United States Department of the Interior
Bureau of Land Management

Preliminary Draft

Piute-Eldorado Valley Area of Critical Environmental Concern Management Plan

PREPARING OFFICE

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Bureau of Land Management
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1.0 Introduction

1.1 Overview

This Piute-Eldorado Valley Area of Critical Environmental Concern (ACEC) Management Plan (ACEC Management Plan) describes management processes and actions to address problematic ecological trends in the Mojave Desert Ecoregion and Bureau of Land Management (BLM) administered lands of the Piute-Eldorado Valley ACEC (ACEC or Planning Area; Figure MP-1). This ACEC Management Plan employs a strategy of improving, enhancing, or augmenting the condition of a specific set of conservation elements while contributing to the conservation of the federally threatened Mojave Desert tortoise (*Gopherus agassizii*), the impetus for designation of the ACEC in 1998.

The focal resources for this ACEC Management Plan are as follows: soils, vegetation, wildlife (including special status species), and visual quality or viewshed. These resources are integral to, or in the case of visual quality, indicative of ecosystem functions, services and processes including change agents such as development, climate change, wildfire and invasive plants that underlie problematic conservation trends in the Mojave Desert. They are also the resources impacted by solar energy projects in the Dry Lake Solar Energy Zone (SEZ) north of Las Vegas. In 2017, the ACEC was selected as a site for offsetting impacts to these resources using funds provided by solar energy developers.

Mitigation policies, a Regional Mitigation Strategy for the Dry Lake SEZ, Technical Note 444 (Regional Mitigation Strategy; BLM 2014), and the Implementation Plan for the Regional Mitigation Strategy (SEZ Implementation Plan; BLM 2015) guide the use and accountability of mitigation funds to ensure the intended offset of impacts through the improvement of resource conditions or problematic regional trends is achieved. Other sources of funds may be used for implementation of this ACEC Management Plan, but any improvements in resource or ecological conditions will not be accounted for as Dry Lake SEZ mitigation actions.

BLM will select a Third Party, which will be a contractor or Non-Government Organization, to support resource protection, restoration, and community outreach actions within the ACEC. A Third Party partner is necessary to assist in planning and implementation for the mitigation funding received from the SEZ in the ACEC. The overall goal of the SEZ Implementation Plan is to improve the quality and quantity of ecosystem services provided in the ACEC (BLM 2015).

LINCOLN COUNTY

NYE COUNTY

CLARK COUNTY

INYO COUNTY

SAN BERNARDINO COUNTY

MOHAVE COUNTY

NEVADA

ARIZONA

CALIFORNIA

Las Vegas

North Las Vegas

Henderson

Boulder City

Pahrump

Mesquite

Indian Springs

Nellis Air Force Base

Desert National Wildlife Refuge

Moapa River Indian Reservation

Valley of Fire State Park

Lake Mead National Recreation Area

Lake Mead

Lake Mohave

Bullhead City

Kingman

Lake Havasu City

Mohave Valley

Chemehuevi Reservation

Fort Mojave Reservation

Dolan Springs

Sandy Valley

Las Vegas Indian Colony

Tule Springs Fossil Beds

Red Rock Canyon

Sunrise Manor

Spring Valley

Paradise

Mojave National Preserve

Sloan Canyon

Tonopah Test Range

Marine Corps Agcc Twentynine Palms

INDIAN SPRING VALLEY

LAS VEGAS VALLEY

PAHRUMP VALLEY

SPRING MOUNTAINS

MOAPA VALLEY

VIRGIN VALLEY

MOODY MOUNTAINS

VIRGIN MOUNTAINS

WHITE HILLS

EL DORADO MOUNTAINS

EL DORADO VALLEY

BLACK MOUNTAINS

DETRITAL VALLEY

MCCULLOUGH RANGE

KINGSTON RANGE

IVANPAH VALLEY

SHADOW VALLEY

NEW YORK MOUNTAINS

PIUTE VALLEY

PROVIDENCE MOUNTAINS

DEVILS PLAYGROUND

CASTLE MOUNTAINS

BRISTOL MOUNTAINS

SACRAMENTO MOUNTAINS

PIUTE MOUNTAINS

OLD WOMAN MOUNTAINS

CHEMEHUEVI MOUNTAINS

CHEMEHUEVI VALLEY

MOHAVE MOUNTAINS

CERBAT MOUNTAINS

COTTONWOOD VALLEY

SACRAMENTO VALLEY

HUALAPAI VALLEY

WARD VALLEY

TURTLE MOUNTAINS

VIDAL VALLEY

CADIZ VALLEY

PULLEN MOUNTAINS

FENNER VALLEY

Piute-Eldorado ACEC Management Plan EA

Piute-Eldorado ACEC Boundary

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FIGURE MP-1
Regional Location

1.2 Background

1.2.1 Dry Lake SEZ Regional Mitigation Strategy

In 2012, the BLM and the U.S. Department of Energy published the *Final Programmatic Environmental Impact Statement (PEIS) for Solar Energy Development in Six Southwestern States* (Solar PEIS). The Regional Mitigation Strategy (BLM 2014) is the product of a BLM pilot project based on the mitigation framework created by the Solar PEIS. The strategy considers compensatory mitigation in a landscape context and includes identification of mitigation goals and objectives, as well as the selection of mitigation actions based on the degree of impact and regional conditions and trends. BLM will hold virtual meetings (two) on June 22, 2021 and June 24, 2021 for the interested public, including Dry Lake SEZ stakeholders, to review the preliminary draft ACEC Management Plan goals, objectives, measures, and indicators prior to initiation of the National Environmental Policy Act (NEPA) process. BLM will incorporate relevant comments and suggestions from the public meetings into the revised ACEC Management Plan.

1.2.2 Dry Lake SEZ Implementation Plan

Following the Regional Mitigation Strategy, the BLM Southern Nevada District developed the SEZ Implementation Plan (BLM 2015). The SEZ Implementation Plan identifies the ACEC as the preferred recipient site for compensatory mitigation for development of the Dry Lake SEZ based on the ability of the site to meet durability, management timing, and additivity mitigation goals.

The ACEC land management designation for the ACEC provides the primary durability as a mitigation recipient site. The ACEC designation is incorporated into the current Las Vegas Field Office Resource Management Plan (LVFO RMP; BLM 1998). The timeline for implementation of mitigation activities is consistent with current management.

Recipient sites must also have opportunities for additivity (enhancing or improving conservation elements that would not otherwise occur without mitigation). BLM's 2013 Rapid Ecoregional Assessment (REA) for the Mojave Desert Ecoregion (Comer et al. 2013) was used to evaluate the ACEC for its additivity potential. The REA intersected low renewable energy potential areas with the Landscape Condition Model results to assess overall suitability of Mojave Desert areas to serve as mitigation recipient sites (Figure MP-2). As shown in Figure MP-2, all shaded areas have low renewable energy development potential. Green shaded areas are likely to be in very good ecological condition but may not meet requirements if restoration must be conducted for mitigation because these areas are already in good condition, therefore, there is less additivity potential. Yellow areas have intermediate condition and may represent the most suitable mitigation opportunities where restoration is required. Red shaded areas are likely to be in very poor condition (urban, transportation, developed) and thus may not offer suitable mitigation options. Overall, the REA depicts ample areas in good ecological condition, but with potential for enhancing conservation elements.

Piute-Eldorado ACEC Management Plan EA

Piute-Eldorado ACEC Boundary

Low Renewable Energy Potential and Opportunities for Mitigation

5 - 10	51 - 60
11 - 20	61 - 70
21 - 30	71 - 80
31 - 40	81 - 90
41 - 50	91 - 100

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FIGURE MP-2

Rapid Ecoregional Assessment Mitigation Suitability for the Planning Area

The SEZ Implementation Plan also incorporates criteria for the selection of recipient sites that were developed in the Regional Mitigation Strategy (BLM 2014). A summary of the ACEC biophysical and conservation setting and how these satisfy the SEZ Implementation Plan criteria are described below:

1) *The recipient site is within the LVFO and within the same sub-region and landscape context as the Dry Lake SEZ:* The 328,242-acre ACEC is located in the Piute and Eldorado valleys between Boulder City and the Nevada-California state line in Clark County, Nevada (see Figure MP-1). The ACEC encompasses the unincorporated towns of Searchlight, Cal-Nev-Ari, and Palm Gardens, and borders the town of Laughlin (Figure MP-3). The ACEC encompasses the Wee Thump Wilderness and abuts two other wilderness areas (see Figure MP-3).

   The ACEC boundary overlaps with these wilderness boundaries in several places along the eastern and western portion of the ACEC. To the south and east, the ACEC is bounded by large swaths of public land including the Mojave National Preserve, Castle Mountains and Mojave Trails National Monuments, and Lake Mead National Recreation Area. The Boulder City Conservation Easement and several private parcels lie adjacent to the ACEC (see Figure MP-3). The Dry Lake SEZ is located within the Mojave Desert Ecoregion approximately 50 miles north of the ACEC within the BLM-administered lands of the LVFO (Figure MP-4).

2) *The recipient site contains similar vegetation communities; in particular, the same Creosote-Bursage vegetation community as the Dry Lake SEZ:* As shown in Figure MP-5, the Creosote Bush-White Bursage community within the ACEC is the dominant vegetation community. This vegetation community covers approximately 213,371 acres, or approximately 66 percent of the ACEC.

3) *The recipient site is within desert tortoise critical habitat. It was intended that the Dry Lake SEZ regional mitigation would indirectly benefit conservation recovery efforts for the desert tortoise:* In 1998, the BLM designated the ACEC to preserve critical habitat for the Mojave Desert tortoise. As shown in Figure MP-6, approximately 87 percent of the ACEC consists of the Piute-Eldorado Desert Tortoise Critical Habitat Unit. This Critical Habitat Unit extends to the north, south, and east of the ACEC, and the Ivanpah Critical Habitat Unit is located to the west in California. The importance of the ACEC as desert tortoise habitat was reinforced in 2010 in an action plan for BLM's Mojave Desert Initiative. This initiative prioritized critical habitat for desert tortoise in Arizona, Nevada, and Utah for fire suppression and restoration activities to address extensive and increasing risk of wildfire and conversion to invasive annual grass ecosystems. Mojave Desert Initiative funding was ultimately used for work in other priority areas and no funding was available for the ACEC critical habitat. Risk of wildfire and conversion to invasive annual grass ecosystems remains a threat to desert tortoise within the ACEC and funding for fire suppression and restoration activities are still needed.

North McCullough
Eldorado Wilderness
Eldorado
Boulder City Conservation Easement
South McCullough
Highland Range Crucial Bighorn Habitat
Ireteba Peaks
Ireteba Peaks Wilderness
Wee Thump Joshua Tree
Lake Mead National Recreation Area
Nipton
Searchlight
Nellis Wash Wilderness
Mojave Wilderness
Castle Mountains National Monument
Cal-Nev-Ari
Mojave Wilderness
Spirit Mountian
Bridge Canyon Wilderness
Mojave Wilderness
Mojave National Preserve
Mojave Trails National Monument
Dead Mountains Wilderness

Piute-Eldorado ACEC Boundary
Boulder City Conservation Easement
Bureau of Land Management
BLM Wilderness Area
National Park Service
NPS Wilderness
Bureau of Reclamation
State
Private

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FIGURE MP-3
Land Use within and Surrounding the Piute/Eldorado ACEC

NEVADA
CALIFORNIA

NEVADA
ARIZONA

ARIZONA
CALIFORNIA

Piute-Eldorado ACEC Management Plan EA

- Piute-Eldorado ACEC Boundary
- Las Vegas Field Office Boundary
- BLM Dry Lake Solar Energy Zone
- Mojave Desert Ecoregion

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FIGURE MP-4
Mojave Desert Ecoregion

Piute-Eldorado ACEC Management Plan EA

Piute-Eldorado ACEC Boundary

Vegetation Communities

- Developed-Low Intensity
- Inter-Mountain Basins Semi-Desert Shrub-Steppe
- Mojave Mid-Elevation Mixed Desert Scrub
- North American Warm Desert Bedrock Cliff and Outcrop
- North American Warm Desert Riparian Systems
- North American Warm Desert Sparsely Vegetated Systems
- Sonora-Mojave Creosotebush-White Bursage Desert Scrub
- Sonora-Mojave Mixed Salt Desert Scrub
- Other

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FIGURE MP-5
Vegetation Communities within the Planning Area

Ivanpah Unit

Piute-Eldorado Unit

Piute-Eldorado ACEC Management Plan EA

Piute-Eldorado ACEC Boundary

Desert Tortoise Critical Habitat

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FIGURE MP-6

Mojave Desert Tortoise Designated Critical Habitat

4) *The recipient site provides habitat for a similar suite of general wildlife, special status wildlife, and rare plants:* Although critical habitat for the desert tortoise is the resource value that supported the original ACEC designation, other sensitive species, both plants and animals, benefit from the designation. These include the rosy two-toned penstemon (*Penstemon bicolor* ssp. *roseus*), desert bighorn sheep (*Ovis canadensis nelsoni*), and other species that have state, county, or Federal special status. Figure MP-7 depicts habitat for desert bighorn sheep, a species common to the Dry Lake SEZ and the ACEC. Yellow two-toned penstemon (*Penstemon bicolor* ssp. *bicolor*) also occurs within the ACEC.

