps).

10.2 Reporting Contacts

The reports described above would be provided to the designated contacts at the federal ROW agencies, the USFWS and/or other applicable land-management agencies (identified in Table 10-2) by an e-mail or phone call within 24 hours. Table 10-2 lists the agency contacts for submitting reports.

Table 10-2. Agency Contacts

Agency	Address
Bureau of Land Management	Carson City District Office 5665 Morgan Mill Road Carson City, NV 89701
Bureau of Land Management	Southern Nevada District Office 4701 North Torrey Pines Drive Las Vegas, NV 89130
Bureau of Land Management	Battle Mountain District Office 50 Bastian Road Battle Mountain, NV 89820

Agency	Address
National Park Service	Tule Springs Fossil Beds National Monument 601 Nevada Way Boulder City, NV 89005
Bureau of Indian Affairs	Western Region Regional Office Indian Affairs 2600 North Central Avenue Phoenix, AZ 85004
United States Fish and Wildlife Service	Pacific Southwest Regional Office Federal Building 2800 Cottage Way Sacramento, CA 95825
United States Fish and Wildlife Service	Reno Field Office 1340 Financial Boulevard, Suite 234 Reno, NV 89502
United States Fish and Wildlife Service	Southern Nevada Office 4702 North Torrey Pines Drive Las Vegas, NV 89130
Nevada Department of Wildlife	Western Region Office 1100 Valley Road Reno, NV 89512
Nevada Department of Wildlife	Southern Region Office 3373 Pepper Lane Las Vegas, NV 89120

Table Acronyms: AZ – Arizona, CA – California, NV – Nevada

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Appendix A

Bird and Bat Avoidance and Minimization Measures

Bird and Bat Avoidance and Minimization Measures

This appendix contains a bulleted list of bird and bat Avoidance and Minimization Measures (AMMs) that will be implemented by the Proponent. A detailed discussion of these measures with supporting rationale is included in Chapter 7 of this document. The AMMs are categorized into seven categories: general, project design features, physical deterrent and exclusion methods, avian avoidance procedures, bat avoidance procedures, training, and adaptive management.

Table A-1. Bird and Bat Avoidance and Minimization Measures

Number and Type	Avoidance and Minimization Measures
G-1 General Responsibilities	• The Proponent's Environmental Services Department will be responsible for implementing and overseeing all bird and bat AMMs and will designate one or more qualified individuals (i.e., biologists familiar with the birds and/or bats of western Nevada) to AMMs that call for an avian biologist or a qualified biologist. • In addition to the AMMs prescribed in the BBCS, all phases of the GLWP will be conducted in accordance with EMMs prescribed in the GLWP's Environmental Impact Statement, Eagle Conservation Plan, Raven Management Plan, and Biological Assessment/Biological Opinion. • Federally listed species that require specific training requirements to be qualified biologists applicable to surveys, research, and/or monitoring is required for any work involving a federally listed species, regardless of the AMMs included in this document. Specific requirements for federally protected species can be obtained from the USFWS.
PD-1 Project Design Features and APLIC-suggested practices	• The GLWP will be designed and constructed in accordance with the practices described by APLIC 2006 and APLIC 2012. • Project personnel will coordinate with federal ROW agencies, NDOW, and the USFWS for the implementation of protective design features. • Deflectors, line markers, and other APLIC-suggested measures designed to reduce bird collisions will be installed on transmission lines within 1,000 feet on either side of the Walker River, Carson River, Amargosa River, Las Vegas Wash, along Walker Lake, Mason Valley WMA, Perk Slough, and Joggles Slough. • Deflectors and line markers may also be utilized at other locations as identified during construction monitoring and during O&M when evaluating risk areas following review of monthly reporting during construction and annual reporting following construction. • The Proponent will coordinate with the federal ROW agencies, NDOW, and USFWS to identify any additional areas where measures to reduce bird collisions should be considered during pre-construction planning of the GLWP. • All flat surfaces of transmission tubular structures will be designed to include nesting and perch deterrents in special status species habitat (in Mojave desert tortoise habitat and Bi-State sage-grouse habitat). • Use of ultraviolet light (UV) line marking products will be considered in high-risk areas when/where there are concentrations of sandhill crane and Canada goose, such as the Walker River and Carson River corridors. Decisions regarding the use of UV light will be made in coordination with a qualified bat biologist. Additionally, other nonlethal avian deterrents, such as lasers (Blackwell et al. 2002; Werner and Clark 2006) may be considered for repelling birds and bats. • Any changes to the Project's design as requested by federal, state, local jurisdictions, and the Proponent will also be in accordance with APLIC-suggested practices. • Bats may also benefit from APLIC-suggested practices. Should bat-specific strategies to prevent collisions and electrocutions with powerlines and associated facilities be published during the course of the GLWP, these recommendations will be incorporated into Project design to the extent practicable.
PD-2 Project Design Features Artificial lighting	• Project design features to minimize impacts to birds and bats from artificial nighttime lighting include limiting permanent outdoor lighting at substations and telecommunications sites to areas required for operations, maintenance, safety, and security. • Outdoor lighting will be anti-glare, shielded, and directed downward to the extent possible.