5) *The recipient site contains a higher visual resource management class than the Dry Lake SEZ so that improvements provided by regional mitigation would result in improvements to a higher visual resource management class at the recipient site:* The SEZ is an area of low scenic quality, impacted by industrial, transportation, energy, municipal and other land uses. The majority of the SEZ has been designated as Visual Resource Management (VRM) Class III (approximately 90 percent) with the remainder designated as VRM Class IV (approximately 10 percent). The ACEC is managed under two primary VRM classes, Class II and Class III. The ACEC area has a diverse scenic quality, with the Highland Range and the portions of the ACEC in the McCullough Mountains containing exemplary scenic qualities due to dramatic relief, rugged nature of the landscape, and variation in color and texture. Overall, the ACEC has a higher level of visual scenic quality and less visual disturbance than the SEZ.

6) *The proposed mitigation site and conservation actions must be in conformance with the Las Vegas RMP:* The emphasis of the LVFO RMP is to protect unique habitats for threatened, endangered, and special status species while providing areas for community growth, recreation, mineral exploration and development, and other resource uses. In addition, ACEC management objectives include the following: manage a sufficient quality and quantity of desert tortoise habitat, which, in combination with tortoise habitat on other Federal, state, and private land, will meet recovery plan criteria; and maintain functional corridors of habitat between ACECs to increase the chance of long-term persistence of desert tortoise populations within the recovery unit. As outlined in the Regional Mitigation Strategy (BLM 2014), LVFO RMP goals and objectives relevant to the Dry Lake SEZ mitigation are for desert tortoise, special status plant, and animal habitat management, ecosystem loss, and visual resources management. This ACEC Management Plan addresses the SEZ mitigation requirements and conform to the LVFO RMP by restoring disturbed areas of desert tortoise and other special status species habitat, improving tortoise habitat connectivity by modifying and installing culverts, improving visual quality by reducing linear and non-linear disturbances (reducing landscape scars), and developing weed management and monitoring plans to reduce ecosystem loss.

Highland Range Crucial Bighorn Habitat

Piute-Eldorado ACEC Management Plan EA

- Piute-Eldorado ACEC Boundary
- Occupied Desert Bighorn Sheep Habitat
- Highland Range Crucial Bighorn Habitat

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NATIONAL SYSTEM OF PUBLIC LANDS
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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FIGURE MP-7

Desert Bighorn Sheep Habitat within the Planning Area

Multi-party stakeholder work groups participating in the development of the SEZ Implementation Plan made a number of recommendations in addition to the development of an ACEC Management Plan. These included the creation of implementation and monitoring plans for wildfire, noxious weeds, and restoration mitigation actions. These components are incorporated into the ACEC Management Plan and described in Sections 4 and 7.

The SEZ Implementation Plan outlines a phased approach to staffing, planning, and coordination necessary to implement mitigation. It also describes suitable projects. The phases, action items and guidance for developing projects are:

Phase 1

- *Hire a project manager.* The project manager develops and prepares planning documents; manages, collects, and processes baseline data; coordinates with the BLM recreation and National Operations Center (NOC) staff; prepares and manages contracts; and develops and coordinates mitigation and monitoring objectives with stakeholders and incorporates climate change models.
- *Hire a park ranger*. Duties include collecting initial baseline data; engagement in visitor contact and being the primary public contact for the ACEC; patrolling and monitoring the ACEC; managing the SEZ Implementation Plan; overseeing and managing the collection of monitoring data; and performing other implementation activities.
- *Employ off-season fire crews*. Duties include logging invasive weed occurrences on major roads and washes; completing route inventory baseline data collection; and comparing new route inventory data and providing maps.
- *Conduct Off-site Mitigation Projects.* Additional impacts from the Dry Lake SEZ development to the cultural viewshed and migratory birds were later discovered. Two projects were described in the SEZ Implementation Plan to mitigate these impacts and an additional two projects were developed to mitigate biological soil crust and rosy two-toned penstemon habitat loss.

Phase 2

- *Select a Third Party organization (Third Party).* The Third Party (contractor/non-governmental organization) will implement the Dry Lake SEZ Implementation Plan and the ACEC Management Plan.
- *Prepare and Implement a Community Outreach Plan.* The SEZ Implementation Plan specifies Third Party use of evidence-based strategies to prepare the plan for review by the BLM and other interested stakeholders. The plan will address education, social media, visitor contacts, and printed materials for use in kiosks at a minimum.
- *Establish Measurable Criteria.* The Third Party, in coordination with the BLM NOC and Southern Nevada staff, will develop statistically sound metrics or indicators to quantify mitigation uplift for criteria associated with the target conservation elements.
- *Incorporate Existing Data and Methods*. Use Southern Nevada District Office (SNDO) Land Health Assessment Program long-term vegetation monitoring data and methods and other information to develop management objectives, indicators, and assessment protocols.
- *Develop an Effectiveness Monitoring Plan*. The Third Party will develop and implement a 30-year monitoring plan to measure and track effectiveness and quantify the amount of

uplift to the targeted conservation elements for approval by BLM (SNDO, Nevada State Office, and NOC). The plan will include management questions, monitoring goals, measurable monitoring indicators, sampling schema, analysis, reporting and adaptive management approaches.

- *Conduct Annual Meetings*. The Third Party will coordinate and conduct meetings with the BLM and the interested public, agencies, and stakeholders to discuss progress and accomplishments.

Phase 3

- *Implement Restoration Actions*. Full implementation of restoration actions.
- *Begin Law Enforcement Patrols*. Law enforcement would start making strategic patrols based on input from the park ranger and the Third Party in addition to their normal patrol responsibilities.
- *Prepare Annual Reports*. These will include all Third Party activities and expenses and BLM fund expenditures, including labor. The completed report will be made available to the public, stakeholders, Federal and state agencies, and state and local governments.

1.2.2 Progress on Dry Lake SEZ Implementation Phases

Phase 1

Phase 1 began in 2017 with the hiring of a project manager and park ranger who began gathering data and resources to prepare an ACEC Management Plan. Four public meetings were held in Searchlight, Laughlin, Las Vegas and Boulder City, Nevada to solicit input on potential components of a ACEC Management Plan, including travel and transportation management. Key issues identified during these meetings are summarized below:

- Communication, Education, and Interpretation
  - Comments included: volunteer training; how to form a "Friends of" group; better user education; more interpretation of historic sites and natural resources; and more lead time notice of future meetings.
- Desert Tortoise
  - Comments included: why the tortoise was still listed; habitat within ACEC not thought to be good for tortoise; questions about tortoise management; and raven predation.
- ACEC Management Plan/NEPA
  - Comments included: questions about the timeline for developing the ACEC Management Plan; when would documents be available to the public; what would be the NEPA process; and requests to remove ACEC designation, particularly near Laughlin.
- Road Closures
  - Comments included: requests to not close any roads and requests to take more conservation actions, including road restoration.
- Travel Management/Road Signage
  - Comments included: critiques on lack of directional signs or poor condition of existing signs; requests for previously closed routes to be reopened; request for online or digital maps of routes; and request for reduction of route network and closure/restoration of routes not designated in the LVFO RMP.

- Tribal Concerns
    - Comments included: more protection of areas of traditional and cultural significance; closure of routes and/or installing vehicle barricades to protect areas; and designating sensitive areas within the ACEC.

Off-season firefighters conducted a ground-based route inventory. Approved off-site mitigation projects for the cultural viewshed, biological soil crusts, penstemon, and migratory birds were initiated and funded.

During 2018-2019, approved off-site mitigation projects continued. An analysis of satellite imagery revealed extensive transportation linear disturbances that were not identified in the 2017 ground-based route inventory. A new unsupervised classification of satellite imagery was initiated and completed in 2019.

In 2018, due to a change in BLM priorities, Transportation and Travel Management Planning was removed as an option for implementing mitigation. Planning was refocused on addressing transportation linear disturbances which are far more extensive than routes designated as open in the ACEC's transportation network.

Personnel changes in the project manager position and workloads were made in 2018 and the decision was made to hire a consultant to assist BLM with the development of the ACEC Management Plan and associated NEPA process.

A half-time park ranger position was filled and vacated three times during 2017-2019. Park rangers assisted with field data collection and visitor contacts through the end of 2019 when the position once again became vacant. The LVFO began efforts in 2020 to initiate a park ranger position at a higher General Schedule level to improve retention.

Uncompleted items in Phase 1, including the coordination of management/mitigation objectives with stakeholders and the incorporation of climate change models in coordination with the BLM NOC are addressed and incorporated into Phase 2 of the SEZ Implementation Plan and are a part of this ACEC management planning process.

2.0 Current Conditions in the ACEC

2.1 Rapid Ecoregional Assessment

The REA analysis identified several problematic regional trends for the Mojave Ecoregion. These include (1) the extremely slow rate of recovery from disturbance; (2) the introduction and increasing area occupied by non-native annual grasses; (3) the introduction of fire and increasing fire return intervals; (4) increasing fragmentation; and (5) climate change and the selective pressure it is having on the recovery of native plant communities.

These trends result from interaction of effects of anthropogenic activities, referred to in the REA analysis as change agents, on conservation elements. The impacts of human development are likely to affect all conservation elements similarly (BLM 2014).

2.1.1 Change Agents

Change agents are those features or phenomena that have the potential to affect the size, condition, and landscape context of conservation elements. Four classes of change agents were included in the REA assessment: wildfire, development, invasive species, and climate change.

Change agents act differentially on individual conservation elements and for some conservation elements may have neutral or positive effects but in general are expected to cause negative impacts. Change agents can impact conservation elements at the point of occurrence as well as offsite. Individual change agents can also be expected to act synergistically with other change agents to have increased or secondary effects (Comer et al. 2013).

2.1.2 Conservation Elements

For the REA, conservation elements selection focused on the ecological resources of the ecoregion supporting regional biodiversity along with selected resources of particular management interest. To define the conservation elements, a "coarse filter/fine filter" approach was adapted to the ecoregion (Jenkins 1976, Noss 1987, and Hunter 1990). The "coarse filter" included 19 terrestrial and aquatic ecological system types and communities that express the predominant ecological pattern and dynamics of the ecoregion. These classified units a) characterized each component of the ecoregion's conceptual model, b) defined the majority of the ecoregion's lands and waters, and c) reflected described ecological types with distributions concentrated within the ecoregion (Comer et al. 2013).

The "fine-filter" included species that, due to their conservation status and/or specificity in their habitat requirements, were likely vulnerable to being impacted or lost from the ecoregion unless resource management is directed towards their particular needs. Species meeting initial selection criteria could then fall into one of two general categories: a) those that might be effectively treated as a species assemblage (i.e., their habitat and known populations co-occur sufficiently to treat them as a single unit of analysis), and b) those species to be treated individually (Comer et al. 2013).

2.2 Change Agents within the ACEC

The REA used a landscape condition model for all species to incorporate effects of human development. The landscape condition model used development change agents and ranked their

proportional impact on the condition of the landscape at their point of occurrence and a distance away from it, as shown in Figure MP-8. The distribution, overlap, and relative intensity of change agents within the ACEC portion of the ecoregion are summarized below.

2.2.1 Landscape Condition

A landscape condition model integrates mapped information on the location of development change agents in order to express common ecological stressors. The score in the model provides one composite view of the relative impacts of land uses across the entire ecoregion. Darker orange to red areas indicate the most apparently impacted areas and darker green areas indicate least impacted (see Figure MP-8) (Comer et al. 2013).

Land condition can also be used to show the breaks between higher impacted areas and least impacted areas, indicating the fragmentation of the landscape. Within the ACEC, approximately 34,000 acres are modeled as impacted or low condition class (0 to 60 range, red, orange, yellow) and approximately 278,000 acres are modeled as least impacted or high condition class (61 to 100 range).

2.2.2 Invasive Plant Species

Invasive plant species, especially exotic annual grasses, have been shown to have substantial effects on ecological processes in the ecoregion. The majority of the Mojave Desert ecoregion is predicted to support invasive annual grasses in at least trace amounts (i.e., 1 to 5 percent cover). Even at trace amounts, the presence of invasive annual grasses has been shown to effectively introduce a fire regime into warm desert scrub communities that have historically never experienced significant natural wildfire (Comer et al. 2013). Within the ACEC, the REA model for potential abundance of invasive annual grasses indicates that 375 acres have a medium to high potential abundance (Figure MP-9, red areas) with the majority of the ACEC at low risk of invasive species abundance. However, additional assessments using Assessment Inventory and Monitoring (AIM) data have been conducted since the REA model was developed. The Third Party will use these assessments, new AIM data, weed monitoring data and additional resources, to refine and update invasive plant conditions.

2.2.3 Fire Regime

Alterations to the expected natural fire regimes, through active fire suppression and/or introducing novel fire regimes with exotic weed and grass species, can significantly alter vegetation structure and composition, leading to habitat degradation and increased risk of uncontrollable wildfire events. The REA fire regime departure index shows the level of departure of an area from pre-settlement conditions (i.e., the composition and structure of vegetation, surface fuel characteristics) (Comer et al. 2013). The ecological status is scored from high (0.61 to 1.0) to low (0.00 to 0.60), with low ecological status areas having higher fire regime departure and greater risk for fire. Based on Landscape Condition modeling, approximately 34,000 acres within the ACEC are modeled as impacted or low condition class and would have a higher regime departure index (see Figure MP-8). The majority of the ACEC is at low risk of fire (higher condition class) (see Figure MP-8). Since the REA was conducted, the BLM has ceased using Fire Regime Condition Class as a landscape fire regime metric. Alternate methods for characterizing the current fire regime conditions will need to be developed outside of the scope of this ACEC Management Plan in order to fully assess the impacts of management activities.

Piute-Eldorado ACEC Management Plan EA

Piute-Eldorado ACEC Boundary

Landscape Condition Model 2010

0 - 10	51 - 60
11 - 20	61 - 70
21 - 30	71 - 80
31 - 40	81 - 90
41 - 50	91 - 100

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FIGURE MP-8

Landscape Condition Model for the Planning Area

Piute-Eldorado ACEC Management Plan EA

Piute-Eldorado ACEC Boundary

Abundance Class

No/Low Risk

< 5%

5-15%

25-45%

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FIGURE MP-9

Potential Abundance of Invasive Annual Grasses within the Planning Area

2.2.4 Climate Change

Climate change represents a globally pervasive stress on natural ecosystems. Two main forms of analysis include (a) evaluation of climate space trends across the ecoregion; and (b) analysis of potential change in climate envelopes for selected terrestrial conservation elements. Climate space trends analysis aims to document and compare forecasted trends in climate variables against measured values from the 20th century. The period of 1900–1980 serves as a practical baseline for comparison. The comparison of forecasted to current climate envelope distributions provides one indication of the direction and magnitude of potential climate-induced stress for a given conservation element. Based on forecasted climate envelope changes out to the 2030s and 2050s, the majority of the ACEC vegetation communities would remain relatively unchanged (Comer et al. 2013).

2.3 Natural Resource Values

This ACEC Management Plan focuses on improving the condition of the small set of natural resource values or conservation elements impacted by the Dry Lake SEZ development (soils, vegetation, wildlife, and visual resources). These elements are also important ecosystem structural features or, as is especially the case for visual quality, indicators of landscape characteristics like fragmentation. This section describes these conservation elements, their importance and level of impact by Dry Lake SEZ development.

2.3.1 Soils

2.3.1.1 Soil Resources

Soils that are not impacted by anthropogenic disturbances tend to provide greater ecosystem services such as plant production, carbon sequestration, water holding capacity, erosion mitigation and resistance to weed infestation.

Biological Soil Crusts: Biological soil crusts, composed of soil surfaces stabilized by a consortium of cyanobacteria, algae, fungi, lichens, and/or bryophytes, are common in most deserts and perform functions of primary productivity, nitrogen fixation, nutrient cycling, water redistribution, and soil stabilization. Biological soil crusts are recognized as having an influence on terrestrial ecosystems where they occur. These communities are referred to as cryptogamic, cryptobiotic, microbiotic or microphytic soil crusts. These crusts serve as a living mulch by retaining soil moisture and discouraging the growth of annual weeds. They can reduce wind and water erosion, fix atmospheric nitrogen into a form usable by plants, and contribute to the soil organic matter (Williams et al. 2012). Biological soil crusts are highly sensitive to trampling and other disturbances (Fennenberg et al. 2015) and can be used as indicators of ecological health, as well as indicators of physical disturbance. Biological soil crusts are common on various soil surfaces throughout the Mojave Desert in southern Nevada.

Warm Desert Pavement: Desert pavements are distinguished by several unique surface and subsurface features. Where best developed, desert pavement is composed of a continuous mantle of flat-lying, densely packed, partially overlapping pebbles, typically overlying a soft, silty layer filled with gas vesicles, termed a vesicular horizon.

Bedrock Cliff and Outcrop: Bedrock cliff and outcrop areas are found from subalpine to foothill elevations and includes barren and sparsely vegetated landscapes (generally less than 10 percent plant cover) of steep cliff faces, narrow canyons, and smaller rock outcrops of various igneous, sedimentary, and metamorphic bedrock types. Also included are unstable scree and talus slopes that typically occur bellow cliff faces. Bedrock cliff and outcrop areas provide specialized habitat for native plants and wildlife, as well as recreational opportunities for the public. Desert pavement, rock outcroppings, and areas with exposed bedrock provide important foraging and nesting habitat for desert-dwelling wildlife.

2.3.1.2 Impacts of the Dry Lake SEZ Development

Approximately 2,866 acres of soil are expected to be impacted by Dry Lake SEZ development (BLM 2015). Desert pavement and biological soil crusts were noted as present within the Dry Lake SEZ but not mapped.

2.3.2 Vegetation and Special Status Plants

2.3.2.1 General Vegetation

Typical vegetation communities within the Mojave Desert of Clark County, Nevada consist primarily of rolling valleys and bajadas with Sonora-Mojave Creosote Bush-White Bursage Desert Scrub, Sonora-Mojave Mixed Salt Desert Scrub, Shadscale Scrub, Blackbrush Shrub, and Pinyon-Juniper Woodland at higher elevations. There are also several extensive Joshua tree (*Yucca jaegeriana*) woodlands within the ACEC.

There have been declines of Sonora-Mojave Creosote Bush-White Bursage Desert Scrub vegetation communities within the ACEC since 1998 because of BLM realty actions and congressionally mandated land transfers (land sales, patents, and rights-of-way [ROW] authorizations). This decrease has predominantly been on multiple-use lands within designated disposal boundaries and utility corridors. Important threats to this ecosystem include direct and indirect impacts resulting from anthropogenic activity, invasion by non-native annual grasses and increased fire frequency. Anthropogenic activities include grazing; development; highway and road construction; utility corridor construction; and recreational activity (casual off-highway vehicle [OHV] activities, concentrated OHV activities, and OHV competitive races). Disturbances associated with these activities have fragmented habitat, increased edge effects, and created conditions that facilitate establishment of non-native annual grasses. See Figure MP-8 and Section 2.2 for Landscape Condition of the ACEC Management Plan Area.

2.3.2.2 Special Status Species

The BLM Nevada Sensitive and Special Status Species List (BLM 2017) was reviewed for BLM Sensitive Plant Species that may occur within both the ACEC and Dry Lake SEZ. Special status plants known to occur within the Dry Lake SEZ include beaver dam breadroot (*Pediomelum castoreum*), dune sunflower (*Helianthus niveus*), halfring milkvetch (Astragalus mohavensis), Las Vegas buckwheat (*Eriogonum corymbosum* var. *nilesii*), Littlefield milkvetch (*Astragalus preussii* var. *laxiflorus*), Parish's phacelia (*Phacelia parishii*), rosy two-tone beardtongue (*Penstemon bicolor* ssp. *roseus*), sticky buckwheat (*Eriogonum viscidulum*), three corner milkvetch (*Astragalus geyeri* var. *triquetrus*), and yellow two-tone beardtongue (*Penstemon bicolor* ssp. *bicolor*) (BLM 2012).

2.3.2.3 Impacts of the Dry Lake SEZ Development

The primary vegetation communities that occur in the developable portion of the Dry Lake SEZ are Sonora-Mojave Creosote Bush-White Bursage Desert Scrub (98.8 percent of the developable area), Sonora-Mojave Mixed Salt Desert Scrub (0.8 percent of the developable area), and North American Warm Desert Wash (0.4 percent of the developable area). Approximately 2,866 acres of these vegetation communities are expected to be impacted by Dry Lake SEZ development (BLM 2015).

Development of the Dry Lake SEZ would result in a moderate impact to the North American Warm Desert Pavement community type (approximately 430 acres of impact) and a small impact on all other vegetation communities occurring within the SEZ (less than or approximately one percent of the community). Development could still directly affect most of the vegetation communities evaluated, with the exception of North American Warm Desert Playa (BLM 2012).

Best management practices, including avoidance and minimization of disturbance within wash habitat, were incorporated to reduce or eliminate impacts to special status plants. Overall, the Solar PEIS determined that impacts to species status plants would be small (a relatively small proportion impacted, less than or no more than one percent of the populations) (BLM 2012).

2.3.3 Wildlife and Special Status Species

2.3.3.1 General Wildlife

General wildlife associated with Creosote Bush-White Bursage Desert Scrub vegetation community include those reptiles and amphibians, mammals and birds not listed under the Endangered Species Act or the State of Nevada as threatened and endangered, or having a special conservation status. Table MP-1 lists the general wildlife species expected to occur.

Table MP-1 General Wildlife Species Expected to Occur

Common Name	Scientific Name
Birds including Neotropical Migrants	
American kestrel	*Falco sparverius*
Ash-throated flycatcher	*Myiarchus cinerascens*
Bendire's thrasher	*Toxostoma benderei*
Bewick's wren	*Thryomanes bewickii*
Black-chinned sparrow	*Spizella atrogularis*
Black tailed gnatcatcher	*Polioptila melanura*
Black-throated sparrow	*Amphispiza bilineata*
Brewer's sparrow	*Spizella breweri*
Burrowing owl (western)	*Athene cunicularia*
Cactus wren	*Campylorhynchus brunneicapillus*
Chukar	*Alectoris chukar*
Common poorwill	*Phalaenoptilus nuttallii*
Common raven	*Corvus corax*
Costa's hummingbird	*Calypte costae*
Crissal thrasher	*Toxostoma crissale*
Gambel's quail	*Callipepla gambelii*
Gilded flicker	*Colaptes chrysoides*
Golden eagle	*Aquila chrysaetos*
Great horned owl	*Bubo virginianus*
Greater roadrunner	*Geococcyx californianus*
Horned lark	*Eremophila alpestris*