Number and Type	Avoidance and Minimization Measures
	• Highly directional, light-emitting diode fixtures (or other fixtures that meet the criteria specified) will be used as appropriate. Switches or photocells will be used as appropriate on outdoor lighting to allow use of lighting only when needed. • Lighting techniques may include using directional lights that do not allow light to shine into the sky, screening lights, using timers and motion detectors so that lights are only on when necessary, and systems that minimize lighting to only meet functional requirements. • The use of non-flashing warning lights on transmission towers should be avoided to the extent practical, and only white or red flashing lights with regards to the minimum number of lights, minimum intensity (< 2,000 candela), and minimum number of flashes per minute (i.e., longest duration between flashes and "dark phase") should be used at night to reduce bird and bat collisions.
PDE-1 Physical Deterrents and Exclusions General	• Visual deterrents and exclusion methods, either on their own or in combination, will be used to discourage birds from nesting in disturbance areas. Examples of visual deterrents include predator decoys (e.g., plastic owls), reflective ribbon, and colored gravel. Use of visual deterrents must be approved by the applicable federal ROW agency. Potential impacts to other resources (e.g., applicable Visual Resource Management requirements, potential for visual deterrents to attract raven predators) will be considered. • Tarps will be used to cover equipment, stored materials including straw waddles, pipes, and partially constructed facilities where appropriate. To increase the effectiveness as a bird-nesting deterrent, tarps must completely enclose the covered items (i.e., no openings), be secured against strong winds, and must not open at the bottom as birds may gain access from the bottom. The Proponent will inspect tarps at least once per week to identify and repair any rips or gaps that could allow birds to pass through and to look for wildlife that may be trapped. If personnel find openings in placed tarps, they will inspect the covered item for trapped wildlife before re-securing them. If wildlife is observed inside or trapped in the mesh netting or tarps, onsite biological compliance monitors will be contacted immediately. During normal operations when monitors are not present at the Project site, the personnel who find the trapped wildlife will promptly contact the Proponent Environmental Services Department. Notification to the applicable federal ROW agency of any animal entrapment will be provided monthly in the Bird and Bat Monitoring Report. • Bird spikes, which typically consist of groupings of stainless steel or UV-resistant polycarbonate spikes, will be utilized to prevent birds from landing and gaining a foothold on structures such as substations and buildings, thereby discouraging nesting. • Perch and nesting deterrents will be installed on all distribution line structures and on transmission line structures located in Mojave desert tortoise habitat and Bi-State sage-grouse habitat. • Bird deterrents shall be installed, maintained, and removed according to product specifications by the Proponent, as directed by the avian biologist.
PDE-2 Physical Deterrents and Exclusions Unoccupied nest removal	• Certain unoccupied nests may be removed from disturbance areas to prevent renesting. Removal of unoccupied nests will adhere to the following procedures: o All existing raptor nests or other large nests found during preconstruction surveys will be preserved in place, if possible, or relocated if necessary. No relocation of in-use nests will occur, and no nests will be relocated until after coordination with the applicable federal ROW agency and the USFWS. o Unoccupied nests will be left undisturbed that will not place birds that may inhabit the nest at risk due to their location on electrical lines or infrastructure and are not located in a place that poses an electrical reliability and safety risk o Unoccupied raptor nests (excluding eagle nests) that may be impacted directly by Project activities may be removed once the avian biologist has confirmed unoccupied status. Following removal, the avian biologist will dismantle the nest and disperse the materials in the immediate area. o All burrows, holes, crevices, or other cavities located during pre-disturbance surveys of burrowing owl habitat will be thoroughly inspected by an avian biologist prior to disturbance, regardless of time of year. If no burrowing owls or other species (e.g., Mojave desert tortoise, which may only be determined by an authorized Mojave desert tortoise biologist) are found to be using the burrow, the burrow may be collapsed by a qualified biologist. Other non-protected species using burrows (e.g., rattlesnakes) will be relocated prior to collapsing burrows. o Colonial nesting birds (which include swifts, swallows, and pinyon jays) are highly vulnerable to disturbance and destruction of unoccupied nests during or near the nesting season. Outside the