Common Name	Scientific Name
Ladder-backed woodpecker	*Picoides scalaris*
Le Conte's thrasher	*Toxostoma lecontei*
Lesser nighthawk	*Chordeiles acutipennis*
Loggerhead shrike	*Lanius ludovicianus*
Long-eared owl	*Asio otus*
Lucy's warbler	*Vermivora luciae*
Mourning dove	*Zenaida macroura*
Northern mockingbird	*Mimus polyglottos*
Phainopepla	*Phainopepla nitens*
Red-tailed hawk	*Buteo jamaicensis*
Rock wren	*Salpinctes obsoletus*
Rufous hummingbird	*Selasphorus rufus*
Sage sparrow	*Amphispiza belli*
Say's phoebe	*Sayornis saya*
Turkey vulture	*Cathartes aura*
Verdin	*Auriparus flaviceps*
Western kingbird	*Tyrannus verticalis*
White-winged dove	*Zenaida asiatica*
Wild turkey	*Meleagris gallopavo*
Mammals	
American badger	*Taxidea taxus*
Big brown bat	*Eptesicus fuscus*
Black-tailed jackrabbit	*Lepus californicus*
Bobcat	*Lynx rufus*
Botta's pocket gopher	*Thomomys bottae*
Brazilian free-tailed bat	*Tadarida brasiliensis*
Cactus mouse	*Peromyscus eremicus*
California myotis	*Myotis californicus*
Canyon mouse	*P. crinitis*
Cougar	*Puma concolor*
Coyote	*Canis latrans*
Deer mouse	*P. maniculatus*
Desert cottontail	*Sylvilagus audubonii*
Desert kangaroo rat	*Dipodomys deserti*
Desert shrew	*Notiosorex crawfordi*
Desert woodrat	*Neotoma lepida*
Gray fox	*Urocyon cinereoargenteus*
Hoary bat	*Lasiurus cinereus*
Kit fox	*Vulpes macrotis*
Little pocket mouse	*Perognathus longimembris*
Long-legged myotis	*M. volans*
Long-tailed pocket mouse	*Chaetodipus formosus*
Merriam's pocket mouse	*Dipodomys merriami*
Mule deer	*Odocoileus hemionus*
Northern grasshopper mouse	*Onychomys leucogaster*
Red fox	*Vulpes vulpes*
Silver-haired bat	*Lasionycteris noctivagans*
Southern grasshopper mouse	*O. torridus*
Western harvest mouse	*Reithrodontomys megalotis*
Western pipistrelle	*Parastrellus hesperus*
White-tailed antelope squirrel	*Ammospermophilus leucurus*

Common Name	Scientific Name
Reptiles and Amphibians	
Coachwhip	*Masticophis flagellum*
Common kingsnake	*Lampropeltis getula*
Desert horned lizard	*Phrynosoma platyrhinos*
Glossy snake	*Arizona elegans*
Gophersnake	*Pituophis catenifer*
Great Basin collared lizard	*Crotaphytus bicinctores*
Groundsnake	*Sonora semiannulata*
Long-nosed leopard lizard	*Gambelia wislizenii*
Long-nosed snake	*Rhinocheilus lecontei*
Mojave rattlesnake	*Crotalus scutulatus*
Nightsnake	*Hypsiglena torquata*
Side-blotched lizard	*Uta stansburiana*
Sidewinder	*Crotalus cerastes*
Western fence lizard	*Sceloporus occidentalis*
Western whiptail	*Cnemidophorus tigris*
Zebra-tailed lizard	*Callisaurus draconoides*
Sources: Nevada Department of Wildlife [NDOW] 2020 and 2020a; U.S. Fish and Wildlife Service (USFWS) 2020	

2.3.3.2 Special Status Wildlife - Federally Listed Species

Mojave Desert Tortoise: The Mojave population of desert tortoise is listed as threatened by the USFWS. Although not the primary focus of this management plan, the threatened status of this species is incorporated into all management recommendations. Mojave Desert tortoise occur within both the ACEC and Dry Lake SEZ.

2.3.3.3 Special Status Wildlife - BLM Sensitive Species

The BLM Nevada Sensitive and Special Status Species List (BLM 2017) was reviewed for BLM Sensitive Species that may occur within both the ACEC and Dry Lake SEZ. Based on habitat requirements, the BLM Sensitive Species that occur within both the ACEC and the Dry Lake SEZ include the following.

Birds: Ferruginous hawk (*Buteo regalis*); golden eagle; western burrowing owl; Peregrine falcon (*Falco peregrinus*); phainopepla; loggerhead shrike; Crissal thrasher; Le Conte's thrasher; Brewer's sparrow.

Mammals: pallid bat (*Antrozous pallidus*); Townsend's big-eared bat (*Corynorhinus townsendii*); big brown bat; spotted bat (*Euderma maculatum*); silver-haired bat; hoary bat; western small-footed myotis (*Myotis ciliolabrum*); Yuma myotis (*Myotis yumanensis*); big free-tailed bat; Botta's pocket gopher; and Nelson's bighorn sheep.

Reptiles and amphibians: Sidewinder; Great Basin collared lizard; long-nosed leopard lizard; desert horned lizard.

2.3.3.4 Impacts of the Dry Lake SEZ Development

General Wildlife: The approximately 2,866 acres of vegetation communities impacted by Dry Lake SEZ development would also result in impacts to wildlife (BLM 2015). Impacts include loss of habitat, disturbance due to noise and construction activities, habitat fragmentation, and possible direct mortality during construction and operation of solar facilities.

Mojave Desert Tortoise: Solar construction and operation would also result in the potential loss of desert tortoise habitat within the SEZ.

Nelson's Bighorn Sheep: The Nelson's bighorn sheep was considered one of the most impacted species within the Dry Lake SEZ. The Dry Lake SEZ lacks high quality habitat for the Nelson's bighorn sheep, but it likely served as a migratory corridor between range habitats.

2.3.4 Visual Resources

2.3.4.1 General Landscape

The Dry Lake SEZ is located within the Arrow Canyon Range north of Interstate 15 (I-15) and west of the Mormon Mesa area. Major landscape features surrounding the Dry Lake SEZ include the Arrow Canyon Range and Dry Lake Range. The Arrow Canyon Range, which dominates the area, is composed of low- to medium-height peaks and ridges formed by geologic uplift and made prominent by the flatter surrounding valleys. Dry Lake Valley is flatter than its surroundings with little topographic or vegetative variety. Communities of sparse, scattered shrubs and grasses including creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), and big galleta grass (*Pleuraphis rigida*) occur in basins; Joshua tree, other yucca species, and cacti occur on arid footslopes.

The ACEC is located within southern Clark County area, which has a diverse scenic quality, being predominantly medium and little high and low scenic quality. The landscape in this region is characteristic of the Basin and Range with north-south trending mountains separated by valleys. Major landforms within the ACEC include the unique black basalt and springs in the McCullough Mountains and the Highland Range, a small, low, rugged mountain range with bold escarpments and massive, tilted colorful rocks that make it distinct, and springs. Broad open, flat valleys include the Eldorado Valley, a comparatively small, slightly bowl-shaped valley with typical Mojave Desert vegetation and Piute Valley with its rolling hills, washes, and notable expanse of Joshua tree forests (BLM 2014).

2.3.4.2 Impacts of the Dry Lake SEZ Development

The general lack of topographic relief, water, and physical variety of the Dry Lake Valley results in low scenic value within the Dry Lake SEZ itself; however, because of the flatness of the landscape, the lack of trees, and the breadth of the open desert, the SEZ presents sweeping views of the surrounding mountains that add significantly to the scenic values within the SEZ viewshed. In general, however, the major cultural disturbances visible throughout Dry Lake Valley have seriously degraded scenic values in the SEZ vicinity (BLM 2012). Within the Dry Lake SEZ, there are no areas designated as VRM Class II, there are approximately 2,930 acres of VRM Class III, and 2,790 acres of VRM Class IV.

2.4 Recreation Resource Values

2.4.1 General Recreation

For the general public, the primary purpose for visiting public lands within the ACEC is to participate in some form of recreation. The types of recreation activities vary and include, but are not limited to, OHV riding, camping, hiking, hunting, sightseeing, and target shooting.

2.4.2 OHV Recreation

The ACEC currently has 425 miles of designated open routes. The predominant type of recreation observed in the ACEC is OHV riding, which may occur concurrently with other forms of recreation. OHV types vary but are generally be categorized as full-size vehicles, utility-terrain vehicles (UTV, also known as side-by-side), all-terrain vehicles (ATV), and motorcycles. In ACEC's, all motorized and mechanized vehicles are limited to designated roads and trails. A discussion of motorized/mechanized use can be found in Section 2.5.1.2., Development and Infrastructure.

Nevada State Parks estimated that there were approximately 425,000 OHVs in Nevada (Nevada State Parks 2009). The Nevada Off-Highway Vehicle Commission estimated that in 2016 up to 134,657 Clark County residents were "OHV users" with 13,498 OHVs registered in the county. Statewide, they estimate that only 10 percent of all OHVs have been registered (Nevada Off-Highway Vehicle Program 2016). Therefore, the actual number of OHVs owned by Clark County residents may be much larger than what is represented by registration numbers. It is anticipated that a large number of registered and unregistered OHVs are utilized on adjacent public lands in varying durations.

In 2020, the population of Clark County was estimated to be 2.3 million residents. By 2060, the population is expected to reach over 3 million. With this significant increase in population expected and the potential for a coinciding expansion of residential development, there will likely be a greater demand for recreational opportunities on public lands. Portions of the ACEC, particularly those areas closest to the Las Vegas Valley and Laughlin, will be susceptible to impacts from this increased demand.

2.4.3 Hunting

Hunting and shooting are not explicitly restricted within the ACEC (except for local/state regulations and general safety restrictions). Hunting has traditionally occurred within the ACEC and is likely to continue to be a regular activity. The ACEC falls within portions of four Nevada Division of Wildlife designated game management units: Units 263, 264, 265 and 265. Game managed for hunting within these units include big game such as mule deer (*Odocoileus hemionus*), bighorn sheep (*Ovis canadensis*), and mountain lion (*Puma concolor*); and small game such as chukar (*Alectoris chukar*), quail (*Coturnix* spp.), and cottontail rabbit (*Sylvilagus audubonii*).

2.4.4 Other Recreation

Other recreational uses within the ACEC include, but are not limited to, access to nearby wilderness, camping, hiking, biking, wildlife viewing, and scenic driving. Dispersed camping opportunities and unconfined hiking are found throughout the ACEC.

Through observations and the use of commercially available traffic counters, the BLM Las Vegas Field Office has been able to estimate visitation on public lands. To capture visitor use within the ACEC, three counters have been placed along select roads in the areas west and south of Searchlight, Nevada. In 2020, traffic counters captured 46,455 vehicle passes along the select roads. It would be cost- and resource-prohibitive to place counters along every road within the ACEC; however, these roads have been observed to be major access corridors. Consistent with Federal Highway Administration's average vehicle occupancy rate of 1.67 for light vehicles (Federal Highway Administration 2017), the BLM can estimate that the ACEC received at minimum approximately 77,580 individual visitors in 2020. Based on anecdotal and observation information, the total number of visitors annually to the ACEC is likely 30-40 percent higher (a

total of approximately 100,000 to 108,000 visitors). Visitor use data for the north and northeast portions of the ACEC have not yet been collected but these areas do receive considerable recreation use due to their relative proximity to the Las Vegas metropolitan area.

The ACEC lies within the Southern Nevada Extensive Recreation Management Area. Recreation Management objectives for these lands calls for emphasizing dispersed and diverse recreation opportunities. The ACEC's classification as VRM Class II & III and its designation as an ACEC helps to retain those recreation resource values by minimizing large-scale, site-type ROW development or other large-scale disturbances. Subsequently, recreation opportunities in the ACEC have largely remained unchanged for over 20 years.

The Las Vegas RMP (BLM 1998) allows for limited Special Recreation Permit (SRP) activities to occur within the ACEC, however, OHV "speed events" are prohibited. In recent years, no SRPs have been issued for commercial activities within the ACEC. Specifically, no more than three events during the desert tortoise active season and no more than four during the inactive season are allowed. In recent years, no SRPs have been issued for events within the ACEC.

2.5 ACEC-Specific Inventory and Current Conditions

2.5.1 ACEC Specific Inventory

2.5.1.1 Non-Designated Lands Within and Surrounding the ACEC

Current Condition

Small areas of BLM-managed land situated between the ACEC boundary and other land management or congressionally-designated boundaries were not included in the ACEC due to mapping inconsistencies, differences in the Wilderness- and ACEC-designation processes, and the time of designation. The multiple designations are largely a minor administrative inconsistency and accounting complication. Wilderness and ACEC boundaries also overlap, resulting in areas of the ACEC occurring within Wilderness.

ACEC and adjacent boundaries were examined using ArcGIS to display boundary locations (Figure MP-10) and to calculate the number of acres of boundary slivers and gaps. Approximately 1,100 acres of slivers or gaps and 3,162 acres of overlap between the ACEC boundary and Wilderness were identified.

Effects to Conservation Elements

If managed for non-ACEC or Wilderness values, these "slivers" could unintentionally fragment the landscape along the periphery of the ACEC. Private in-holdings, currently disturbed or not, likely have a higher potential for disturbance through development than the surrounding ACEC. Private lands occasionally become available for purchase. These are evaluated on a case-by-case basis as owners approach the BLM or Third Party organizations express a wish to sell. One such parcel lies within a large gap between the ACEC and the adjacent South McCollough Wilderness.

The parcel includes water developments for the adjacent to McCullough Springs, an important water source for special status desert bighorn sheep and other wildlife (Figure MP-11). Habitat for yellow two-toned penstemon, another special status species targeted for mitigation, is also present on this parcel. The parcel was acquired by the Wilderness Land Trust and is currently available for purchase by BLM (see Figure MP-11).

Piute-Eldorado ACEC Management Plan EA

Piute-Eldorado ACEC Boundary

Boundary Adjustments

Contract ACEC Boundary

Expand ACEC Boundary

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Date: 6/4/2021

NATIONAL SYSTEM OF PUBLIC LANDS
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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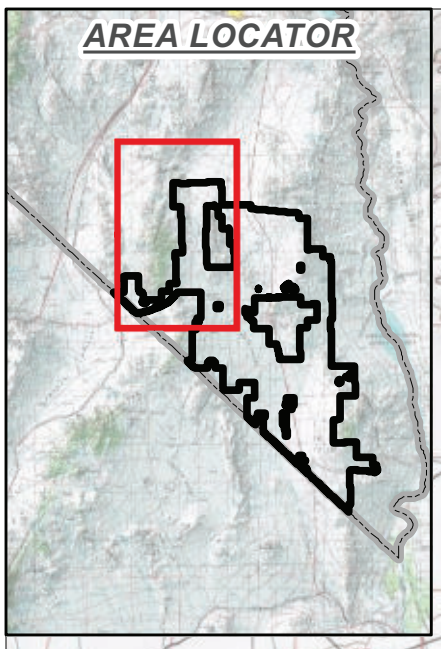
FIGURE MP-10

Wilderness and ACEC Boundary Discrepancies



South McCullough Wilderness

Highland Range Crucial Bighorn Habitat

Wee Thump Joshua Tree Wilderness

McCullough Pass

ELDORADO

POWERLINES

New York Mts

Piute Valley

Highland Spring

Crescent Peak

Clarks Well

Hoops Well

Nipper Mine

Silver Bell Mines

Radio Facility

Corral

Piute-Eldorado ACEC Management Plan EA

Piute-Eldorado ACEC Boundary

McCollough Spring Parcel

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FIGURE MP-11

McCullough Springs Parcel Location

2.5.1.2 Development and Infrastructure

Current Condition

The types of development and infrastructure reviewed for this ACEC Management Plan include pipelines, powerlines, major roads, right-of-way fences, and culverts. These are described below.

Pipelines and Powerlines

- **Powerlines:** There are approximately 126 miles of high voltage overhead transmission lines within the ACEC (Figure MP-12).
- **Pipelines:** There are approximately 22.4 miles of pipelines within the ACEC (see Figure MP-12).
- **Utility Corridors:** Utility corridors for the concentration of future transmission projects have been designated across 81 miles of the ACEC, covering approximately 20,275 acres (see Figure MP-12).

Major Roads, Right-of-Way Fences, and Culverts

- Minor roads and other linear transportation disturbances are discussed in Section 2.4.3 below.
- **Paved Roads:** Approximately 114 miles of paved roads, consisting primarily of U.S. Route 95 (U.S. 95), State Route 164 (Nipton Road), State Route 163 (SR 163), Cottonwood Cove Road, and LORAN Road (described in more detail below) (see Figure MP-12).
    - **U.S. 95:** U.S. 95 bisects the ACEC north to south (approximately 27 miles) (see Figure MP-12). It is a 4-lane divided highway for much of its length and fenced to reduce vehicle-wildlife collisions. The highway footprint ranges from approximately 100 to 200 feet in width depending on whether a median is present. Fencing is generally aligned with the ROW on either side of the highway, spaced approximately 200-400 feet from fence to fence.
    - In general, these T-post and wire fences include desert tortoise fence consisting of 1-inch horizontal by 2-inch vertical galvanized welded wire mesh partially buried and cattle guards at road-fence intersections. Approximately 17 culverts cross beneath the roadway (Figure MP-13). Efforts have been underway to tie fencing into culverts to create safe wildlife crossings. Clark County is completing a comprehensive survey to catalog which fences are connected with culverts, whether culverts are traversable, and other issues associated with the goal of wildlife, especially desert tortoise, use of culvert crossings. NDOT is collecting data on tortoise fence conditions within southern Nevada.

Cottonwood Cove Road

LORAN Station Road

Piute-Eldorado ACEC Management Plan EA

- Piute-Eldorado ACEC Boundary
- High Voltage Powerlines
- Water Pipelines
- Utility Corridors
- Roads

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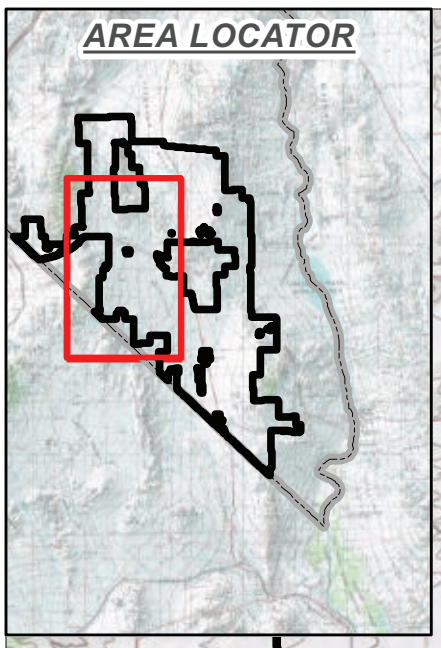
FIGURE MP-12

Major Utility Lines and Roadways within the Planning Area



Piute-Eldorado ACEC Management Plan EA

Piute-Eldorado ACEC Boundary

Existing Tortoise Fencing (13.19 miles)

Existing Wildlife Culverts

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FIGURE MP-13

Existing Nipton Road Tortoise Fencing and Wildlife Culverts

- **State Route 164 (Nipton Road):** State Route 164 from Searchlight to the western edge of the ACEC is also called Nipton Road (see Figure MP-12). This approximately 17-mile, two-lane road has T-post and wire fencing along either side of the road, at distances of generally 150 to 200 feet from the roadway aligned with the NDOT ROW (see Figure MP-13). There is an approximately 12-mile-long stretch of fence along the southern side of Nipton Road, from the eastern edge of the ACEC boundary to Walking Box Ranch Road, that is offset up to 2,500 feet from the pavement. This 12-mile section of fence has DT fencing as does the fencing along this same stretch of road along the northern NDOT right of way. None of the fencing is tied into culverts. West of Walking Box Ranch there is no desert tortoise fencing (see Figure MP-13). There is an approximately 7-mile section of Nipton Road that has no culverts. There also appears to be higher truck traffic along this route (data needed if possible). Annual average daily traffic along this route is approximately 700 vehicles per day (Nevada Department of Transportation [NDOT] 2019). There are approximately 12 existing culverts along portions of Nipton Road that are damaged or blocked with debris and are dangerous for wildlife passage (photos needed).
- **Cottonwood Cove Road:** The less-traveled and slower speed (45-mile-per-hour speed limit) Cottonwood Cove Road from Searchlight eastward to the Lake Mead National Recreation Area is not fenced and culverts have not been mapped (see Figure MP-12). This road is at or below grade for much of its length through the ACEC. There is typically very little traffic during winter months with higher traffic during the summer to Cottonwood Cove (within the Mojave District of Lake Mead) and campgrounds, resort, and marina recreation areas (accessing boat ramp, etc.). The Mojave District received approximately 1.5 million visitors in 2018, with steady visitation through 2019.
- **SR 163:** SR 163 runs east-west from Palm Gardens to Laughlin through southern tip of the ACEC (see Figure MP-12). SR 163 is a four-lane highway that forms part of the most direct route between Laughlin and Las Vegas via U.S. 95.
- **LORAN Station Road** (U.S. Coast Guard Long Range Navigation Station) (see Figure MP-12): The current condition of the road includes sections of degraded pavement, eroded, undermined roadbed, and deep erosion channels. The road creates hazardous conditions for drivers and a barrier or trap for some wildlife species because of the steep drop-off caused by erosion on either side of the road (photo needed). The current condition of the road results in a barrier to desert tortoise movement as well as a hydrologic barrier. The road also has an adverse impact the scenic quality and viewshed of the area in its current deteriorated condition.

Designated Route Network

During 2017-2019, BLM staff conducted a route inventory using aerial imagery and field-based data collection. Google Earth satellite images were visually inspected for disturbance features and digitized on screen. Off-season wildland firefighters mapped a subset of routes and disturbance features using OHV-mounted global positioning systems. The ground-based mapping was used to verify the image-based mapping for approximately 20 percent of records. Additional ground-based assessments will be necessary prior to implementation of restoration for the remaining disturbance segments.

Linear disturbances were classified by:

- **Use:**
  - In-use – vehicle tread marks visible, encroaching vegetation not observed in satellite images
  - Not-in-use – tread marks not visible, vegetation often encroaching into disturbed area
- **Status:**
  - Old – disturbance present in 2005 satellite images
  - New – disturbance not present in 2005 images
- **Type:** Single-track, ATV, Unimproved/2-track, improved

Use: Table MP-2 and Figure MP-14a show the 1998 RMP designated open and closed routes within the ACEC as well as the route inventory conducted in 2017-2019. Approximately 99 percent of the open routes are in use as of 2019. However, nearly 85 percent (100 miles) of the 118 miles of closed routes also appeared to be in use in 2019. Together, formerly closed routes and linear disturbances total 653 miles, with approximately 564 of those miles appearing to be in-use (see Table MP-2 and Figure MP-14b).

Table MP-2 Linear Disturbances in Use

Description	Miles	Currently In Use
Designated Open	425	420
Designated Closed	118	100

Type: The area of these unauthorized linear disturbances and closed routes was calculated using an average width of linear disturbances derived from random samples of field-checked route inventory records. Widths were averaged for single-track, ATV track, and two-track vehicle types. The average widths were combined with miles of disturbance created from aerial and ground truth data to calculate the acres of disturbance. The approximate acres of disturbance by vehicle type are presented in Table MP-3 (ATV track and two-track were combined). Approximately 5.8 miles of linear disturbance segments areas are labeled as "Unknown" because the feature type could not be determined without a field visit and will need further assessment to determine the disturbance type before calculating acres of disturbance.

Table MP-3 Linear Disturbances by Type

Type of Linear Disturbance	Miles	Acres
Single Track	383	100.9
ATV/Two Track	147	11.8
Unimproved/Two Track	Incorporated above	532.4
Unknown	0	0.2

Effects to Conservation Elements

Soils: Motorized and non-motorized travel typically results in soil compaction and minimal opportunity for vegetation regrowth. Linear disturbances vary within the ACEC, depending on the type of motorized vehicle used (two-track or single-track vehicles). Linear disturbances located on steep slopes and in areas with fragile soils where vegetation has been removed are vulnerable to disturbance and the displacement of soil particles that can be transported by wind, water, or other natural and anthropogenic forces. Vehicular disturbance during the spring season or other times of year with high soil moisture content (i.e., after a recent precipitation event) could lead to rutting compaction and decreased infiltration leading to accelerated runoff, erosion, and sedimentation.

Piute-Eldorado ACEC Management Plan EA

Piute-Eldorado ACEC Boundary

Route Status

Open

Closed

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Miles

FIGURE MP-14a

Designated Open and Closed Routes (1998 RMP)

Piute-Eldorado ACEC Management Plan EA

Piute-Eldorado ACEC Boundary

Closed Routes

In-Use

Not In-Use

Linear Disturbance

In-Use

Not In-Use

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Miles

FIGURE MP-14b

Closed Routes and Linear Disturbances

Vegetation: Motorized use of linear disturbance areas creates fugitive dust that settles on vegetation, affecting photosynthesis, respiration, and transpiration, which could result suppressing plant growth and reduced vigor (Spellerberg and Morrison 1998). Vegetation mortality may change the structure and composition of the overall community. Ruts created by motorized uses can also disrupt hydrologic flow and increase potential for erosion.