Number and Type	Avoidance and Minimization Measures
	nesting season, the federal ROW agency and the USFWS will be consulted regarding the removal of colonial bird species' unoccupied and partially built nests. Unoccupied nests of colonial bird species may be removed or collapsed only with USFWS approval and by qualified biologists. ○ Once the avian biologist confirms a nest is unoccupied and does not belong to a listed species, unoccupied nests for birds other than listed species, raptors, and colonial birds may be removed. Removed nests will be immediately dismantled and scattered onsite. The USFWS does not need to be notified prior to removal of these unoccupied nests when they are removed in compliance with federal and state regulations. The location where nests were removed will be subsequently monitored by an avian biologist to detect any re-nesting attempts. • To avoid MBTA violations, unoccupied nests that are removed will not be collected or taken off-site.
AA-1 Avian Avoidance Procedures Temporal avoidance	• To avoid impacts to in-use bird nests, clearing, grubbing, removal, or modification of vegetation or other nesting substrates will occur outside the breeding season, to the extent practicable. Helicopter work, including take-off and landing sites, will also occur outside the breeding season when practicable. • The avian breeding season generally occurs from February 15 – August 31. The potential for early nesting species to be present within a given disturbance area will be determined by the avian biologist in advance of the proposed work and associated disturbance will be timed to accommodate early nesting species as needed. The Proponent will coordinate within the federal ROW agency and NDOW regarding area specific breeding seasons that vary geographically across the Project. • Projects conducted outside the avian breeding season will not be subject to pre-disturbance nest survey requirements, pending confirmation by the avian biologist; disturbance areas within burrowing owl habitat are subject to pre-disturbance burrowing owl survey requirements at all times of year.
AA-2 Avian Avoidance Procedures Spatial avoidance	• To avoid impacts to in-use bird nests, vegetation removal, equipment operation, helicopter work, and other disturbances will be limited to approved work areas. • To prevent direct watering of an in-use nest, care will be taken to avoid over-spraying water for dust control into nesting bird habitat.
AA-3 Avian Avoidance Procedures Nest Surveys	• During all phases of the GLWP including construction, O&M, and decommissioning when breeding season disturbance to areas that could support in-use bird nests (e.g., woody vegetation, grasslands and agricultural fields, structures such as bridges, cliffs, embankments) cannot be avoided, the Project will implement pre-disturbance nest surveys and protection protocols. • Prior to initiating disturbance, all vegetation and other nesting substrates that will be modified or removed during the breeding season must be surveyed for nests by an avian biologist. Surveys will also include all areas within 300 feet of physical disturbance. • Pre-disturbance nest surveys must be conducted a maximum of three days prior to disturbance and are valid for only three days. If three days from the time of the survey pass, the area must be surveyed again. • If any newly identified nests of endangered, threatened, or sensitive species are documented at any stage of project implementation, they must be reported to the federal ROW agency and the USFWS within 24 hours.
AA-4 Avian Avoidance Procedures Pre-Disturbance Nest Survey for Burrowing Owls	• Where ground-disturbing activities occur within suitable burrowing owl habitat, as determined by an avian biologist, a pre-construction burrowing owl survey will be conducted according to methodology described by the California Burrowing Owl Consortium[2] and the BLM Southern Nevada District[3]. Specifically, the disturbance area and a 250-foot buffer will be surveyed by an avian biologist for burrows, owls, and their sign by walking transects spaced no greater than every 100 feet apart. Surveys will be conducted within 30 days of the start of the proposed disturbance, and avoidance buffers will be established according to the buffers identified in Table A-1. • Planning level surveys to identify areas where burrowing owls are present may be conducted more than 30 days prior to disturbance, but an additional survey will need to be conducted within 30 days prior to disturbance to show burrowing owl absence.
AA-5 Avian Avoidance Procedures	• A pinyon jay nest survey will be conducted in suitable pinyon-juniper habitat during the pinyon jay breeding season (March 1 – May 30) prior to the planned activities.