Linear Disturbances and motorized use also lead to the introduction and invasion of invasive species. Invasive plant seeds have dispersal mechanisms that allow them to temporarily cling to tires or other vehicle parts and later drop off in areas of native plant suppression or soil disturbance. Animals or humans using the linear disturbances as travel corridors may further spread weed seed attached to hooves, fur, and boots. The increase in invasive species as well as impacts from dust and loss of vegetation result in changes to vegetation communities and decrease in habitat suitability for native wildlife. Of particular concern within the ACEC are infestations of buffelgrass, a perennial grass from Africa that is invasive, which has been linked to an increase in fire frequency. There is an area approximately two miles north of the ACEC boundary within a transmission ROW where a recent buffelgrass infestation was discovered. Known occurrences have been controlled.

Wildlife: Direct and indirect impacts of transmission ROWs, roads, routes, and trails on wildlife and desert tortoise populations are well documented and include habitat and population fragmentation and degradation as well as mortality of individual tortoises (USFWS 1994, Boarman 2002). Paved and unpaved roads serve as corridors for urbanization and dispersal of invasive species and provide access to recreation. Roads, routes, trails, and linear disturbances also act as barriers to desert tortoise and small wildlife movement. Roadside vegetation is often more robust and diverse because water that becomes concentrated along roadside berms promotes germination, which attracts tortoises and other wildlife, and puts them at higher risk of mortality as roadkill (Boarman et al. 1997). Raised roadbeds or other types of linear disturbances can also affect water runoff patterns across the landscape, decreasing soil moisture on upland areas between channels downslope of the linear disturbance and resulting in lower shrub density and biomass (Schlesinger and Jones 1984; Brooks and Lair 2009). Fencing can fragment and isolate desert tortoise and other wildlife populations (Peaden et al. 2017).

Within Mojave Desert tortoise critical habitat, there are approximately 118 miles of closed routes/linear disturbances in use and 411 miles of open routes (Figure MP-15a). Within Nelson's bighorn sheep habitat, there are approximately 8 miles of closed routes/linear disturbances and approximately 66 miles of open routes (Figure MP-15b).

Wildlife can also be directly affected by excessive noise (above typical background noise) and other disturbance associated with recreational OHV activities. Disturbance effects range from physiological impacts (such as stress and mortality due to breakage of nest-supporting vegetation, collapsed burrows, inner ear bleeding, and vehicle-animal collisions) to altered behaviors and population distribution/dispersal patterns, which can lead to declines in local population size, survivorship, and productivity (USGS 2007).

Ivanpah Unit

Piute-Eldorado Unit

Piute-Eldorado ACEC Management Plan EA

Piute-Eldorado ACEC Boundary

Desert Tortoise Critical Habitat

Route Status

Open

Closed

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Miles

FIGURE MP-15a

Overlap of Linear Disturbances with Mojave Desert Tortoise Habitat

Highland Range Crucial Bighorn Habitat

Piute-Eldorado ACEC Management Plan EA

- Piute-Eldorado ACEC Boundary
- Occupied Desert Bighorn Sheep Habitat
- Highland Range Crucial Bighorn Habitat

Route Status

- Open
- Closed

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FIGURE MP-15b

Overlap of Linear Disturbances with Desert Bighorn Sheep Habitat

Desert tortoises, particularly hatchlings and juveniles, and small wildlife are preyed upon by several native species of mammals, reptiles, and birds. The common raven has been the most highly visible predator of small wildlife, particularly juvenile tortoise, while coyotes (*Canis latrans*) have been commonly implicated in deaths of adult tortoises as well as a variety of small and medium wildlife species. Predation pressure by ravens is increased through elevated raven populations as a result of resource subsidies associated with human activities (USFWS 2014). Raven populations have been shown to be higher near roadways and linear disturbances where vegetation may be increased by water runoff and human activity may increase trash and other food sources (USFWS 2014, Coates et al. 2014).

Studies demonstrate that even narrow roads (paved and unpaved) and trails can represent significant barriers to the movements of wildlife. Reluctance to cross even narrow trails similar in width to routes created by OHV travel may alter or preclude the movements of various species (USGS 2007). Habitats containing roads can become population sinks for any species that commonly attempts to move from one habitat fragment to another by crossing roads. If mortality rates exceed rates of reproduction and immigration, wildlife populations decline (USGS 2007).

For Mojave Desert tortoise, threats include mortality and permanent habitat loss as well as fragmentation and degradation of habitats, particularly critical habitat primary constituent elements, resulting from the proliferation of roads and highways, OHV activity, poor grazing management, and habitat invasion by non-native invasive species (USFWS 2011). The specific primary constituent elements of desert tortoise critical habitat are:

- Sufficient space to support viable populations within each of the recovery units, and to provide for movement, dispersal, and gene flow;
- Sufficient quality and quantity of forage species and proper soil conditions to provide for the growth of these species;
- Suitable substrates for burrowing, nesting, and overwintering; burrows, caliche caves, and other shelter sites;
- Sufficient vegetation for shelter from temperature extremes and predators; and
- Habitat protected from disturbance and human-caused mortality.

Visual: ROWs, roads, routes, trails, and other development are surface disturbances that can change the basic visual elements of form, line, color, and texture of the existing natural landscape, thereby decreasing scenic values. These developments and disturbances can also negatively impact the scenic values of sensitive areas. In general, ROW developments (e.g., power lines, pipelines, fiber optic lines, and communication sites), and associated access roads can result in large areas of vegetation removal and structures that can alter the visual character and result in adverse impacts to scenic values and visual quality of the ACEC. The amount of visual contrast can diminish over time as a result of reclamation efforts in areas where linear disturbances are in high concentrations. Reducing contrasting elements and improving visual quality creates a more positive recreation experience for public land users by creating a more cohesive and appealing visual environment.

2.5.1.3 Landscape Disturbances

Landscape Disturbance Types

Anthropogenic activity drives the change agents and interaction with conservation elements resulting in problematic trends in the Mojave Ecoregion. The impacts of human development and

disturbances are likely to affect all conservation elements similarly (BLM 2014). Ground and vegetation disturbing activities are relatively easy to measure, quantify, and use as bases for characterizing current ecological conditions.

The disturbances analyzed in this Plan include non-linear features described as the total area disturbed and type of disturbance (fire and mining scars, target practice areas, OHV recreation staging areas, trash dumps, etc.) and linear disturbance features associated with unauthorized OHV use (single tracks, two tracks; linear disturbances). The type and status of OHV use and the distance and density of these linear disturbance features are also described in under the Designated Route Network in Section 2.5.1.2.

Ground-based assessments described in this Plan will be developed and implemented by the Third Party. Quantifiable indicators will be further developed and refined by the Third Party for use as quantifiable indicators of restoration effectiveness and impact on mitigation objectives. Some indicators may be used to assess the effect on multiple conservation elements. For example, cumulative miles of unauthorized linear disturbance may be used as an indicator of soil erosion, native vegetation condition, visual quality, fragmentation of wildlife habitat and transportation-related wildlife mortality. Other conservation elements, including special status wildlife species habitat, are limited to smaller areas within the ACEC and will require the inclusion of site-specific indicators in lieu of, or addition to, broad disturbance indicators.

Current Conditions - Linear Disturbances

Linear disturbances appearing in current satellite images were compared with images dating back to 2005 (Figure MP-16). This date was chosen because images acquired prior to 2005 lacked sufficient resolution to detect some linear disturbances, especially those narrow disturbances the BLM classified as single-track. The 2019 route inventory identified 530 miles of other linear disturbances, of which, nearly 87 percent (463 miles) appear to be in use. Of the 530 miles of linear disturbances documented, 45 percent (238 miles) were created between 2005 and 2019. The other 292 miles were present in the 2005 images. The BLM could not determine whether these older disturbances were created after the adoption of designated routes in the 1998 RMP. Some of these disturbances may have been missed in route inventory efforts in the 1990s which were ground-based and lacked today's high-resolution imagery.

Current Conditions - Landscape Disturbances

An estimated 725 acres of non-linear disturbed areas were delineated in 2020 using satellite imagery (Figure MP-17). Disturbed areas range in size from less than an acre to over 195 acres (at the LORAN Station area). Most delineated disturbed areas appear to be related to mining, recreation (camping and OHV staging areas primarily), wildcat dumping, utility projects, wildfire, and other unknown land use activities.

Most disturbed areas have not been ground-truthed; therefore, categorizing the type or condition of these disturbances was not undertaken. However, many of the disturbances appear to be old and may recover naturally if further disturbance can be avoided. Others will require varying degrees of restoration. Disturbances in warm desert pavement areas are visible in satellite images because of stark differences in reflectance values caused by overturned desert-varnished rocks, exposed caliche, or less weathered portions on overturned rock material.

Piute-Eldorado ACEC Management Plan EA

Piute-Eldorado ACEC Boundary

Linear Disturbance Type

- New 2-track (not present in 2005)
- New Single Track (not present in 2005)
- Old 2-track (present in 2005)
- Old Single Track (present in 2005)

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Miles

FIGURE MP-16

Linear Disturbances Other Than Closed Routes

Piute-Eldorado ACEC Management Plan EA

- Piute-Eldorado ACEC Boundary
- Phoenix Metals Mill Site (approx. 22 acres)
- Wee Thump Corral (approx. 4.4 acres)
- LORAN Station Site (approx. 196 acres)

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FIGURE MP-17

Landscape Disturbances within the Planning Area

A few of the disturbed areas are well-known to BLM staff and interested parties and have been the subject of past restoration efforts. These are being tracked through individual project monitoring or through an interagency effort to track disturbances and restoration efforts throughout southern Nevada called the Disturbance Inventory and Restoration Tracking Database (DIRT).

Disturbed areas that are being tracked by the BLM include the following:

- **Phoenix Metals Mill Site:** The 22-acre Phoenix Metals Mill site is located at the seven-mile marker along Cottonwood Cove Road between Searchlight and Cottonwood Cove, just east of the Lake Mead National Recreation Area entrance station. The majority of the site has some type of disturbance, including unpaved access roads (see Figure MP-17). A restoration plan for the site has been analyzed and approved (ACEC Management Plan Environmental Assessment, BLM 2021, pending). Funding has been secured for removing material piles and recontouring berms and pits. Additional funding will be needed for restoration activities including planting, seeding and vertical mulching.
- **Wee Thump Corral Disturbance:** This area, adjacent to Wee Thump Wilderness (see Figure MP-17), was restored in 2013 with a trash cleanup effort, post and cable fencing to constrain the size of a popular camping area, weed control, planting and other restoration activities (ACEC Management Plan Environmental Assessment, BLM 2021, pending). Management concerns for long-term maintenance of this site include a recent infestation of puncture vine (*Tribulus terrestri*) and heavy recreational use.
- **LORAN Station:** This abandoned approximately 196-acre navigation site includes two buildings with a total of approximately 8,000 square feet, concrete tower pads, a paved parking lot of approximately 20,500 square feet, a paved driveway of approximately 38,400 square feet, roads, and large disturbed patches infested with invasive plants (see Figure MP-17). The site is under a ROW agreement with the U.S. Coast Guard.

Effects to Conservation Elements

Landscape disturbances can result in a variety of impacts to sensitive resources, including impacts to soils, vegetation, wildlife, and visual resources.

Soils: The primary effects of landscape disturbances on soils and overall watershed function include altered soil structure (soil compaction in particular), destruction of soil crusts (biotic and abiotic) and desert pavement (fine gravel surfaces) that would otherwise stabilize soils, and soil erosion. As soil compaction increases within disturbed areas, the soil's ability to support vegetation diminishes because the resulting increases in soil strength and changes in soil structure (loss of porosity) inhibit the growth of root systems and reduce infiltration of water. As vegetative cover, water infiltration, and soil stabilizing crusts are diminished or disrupted, the precipitation runoff rates increase, further accelerating rates of soil erosion (USGS 2007).

Vegetation: Soil compaction affects plant growth by reducing moisture availability and precluding adequate taproot penetration to deeper soil horizons. In turn, the size and abundance of native plants may be reduced. Above-ground portions of plants also may be reduced through breakage or crushing, potentially leading to reductions in photosynthetic capacity, poor reproduction, and diminished litter cover. In turn, reduced vegetation cover may permit invasive and/or non-native plants—particularly shallow-rooted annual grasses and early successional

species capable of rapid establishment and growth—to spread and dominate the plant community, thus diminishing overall endemic biodiversity.