Number and Type	Avoidance and Minimization Measures
Pre-Disturbance Nest Survey for Pinyon Jays	
AA-6 Avian Avoidance Procedures Determining Nest Activity	• In most cases, a nest is considered in-use as soon as construction of a new nest reaches the stage where an egg can be held in the nest or use of an existing nest commences. In most cases, a previously in-use nest becomes unoccupied when it no longer contains viable eggs and/or living young and is not being used by a bird as part of the reproductive cycle. Nest activity status will be determined using the following protocol: ○ Raptor nests are considered in use throughout periods of courtship and nest building, egg laying, incubation, brooding, fledging, and post-fledgling dependency. To determine the status of a raptor nest, an avian biologist will observe the nest for four consecutive hours over two successive days to determine if there is any activity at the nest site. If the avian biologist determines that the nest is unlikely to be in use based on these observations, the avian biologist will confirm whether the nest is unoccupied by viewing the nest contents. If the avian biologist is unable to directly view the nest contents due to safety concerns (e.g., nest located on energized transmission and distribution line structures), the Proponent will provide personnel to directly inspect the nest to determine its contents. The Proponent personnel will use equipment such as bucket trucks or drones to achieve a vantage point above the nest and will document the contents of the nest through video or photographs. Using the video or photographic documentation, the avian biologist will then confirm if the nest is in-use or unoccupied. ○ All burrows, holes, crevices, or other cavities located incidentally or during pre-disturbance surveys will be thoroughly inspected by an avian biologist for owls and fresh sign within 30 days prior to disturbance. Planning level surveys to determine occupancy of potential burrowing owl burrow sites may be conducted more than 30 days prior to disturbance, but an additional survey will need to be conducted within 30 days prior to disturbance to show burrowing owl absence. If fresh sign is observed but no owls are present, the avian biologist will conduct additional inspections until the occupancy status of the burrow can be determined. • To determine if a nest is unoccupied, avian biologists will be required to either observe the nest activity, or directly view the nest contents: ○ An avian biologist will observe the nest of interest for a required minimum of one uninterrupted hour in suitable conditions while situated at an appropriate distance from the nest to prevent avian avoidance of the nest due to human presence; or ○ An avian biologist may confirm a nest's status by viewing its contents. Direct observations of nest contents will be conducted in such a way as to minimize disturbance to nesting birds. For example: – Nest observations will be conducted as quickly as possible and will avoid flushing incubating or brooding adults. – The biologist and qualified observers will take care to avoid walking the same path on each visit to a known nest to avoid forming trails that potential predators may use to access the nest. – To prevent force-fledging, nest observers will avoid approaching nests when nestlings are near the fledgling stage.
AA-7 Avian Avoidance Procedures In-Use Nest Protection	• All in-use nests, including those found outside the breeding season, will be protected until the nest is no longer in use. Known raptor nests located near disturbance areas (as determined by distances specified in Table A-1) will also be protected. Nests of federally listed species and eagle nests are protected at all times regardless of activity status. • When an in-use nest is found, a standard species-specific activity exclusion buffer (see Table A-1) will be implemented. Buffer boundaries will be clearly marked at the perimeter. To prevent alerting predators to in-use nests, buffer markings should be placed in a manner to clearly mark the buffer, but not draw attention to the nest itself. • An avian biologist will monitor protected nests periodically during adjacent Project activities to determine nest status and monitor for signs of stress in attending birds. Nest monitoring can be discontinued when nesting activity ceases (e.g., nest failure, nestlings fully fledged, etc.) or project disturbances in the vicinity of the nest have ended, whichever occurs first. All nest failures of special status species should be reported to the applicable ROW agency within 24