Wildlife: Habitats for native plants and animals, including endangered and threatened species, are impacted by landscape disturbances in several ways. Disturbances result in habitat fragmentation and reduce habitat connectivity as disturbances proliferate across the landscape. Reduced habitat connectivity may disrupt plant and animal movement and dispersal, resulting in altered population dynamics and reduced potential for recolonization if a species is extirpated from a given habitat fragment.

Visual: Landscape disturbances result in degradation of the visual quality from the loss and disturbance of vegetation, increase of invasive plant species (weeds), loss of litter and cover, and soil erosion. Visitor perception of scenic quality could be adversely impacted by disturbed and lost vegetation, increased presence of invasive species, and soil erosion. Scenic quality may also be impacted by increased presence of recreational users within disturbed areas.

2.5.1.4 Degraded Springs

Current Conditions

There are several springs within or adjacent to the ACEC that are important for wildlife, including special status species. The status of most springs within the ACEC is unknown. An interagency project led by the U.S. Forest Service and including several partnering non-governmental organizations began surveying springs throughout southern Nevada. Several springs within the ACEC have been prioritized for visits by these groups in 2021-2024. The BLM SNDO has also scheduled field visits to assess primary functioning condition of several springs in the ACEC. The condition of other springs is well-document. Many are degraded by past and current land uses and invasive species. The NDOW has noted the degraded condition of three springs within or adjacent to the ACEC important to restoration (Figure MP-18) (NDOW 2020b). These springs are described below:

- ***Ora Hanna Spring:*** Located near the western boundary of the Highland Range Crucial Bighorn Sheep Area, this small spring was developed in historical times by digging an adit. The adit has silted in, restricting access to wildlife, particularly small mammals, and potentially endangering them. Describe specific issues (add photos).
- ***Cow Spring:*** Located on the eastern side of the Highland Range within approximately 1,300 feet of the ACEC boundary, this spring provides water for bighorn sheep and other wildlife throughout a large area of the ACEC. The spring has been significantly altered by past ranching activities and now consists of three adits, supported by timbers that are visible just inside the entrances. Cattails and other vegetation partially block access to the water, and stray cattle have trampled and churned the area just outside one of the adits. Describe specific issues (add photos).
- ***Highland Springs:*** Located on the southern end of the Highland Range within approximately 2,600 feet of the ACEC boundary. This spring has been degraded by past ranching activities and current significant degradation by feral cattle use. Describe specific issues (add photos).

Ora Hanna Spring

Highland Spring

Cow Springs 1

Cow Springs 2

Piute-Eldorado ACEC Management Plan EA

Piute-Eldorado ACEC Boundary

Spring Restoration Sites

Map Produced by: RECON Environmental
Date: 6/4/2021

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Miles

FIGURE MP-18

Location of Degraded Springs

Effects to Conservation Elements

Over time, springs can be degraded by an increase of silt and sedimentation that reduces the size and output of the spring. Silt and sedimentation can also restrict wildlife access to springs and degrade native vegetation. Springs are also disturbed by trampling by feral cattle. Because animals move frequently to and from springs, invasive species infestations in and around springs are particularly problematic. Invasive plants can restrict access to the spring water source and reduce the amount of water available to wildlife. Degraded spring structures and invasive vegetation also degrade the scenic quality of the spring and surrounding area.

2.5.1.5 Invasive Plants

Current Condition

Comprehensive data on weed occurrence, spread, and abundance are unavailable. However, occurrences of buffelgrass (*Pennisetum ciliare* or *Cenchrus ciliaris*) have been detected in the McCullough Pass area and have been treated. Mediterranean grass (*Schismus barbatus*) invasion areas have been mapped in the past but require further ground-truthing. Areas considered as having a significant noxious weed issue include McCullough Spring and Pine Spring. Puncture vine has increased in the Wee Thump area. Also, anecdotal observations suggest weeds have been spreading north from California along the I-15 and U.S. 95 corridors. Sahara mustard (*Brassica tournefortii*) has been reported as expanding significantly in portions of the ACEC.

Effects to Conservation Elements

Noxious weeds can spread rapidly and compete aggressively with other plants for light, nutrients, and water. Once noxious weeds inhabit a site, they often reproduce profusely, creating dense stands with extensive roots and soil seedbanks that can persist for many years. Impacts of noxious weeds in Nevada can include increased soil erosion and salinity; increased flood potential; decreased water quality; decreased forage and crop yield; displaced wildlife and native plants; reduced recreation potential; reduced aesthetic value; injury to humans and animals; and increased fire danger (University of Nevada Cooperative Extension 2010). Within spring areas, noxious weeds can be carried and spread by livestock entering and exiting the area. Along roadsides, noxious weeds are carried into areas by vehicles traveling along roadways.

2.5.1.6 Public Outreach and Education

Current Conditions

There are currently no official public outreach programs, public contact facilities, or sign replacement plans for the ACEC. Anecdotal reports suggest that over 50 percent of carsonite signs designating open routes are down or missing due to vandalism, weather decay, or other causes. Two kiosks within the ACEC provide basic information on the ACEC. Trash dumping areas are infrequent, but a few larger ones were noted during the disturbances analysis.

Effects to Conservation Elements

Reduced public outreach can lead to increases in resource degradation due to continued motorized use of closed routes and other disturbed areas. Unauthorized uses and presence of trash in disturbed and undisturbed areas result in degradation of soils, vegetation, wildlife habitat and visual resources. Signage, kiosks, maps, visitor contacts, and awareness programs as well as an increase presence of law enforcement lead to reduced disturbances and improved recreational experiences.

2.5.2 ACEC Resource Values Current Conditions

2.5.2.1 Soils

Biological soil crusts, warm desert pavement, and bedrock cliff and outcrop resources are known to occur within the ACEC, but these areas have not been mapped. Ongoing research using remote sensing may eventually be useful for determining the distribution and abundance of biological soil crusts in the future, but the BLM is unaware of studies designed to inventory other soil resources. In the BLM's 2019 analysis of disturbed areas within the ACEC, vehicle tracks can be discerned in many desert pavement patches and in presumed high biological soil crust areas.

2.5.2.2 Vegetation and Special Status Species

Vegetation communities within the ACEC are shown in Figure MP-5. The most abundant communities are described below.

Creosote Bush-White Bursage Scrub. Sonora-Mojave Creosote Bush-White Bursage Desert Scrub is one of the most abundant ecosystems in the Mojave region and covers approximately 66 percent of the ACEC (see Figure MP-5). Creosote bush and white bursage comprise the monotonous desert scrub in the broad valleys, plains, and gentle rolling bajadas between mountain ranges of the ACEC (below 3,000 to 3,500 feet elevation). Creosote bush is the dominant vegetation with white bursage, four-winged saltbush (*Atriplex canescens*) and desert tomato or wolfberry (*Lycium andersonii*) also present. In loose aeolian sandy soils under "dune-like" conditions, creosote bush and big galetta grass dominate the community and white bursage is present in reduced numbers. In southern Nevada, the Creosote Bush-White Bursage community at 2,000–2,500 feet above sea level also contains Mojave yucca (*Yucca schidigera*) or Mojave yucca and Joshua trees (*Yucca jaegeriana*). At higher elevations, creosote-bursage scrub communities are more diverse in species composition than lower valley scrub. Major shrub species include blackbrush (*Coleogyne ramosissima*), Mormon tea (*Ephedra* spp.), indigo bush (*Psorothamnus fremontii*), shadscale (*Atriplex confertifolia*), spiny hopsage (*Grayia spinosa*), desert thorn (*Lycium* spp.), ratany (*Krameria erecta*), and brittlebush (*Encelia farinosa*). Catclaw acacia (*Acacia greggii*), honey mesquite (*Prosopis glandulosa*), cheesebush (*Hymenoclea salsola*), and sweetbush (*Bebbia juncea*) can be found along washes (Clark County 2007).

Shadscale Scrub. Shadescale (saltbush) scrub communities occur on dry slopes, flat areas, ridges, and valley bottoms. Common components of shadscale saltbush communities include budsage (*Artemisia spinescens*), winterfat (*Krascheninnikovia lanata*), rubber rabbitbrush (*Chrysothamnus nauseosus*), green rabbitbrush (*Chrysothamnus. viscidiflorus*), big sagebrush (*Artemisia tridentata*), spiny hopsage, and black greasewood (*Sarcobatus vermiculatus*). Common grass associates include cheatgrass, bottlebrush squirreltail (*Elymus elymoides*), Sandberg bluegrass (*Poa secunda*), and Indian ricegrass (*Oryzopsis hymenoides*).

Blackbrush Shrub. The blackbrush vegetation community is a common associate in the creosote bush-white bursage, spiny hopsage, and Mojave mixed scrub associations. Blackbrush is a common, often dominating component of middle-elevation slopes and upper bajadas in the Upper Sonoran (Mojave Desert Scrub) life zone. Blackbrush is most common at the interface of the Mojave Desert Scrub and pinyon-juniper habitat types.

Pinyon-Juniper Woodland. Pinyon-juniper woodland is found at higher elevations (4,000 to 8,500 feet above sea level) and is dominated by two tree species, singleleaf pinyon pine (*Pinus monophylla*) and Utah juniper (*Juniperus osteosperma*). Juniper is typically more abundant in more stressful environments at lower elevations, being better adapted to drought conditions.

Joshua Tree Woodland. The ACEC contains several Joshua tree stands. Joshua trees are typically found in mid- to upper-elevational zones of the Mojave Desert shrubland communities.

Special Status Plants. Based on habitat requirements, the rosy two-tone penstemon and yellow two-tone penstemon are known to occur within the ACEC. These two species have not been well-surveyed for and understanding of distribution is limited. These subspecies have the potential to interbreed with each other and with other species of penstemon, which changes the genetics of the plant adjacent to urban areas even absent of other impacts.

2.5.2.3 Wildlife

General Wildlife: With few exceptions, wildlife and special status species found in the Dry Lake SEZ area are also expected to occur within the ACEC.

Mojave Desert Tortoise: The ACEC represents the largest area of high-density desert tortoise habitat known in Nevada (see Figure MP-6). It spans the boundary between the Northeastern Mojave (NEMO) Recovery Unit (RU) and the Eastern Mojave (EMO) RU. Approximately 190,000 acres of the ACEC, beginning just north of Searchlight and extending south through Piute Valley, are located with the EMO RU. The desert tortoises in this portion of the ACEC share genetic markers with those in California to the south. The remaining ACEC (approximately 138,000 acres) is located in Eldorado Valley within the NEMO RU to the north with desert tortoises sharing genetic markers with those found in the Las Vegas Valley and areas to the northeast (see Figure MP-6) (USFWS 2020).

Nelson's Bighorn Sheep: The ACEC includes crucial habitat and winter range and provides migratory connections between the Mojave National Preserve and habitat in Lake Mead National Recreation Area. The Highland Range Crucial Bighorn Habitat Area has been designated adjacent to the ACEC, within the central portion (see Figure MP-3). Within the ACEC, bighorn sheep incorporate the area between the Highland Range and McCullough Mountains into their winter range and as a seasonal movement corridor (Figure MP-19).

2.5.2.4 Visual Resources

The ACEC is managed under two primary VRM classes: Class II and Class III (Figure MP-20). There are approximately 118,800 acres of VRM Class II and 192,980 acres of VRM Class III within the ACEC. Disturbances within the ACEC consist primarily of unauthorized linear disturbances.

Piute-Eldorado ACEC Management Plan EA

Piute-Eldorado ACEC Boundary

Bighorn Sheep Movement Corridors

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Miles

FIGURE MP-19

Nelson's Bighorn Sheep Corridors within the Planning Area

Piute-Eldorado ACEC Management Plan EA

- Piute-Eldorado ACEC Boundary
- BLM VRM Class I
- BLM VRM Class II
- BLM VRM Class III
- BLM VRM Class IV

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FIGURE MP-20
Visual Resource Management Designations

3.0 Mitigation Objectives and Management Actions

To offset the unavoidable impacts from the development of the Dry Lake SEZ, mitigation objectives to augment and improve key resources were developed with input from stakeholders and the public. The Dry Lake SEZ Implementation Plan discussed reducing landscape fragmentation through a range of management activities. That objective is further refined here, and additional objectives have been added. A preliminary set of metrics or indicators for these mitigation objectives are recommended. However, additional indicators as well as objectives may be recommended to the BLM and mitigation stakeholder group by the Third Party implementing this ACEC Management Plan for potential incorporation or substitution. Projects (Management Actions) recommended in this ACEC Management Plan address the problematic regional trends and areas of degraded resource conditions and impacts to conservation elements by improving and augmenting the condition of specific resources. None of the actions have been previously planned for the area; therefore, any uplift of conservation elements achieved through these actions would be additive to habitat restoration funded by congressional appropriation.