Number and Type	Avoidance and Minimization Measures
	hours. Once a nest has become unoccupied, flagging and all other buffer marking will be removed by project personnel. • During Project activities conducted outside of the buffer area, an avian biologist will periodically monitor protected nests to determine their status and monitor them for signs of stress in attending birds. • The avian biologist may stop work and/or increase buffer distances if the biologist believes project disturbances or environmental conditions are negatively impacting the success of the nest. Any increases in the nest buffer distances will be implemented immediately by the avian biologist and will be reported in the monthly Bird and Bat Monitoring Report. • The avian biologist may reduce buffer distance once the stage of nesting activity is determined, the temperament of the birds is understood, and the biologist is certain the project disturbance will not negatively impact nest success. Any reductions to nest buffer distances for BLM Sensitive and federally listed species must be submitted by the avian biologist in writing to the federal ROW agency (and USFWS if a federally listed species) in the form of a Nest Buffer Justification. Requests to reduce nest buffer distances will be reviewed on a case-by-case basis, and the agency will respond to the request within 48 hours. If the agency/USFWS requests additional information from the avian biologist before implementing a buffer reduction, the biologist would provide it prior to reducing the size of any buffer. If the avian biologist does not receive a response from the presiding agencies within the allotted time frames, the avian biologist would use field observations and bird behavior to determine an appropriate buffer reduction and report the new size of the implemented buffer to the agency/USFWS within 24 hours of implementation (however, nest buffer reductions should not be applied to federally listed species without USFWS approval). The biologist would continue to monitor nests with reduced buffers. If, after buffer reduction, Project activities cause or contribute to nesting birds exhibiting stress-related behavior, Project personnel would reinstate the initial buffer distance and the avian biologist would reevaluate the nesting situation. Once initial Project disturbance has occurred and the Project is underway, non-listed species that initiate nesting in areas adjacent to active work areas, access roads, or within operating yards and substations do not require activity exclusion buffers—as long as there has been no lull in Project activity. This is because the birds begin to nest at the already-increased Project activity level. In the case where an avian biologist determines one cannot assume nesting birds are acclimated to the Project activity, such as when there are major changes to Project activity levels or activity types, the biologist may determine it is appropriate to conduct pre-disturbance surveys and/or to implement activity exclusion buffers. • Extreme weather can increase the likelihood of nest failure. Combining extreme weather with stress from nearby Project activity may cause an otherwise successful nest to fail. On unseasonably hot or cold days, Project personnel may need to temporarily increase species-specific buffers. An attending avian biologist would promptly implement any required increases in nest buffers and would report them in the monthly Bird and Bat Monitoring Report. • Pinyon jay nest sites within 0.7-mile of the nest site and associated foraging habitat within the 0.7-mile buffered area will be protected from direct and indirect disturbances that may lead to colony abandonment. No disturbance will occur within the buffer during the pinyon jay breeding season (March 1 – May 30). No vegetation will be removed from the buffer area during any time of year, to the extent practicable. If complete avoidance within a 0.7-mile buffer is not practicable, notification will be provided to the federal ROW agency and disturbance within the buffer will be limited to the minimum necessary. • In-use nests, excluding eagle nests, may be destroyed in instances of emergency situations only. An emergency situation is defined as the safety of the migratory birds, nests, or eggs is at risk; or the migratory birds, nests, or eggs pose a threat of serious bodily injury or a risk to human life, including a threat of fire hazard, mechanical failure, or power outage. • In-use and unoccupied eagle nests shall not be removed at any time without an incident specific eagle take permit. • The Proponent shall not remove federally listed species nests without prior coordination and approval from the applicable federal ROW agency and the USFWS.
AA-8	• In-use nests discovered during the pre-disturbance survey and proposed site-specific protective measures (e.g., buffer distances) will be included in an initial Bird and Bat Monitoring Report

Number and Type	Avoidance and Minimization Measures
Avian Avoidance Procedures Bird and Bat Monitoring Report	provided to the applicable ROW agencies at least 48 hours prior to construction. Once construction starts, an updated report will be submitted monthly to the agencies. The report will provide a summary of each nest identified including species, location, proximity to active disturbance and disturbance type, nest status and stage with pertinent transition dates, buffer information, nest outcome (success or failure), and dates and rationale for initiation and discontinuation of monitoring. For failed nests, determination of the cause of failure should be reported along with supporting evidence for the determination (photos, nest activity prior to destruction, Project activity prior to and at the time of failure, etc.). The Bird and Bat Monitoring Report will also include the number, location, species, unoccupied status rationale, and removal justification for all unoccupied nests that are removed. In-use nests in the Project vicinity, but outside of prescribed buffer distances, do not need to be reported.
BA-1 Bat Avoidance Procedures Pre-disturbance Roost Survey	• A qualified bat biologist will conduct preliminary daytime surveys for bat roosts and hibernacula within suitable habitat (e.g., cliffs and canyons, abandoned mines and structures, forested areas) that occurs within 150 feet of physical disturbance associated with the GLWP. Specific areas to be surveyed will be identified using remote data and existing information such as known roost locations in coordination with the federal ROW agencies, NDOW, and the USFWS (as appropriate). • Preliminary surveys will be conducted prior to the final Project siting and design so that bat roost sites and hibernacula may be avoided, where feasible, during construction of the GLWP. Micro-siting of Project facilities will avoid direct impacts to roost sites and hibernacula, where feasible. Preliminary surveys will also be conducted during O&M and decommissioning prior to new disturbance within suitable bat roosting habitat. • Survey reports documenting the surveys, their results, and recommendations must be provided to the applicable ROW agencies for approval prior to construction. • Care will be taken to minimize survey-related disturbance to bats during the hibernation and maternity seasons[5], as human disturbance may cause roost abandonment as well as reduced energy reserves that lower survival in hibernating bats. • If potential roost sites are identified during preliminary daytime surveys, supplemental dusk-emergence surveys will be conducted to determine the species, number of bats present, and roost type. Some roost sites may require additional visits to determine seasonal patterns of roost site occupancy. To determine seasonal use of potential roost sites, daytime visits will be conducted during the spring/summer maternity season, fall and spring migration, and winter hibernation[5], as needed based on elevation, geographic location, habitat type, and species likely to be present. Specific seasonal survey requirements for potential roost sites will be determined by a qualified bat biologist and in collaboration with the federal ROW agency. • To identify new potentially active bat roosts and hibernacula for bats that may have moved in since the preliminary bat surveys and may be impacted by the GLWP, a qualified bat biologist will conduct daytime surveys in suitable habitat (e.g., forests, cliffs, canyons, abandoned mines and structures) within 150 feet of planned ground disturbance activities. Surveys must be conducted within a maximum of three days prior to site disturbance and are valid for only three days. These surveys may be conducted in conjunction with the pre-disturbance nest surveys.
BA-2 Bat Avoidance Procedures Avoidance of Active Roosts	• Whenever possible, avoidance buffers will be determined and implemented around bat roost sites and hibernacula that are found within or adjacent to the disturbance areas for the project (Table A-2). Buffer distances will be determined by a qualified bat biologist in coordination with the federal ROW agency. Caltrans[4] (2019) considers a bat spatial avoidance buffer of 150 feet sufficient to avoid most disturbance to day roosting bats. • Temporary disturbances such as human activity, equipment operation, pedestrian and vehicular travel within the buffer will be excluded during seasons when the roost is occupied. Permanent disturbances such as vegetation removal and earthwork will be excluded from the buffer at all times, where feasible. Buffer boundaries will be clearly marked at the perimeter and should be placed in a manner to clearly mark the buffer, but not draw attention to the roost. • A bat biologist will monitor protected roosts periodically during adjacent Project activities to determine activity status and monitor for signs of indirect impacts to bats. The bat biologist may stop work and/or increase buffer distances if the biologist believes Project activities are negatively impacting the roost. If a roost is abandoned or otherwise impacted by adjacent Project activities, the applicable ROW agencies will be notified within 24 hours. Buffer distances

Number and Type	Avoidance and Minimization Measures
	may be reduced in certain circumstances according to the protocol described for avian nest buffer distances in AMM AA-6 In-Use Nest Protection. • Roost monitoring can be discontinued when the roost becomes or Project activities in the vicinity of the roost have ended, whichever occurs first. Once a roost has become inactive, flagging and all other buffer marking will be removed by Project personnel.
BA-3 Bat Avoidance Procedures Roost Monitoring Report	• A roost-monitoring report will be provided to applicable ROW agencies on a monthly basis to allow agencies to track the success of AMMs and provide opportunity for adaptive management. The report will provide a summary of each roost monitored including species, roost type, location, proximity to active disturbance and disturbance type, reaction of bats of adjacent activities, buffer information, and dates and rationale for initiation and discontinuation of monitoring.
BA-4 Bat Avoidance Procedures Remedial Actions	• If direct impacts to bat roost sites and/or hibernacula cannot be avoided, the Proponent will coordinate with the applicable ROW agencies to determine a course of action to minimize impacts. Remedial actions may vary by species and location and could include seasonal restrictions on disturbance, constructing or installing alternate roost sites, installing exclusionary devices, and restoring roost characteristics after work is complete, among others.
T-1 Bat Avoidance Procedures Personnel Training Program	• Prior to the start of construction and/or operations and maintenance activities, all supervisory and onsite personnel will attend a Bird and Bat Preconstruction Awareness Meeting presented by a qualified biologist. The meeting will cover topics discussed in the BBCS including applicable regulations, use of deterrents, avian and bat avoidance procedures, location and reporting of avian and bat mortalities and injuries, and roles and responsibilities relating to the protection of birds and bats. All new project personnel will attend a Bird and Bat Awareness Training prior to beginning work.
AM-1 Adaptive Management Review and Update of Conservation Measures	• The Proponent, in cooperation with the federal ROW agencies, USFWS, and NDOW, will periodically review the successes and failures of bird and bat AMMs, to determine the effectiveness of conservation strategies such as physical deterrents, nest and roost surveys, and buffer distances. These reviews would occur immediately following the monthly monitoring reports during construction activities and immediately following the annual reports during O&M (refer to Section 10 for more details on reporting). Any deficiencies identified during reviews will be addressed by adapting protocols or materials and monitoring the effectiveness of any changes. • Project personnel would assess the effectiveness of bird and bat AMMs using data collected during the pre-construction/pre-disturbance surveys conducted prior to and during construction and comparing those results with information and data collected during the O&M annual inspections and O&M reporting. The Proponent will provide an annual report summarizing avian and bat mortalities and injuries recorded along the GLWP to the federal ROW agencies. Information on avian and bat mortalities and injuries will be used to identify problem areas where corrective actions will be taken to prevent future bird and bat collisions and electrocutions. • The BBCS will be revised and updated as innovative solutions are developed, agency guidance is adjusted, new information is published, and conditions of the Project warrant.

Table Acronyms: AA – Avian Avoidance; AM – Adaptive Management; AMM – Avoidance Minimization Measure; APLIC - Avian Power Line Interaction Committee; applicable federal ROW agencies – BLM, BIA, and NPS; BA – Bat Avoidance; BBCS – Bird and Bat Conservation Strategy; BLM – Bureau of Land Management; Caltrans – California Department of Transportation; G – General, GLWP – Greenlink West Transmission Project; PD – Project Design; Proponent – Nevada Power Company and Sierra Pacific Power Company (NV Energy); O&M – Operations and maintenance; PDE – Physical Deterrent and Exclusion; ROW – right-of-way; T – Training; USFWS – United States Fish and Wildlife Service; UV – Ultraviolet; WMA – Wildlife Management Area

Table Sources and Notes: [1]Avian Power Line Interaction Committee (APLIC 2006). Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C. and Sacramento, CA. Accessed December 2022 at: https://www.aplic.org/uploads/files/2613/SuggestedPractices2006(LR-2watermark).pdf. and APLIC (APLIC 2012). Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Edison Electric Institute and APLIC. Washington D.C. Accessed November 2022 at: https://www.aplic.org/uploads/files/15518/Reducing_Avian_Collisions_2012watermarkLR.pdf.

[2]California Burrowing Owl Consortium. 1993. Survey Protocol and Mitigation Guidelines. 15 pp.

[3]Bureau of Land Management. 2019. Southern Nevada Nesting Bird Management Plan. 21 pp.

[4]California Department of Transportation [Caltrans]. (2019). Caltrans Bat Mitigation: A Guide to Developing Feasible and Effective Solutions. In Collaboration with: HDR, Inc., Sacramento, CA. Updated October 2021. 212 pp. H. T. Harvey & Associates. Sacramento, California.

[5]Hibernation season usually occurs in the winter from late fall through early spring. Maternity season timing varies among different climatic regimes, with hot desert areas ranging from March to June and cold climate areas from May to August.

Table A-1. Spatial Avoidance Distances for Nesting Bird Species

Avian Group	Example Species	Horizontal Buffer
Hummingbirds	Anna's hummingbird, Costa's hummingbird	100 feet
Passerines (bridge, culvert, building, understory, and thicket nesters)	Say's phoebe, house finch, spotted towhee, Brewer's sparrow, sagebrush sparrow, northern rough-winged swallow, gray vireo, green-tailed towhee, black-chinned sparrow, American goldfinch	100 feet
Passerines (cavity, crevice, ground, open habitat, shrub, tree, open scrub nesters)	Ash-throated flycatcher, canyon wren, juniper titmouse, horned lark, Cassin's kingbird, verdin, blue-gray gnatcatcher, black-throated sparrow, house finch, black-tailed gnatcatcher, rock wren, Bewick's wren, white-breasted nuthatch, western meadowlark, western kingbird, bushtit, black-throated gray warbler, great-tailed grackle, northern mockingbird, Brewer's blackbird	150 feet
Passerines (shrub, tree, open scrub nesters)	Loggerhead shrike, Bendire's thrasher, phainopepla, lesser goldfinch, cactus wren, Leconte's thrasher, Scott's oriole	300 feet
Doves	Mourning dove	150 feet
Nightjars	Lesser nighthawk, common poorwill	150 feet
Quail	Gambel's quail	150 feet
Corvids	Common raven	150 feet
Corvids (species-specific)	Pinyon jay	0.7 mile
Waterfowl	Canada goose, bufflehead, cinnamon teal, common goldeneye	150 feet
Woodpeckers	Ladder-backed woodpecker	150 feet
Raptors	American kestrel, barn owl, great horned owl, western screech-owl	200 feet
Raptor (burrow occupier)	Burrowing owl[1,2]	250 feet[2]
Raptors	Northern harrier, Swainson's hawk, sharp-shinned hawk, flammulated owl, Cooper's hawk, merlin, barred owl	400 feet
Raptors	Red-tailed hawk[3], turkey vulture	0.33 mile
Raptor (species-specific)	Prairie falcon	0.5 mile
Raptors	Peregrine falcon, ferruginous hawk	1.0 mile
Shorebirds	Killdeer	200 feet
Shorebirds (species-specific)	Long-billed curlew	600 feet
Swifts	White-throated swift	200 feet
Roadrunners	Greater roadrunner	300 feet

[1] If avoidance of burrowing owl burrow sites is not practicable, burrowing owls may be relocated by a qualified company, agency, or organization possessing the necessary USFWS permits.
[2]Buffers apply to all occupied burrows regardless of nesting status. Burrows may be occupied year-round.
[3]Buffer may be reduced to 250 feet for nests on adjacent power lines within BLM-designated utility corridors.
[4]Buffer may be reduced to ½ mile if nest is not within line-of-sight of project activities. For additional information on eagle protection, see the GLWP Eagle Conservation Plan (NV Energy 2022).
Table Source: (BLM 2019)

Table A-2. Spatial Avoidance Buffer Distances for Day- and Night-Roosting Bats by Activity Type

Bat species	Construction Trucks and Heavy Equipment	Small Vehicles	Drilling, Trenching, and Small Equipment	Light Source without Shielding	Pedestrian Traffic	Stationary Diesel/ Gasoline Exhaust Sources
Pallid bat, Townsend's big-eared bat	120	90	150	400	65	250
Other bat species	100	65	150	300	65	250
Yuma myotis, Brazilian (Mexican) free-tailed bat	90	65	150	250	65	250

Table Notes: All units are in feet.
Table Source: Caltrans 2019