3.1 Reducing Landscape Fragmentation

3.1.1 Landscape Fragmentation Objectives

Landscape Fragmentation (LF) Objective 1: Consolidate areas designated for conservation (Wilderness, ACEC, Critical Habitat Unit) by reducing inholdings and slivers of lands not managed for multiple use or non-conservation purposes and to streamline management.

LF-Indicator-1: Reduce the acres of BLM-administered multiple use land inholdings inside the ACEC or sandwiched between areas managed for conservation.
LF-Indicator-2: Reduce acres of boundary slivers (gaps and overlaps).

Landscape Fragmentation Objective 2: Reduce the length and density of unauthorized linear disturbances to reduce landscape fragmentation, the spread of invasive species, transportation-related wildlife mortality and potential fire ignition sources using active and passive restoration techniques.

LF-Indicator-3: Miles of unauthorized linear disturbance in use.
LF-Indicator-4: Miles of actively or passively restored unauthorized linear disturbances within Creosote Bush-White Bursage vegetation type.
LF-Indicator-5: Number of assessment areas (or overall acres) classified as unfragmented or less fragmented as defined by an agreed upon assessment protocol.

Management actions to address this objective have been incorporated into Habitat Connectivity and Habitat Quality management actions in sections 3.2 and 3.3, respectively, below.

3.1.2 Landscape Fragmentation Management Actions

Landscape Fragmentation Management Action (MA) 1: Consolidation of Private Lands Designated for Conservation Within/Adjacent to the ACEC.

HC-MA-1: The 40-acre McCullough Spring parcel located between the ACEC's western boundary and the eastern boundary of the South McCullough Wilderness has been

prioritized for environmentally sensitive land acquisition by the BLM (see Figure MP-11). The McCullough Springs are adjacent to, and hydrologically linked to this isolated private parcel. A non-governmental organization, The Wilderness Land Trust, has purchased this land for conservation purposes and is interested in selling the land to the BLM for the benefit of wildlife in the adjacent ACEC and South McCullough Wilderness. The spring is a rare water source in the area and valuable for a number of wildlife species that reside in or migrate through the ACEC. The BLM has prepared a sensitive land acquisition proposal for Southern Nevada Public Land Management Act[1] (Public Law 105-263) funding, which would be used to purchase the McCullough Spring parcel. As with the adjustment of the ACEC boundary, a separate NEPA process would be used for this management action recommendation.

Landscape Fragmentation Management Action 2: Recommendations for ACEC Boundary Adjustments.

HC-MA-2: There are several areas within the ACEC where ACEC, non-ACEC, and Wilderness boundaries do not align due to designations occurring at different time periods. Most boundary adjustments would remove areas where ACEC and Wilderness designations overlap or remove "slivers" of multiple use BLM lands that were unintentionally excluded from ACEC designation (see Figure MP-10). If all recommended adjustments were made, the ACEC would be reduced by approximately 4,262 acres, but these acres would remain in congressionally-designated wilderness. Any changes to the ACEC boundary require an RMP level decision; therefore, this action would be analyzed under a separate NEPA process.

3.2 Improving Habitat Connectivity

3.2.1 Habitat Connectivity Objectives

Habitat Connectivity (HC) Objective 1: Connect small mammal/reptile habitat across roads using fencing and culverts to facilitate safe passage.

HC-Indicator-1: Number of culvert crossings categorized as passable for desert tortoise (indicator species) through maintenance, repair, or modification of culverts and associated structures.
HC-Indicator-2: Number of culvert crossings connected to desert tortoise fencing aligned in/near road rights of way.
HC-Indicator-3: Miles of improved road with desert tortoise fencing.
HC-Indicator-4: Maximum distance between safe crossings by installing new culverts along Nipton Road.
HC-Indicator-5: Number of culvert inflow and outflows blocked by Russian thistle and other weed/invasive species.

[1] The Southern Nevada Public Land Management Act was enacted in 1998 to provide for the orderly disposal of certain Federal lands in Clark County, Nevada, and to provide for the acquisition of environmentally sensitive lands in the State of Nevada.

HC-Indicator-6: Number of culvert inflow and outflow adjacent wash habitat patches providing shade/cover for wildlife transit as determined by percent cover of mature shrubs/yuccas.

Habitat Connectivity Objective 2: Reduce barriers that are not facilitating road crossings.

HC-Indicator-7: Miles of tortoise fencing and non-tortoise fencing creating wildlife barriers, but not facilitating road crossing or protection from hazards.

HC-Indicator-8: Miles of low-traffic improved road (e.g., LORAN Road) creating an artificial barrier for some wildlife species.

3.2.2 Habitat Connectivity Management Actions

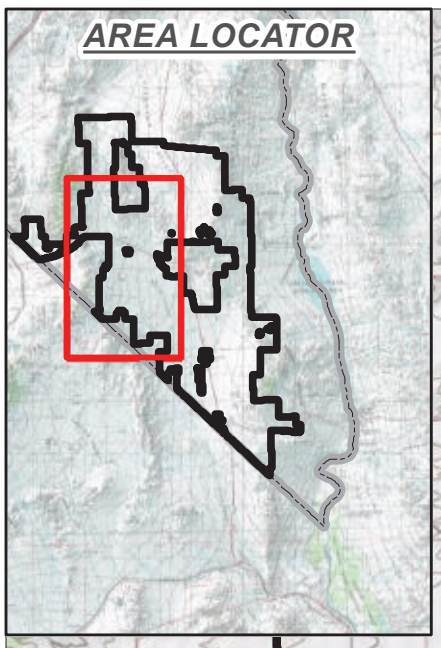
Habitat Connectivity Management Action 1: Installation of New Culverts.

HC-MA-1: Install up to twelve new culverts specifically for wildlife to safely cross Nipton Road (Figure MP-21). Fencing would be tied in as described below (HC-MA-3 and HC-MA-4).

Habitat Connectivity Management Action 2: Modification of Existing Culverts for Wildlife.

HC-MA-2: The existing 17 culverts along Nipton Road are in need of repair (see Figure MP-13), maintenance, or retrofitting in order to improve wildlife access. The condition of each culvert would be assessed for repair, maintenance, and wildlife impassibility in order to focus on the subset of culverts that can be improved. Assessment would include note of wildlife sign adjacent to culverts (tracks, scat, or other signs of wildlife), blockages, or damage/disrepair.

Culvert repair, maintenance, retrofitting, and installation would likely require a footprint of disturbance on either side of a roadway of approximately 2,000 square feet or less. These areas are primarily previously disturbed (during the original road construction), although vegetation has recovered adjacent to some culvert locations. Heavy equipment (backhoes, loaders, boring machines, etc.) may disturb vegetation at some locations.



Piute-Eldorado ACEC Management Plan EA

Piute-Eldorado ACEC Boundary

Proposed Wildlife Culvert Zone

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Date: 5/12/2021

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FIGURE MP-21

Proposed Wildlife Culvert Zone along Nipton Road

The following modifications would occur:

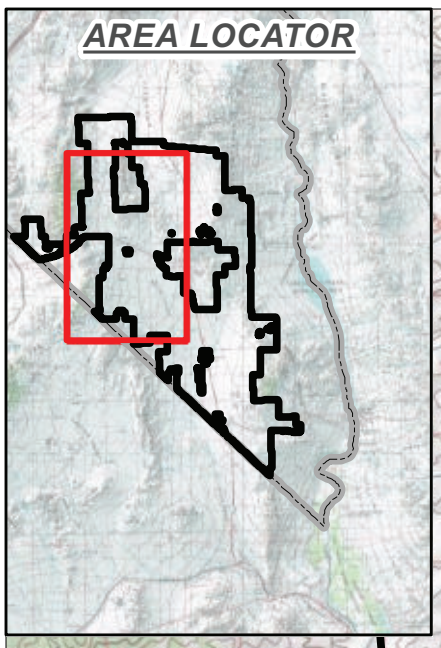
- Conduct annual inspection of culverts for factors that could cause blockage during flooding and potentially lead to entrapment of species like Mojave Desert tortoise.
- Repair or modify culverts where sedimentation, erosion, rip-rap or other characteristics result in openings that are not accessible for tortoises or other wildlife. Modifications would include the addition of concrete to keep the outflow end of culverts level with the ground if they have become "perched" by erosion.
- Make the entrance/exit of culverts accessible to tortoises and other wildlife by ensuring that the bottom of culverts are at or below grade and adjacent portions of washes are passible. Rip-rap is a major obstacle (tortoises cannot traverse through rip-rap). Solutions include:
    - Extend a smooth, flat strip of concrete between the culvert openings and rip-rap or drop-off areas that connect to the sides of a wash. Wildlife can use these as on- or off-ramps to the culvert and avoid rip-rap, drop-offs, weed infestations, or other barriers that develop in wash channels.
    - Cement rip-rap so that a smooth surface is created between rip-rap boulders, creating a safe place for wildlife to traverse without becoming entrapped in crevices.
    - Modify a subset of corrugated metal culverts to facilitate passage by juvenile tortoises and other small wildlife. Techniques include re-lining culverts by installing a smaller diameter smooth pipe insert or other specialized insert, applying shotcrete or gunite lining, or other techniques that create at least a narrow strip of smooth surface in the bottom of the culvert.
    - Conduct herbicide or mechanical weed treatments where invasive vegetation, such as Russian thistle (*Salsola* spp.), blocks wildlife access to culvert openings.
    - Add culverts specifically for wildlife use (as opposed to primarily water drainage) under Nipton Road (see Figure MP-21). Culvert installation may be trenchless (e.g., pipe ramming, horizontal boring) or more traditional trench and cover techniques (which would depend on contracting, NDOT specifications, cost, etc.). Several factors affect the number and location of wildlife culverts installed beneath Nipton Road including the results of wildlife culvert use studies being conducted by BLM and USFWS researchers, topographic conditions, the location of cultural resource avoidance areas and cost.
    - Remove excess invasive plant material, particularly Russian thistle, from existing culverts to make them passable for wildlife. Dead or live plant material such as a build-up of Russian thistle (tumbleweed) would be removed by hand and loaded into trash bags, a dumpster, or other container for transportation to a landfill. Once problem areas are identified by weed monitoring, herbicide treatments would be used to reduce the build-up of tumbleweeds at culvert openings.

Habitat Connectivity Management Action 3: Installation of Sensitive Area Fencing and Desert Tortoise/Wildlife Fencing.

HC-MA-3: Construct post and cable fencing to guide motorized use away from sensitive areas and/or toward designated routes as a Best Management Practice. This technique would be used in areas identified as having sensitive resources (specific conservation elements) and used if other techniques are not protecting resources as anticipated.

HC-MA-4: Desert tortoise/wildlife fencing criteria:

- Fencing would meet USFWS desert tortoise exclusion fencing specifications (USFWS 2009).
- Collect data on tortoise/wildlife fence conditions within southern Nevada in coordination with the NDOT.
- Work with the NDOT to monitor, repair, and maintain tortoise/wildlife fencing. Fencing is currently down in many places along U.S. 95 and Nipton Road due to flood damage.
- Re-align tortoise/wildlife fencing at existing culverts and new wildlife crossing locations along U.S. 95, Nipton Road, and U.S. Route 165. In addition to improving wildlife habitat connectivity, the fence re-alignments would reduce the amount of fencing crossing washes that are prone to flooding and sedimentation damage.
- Move desert tortoise/wildlife fence on Nipton Road (south side) (Figure MP-22). Currently, the fence on the south side of Nipton Road between Searchlight and Walking Box Ranch Road is more than 1,000 feet south of the NDOT ROW. Fences are typically aligned with the NDOT ROW, which is 100 to 200 feet from the roadway. Moving the fence closer to the road would provide additional protected tortoise habitat to the south of Nipton Road (protected from road-related mortality).
- Extend fence along south side of Nipton Road from Walking Box Ranch west to the pass through the McCullough Mountains to protect tortoise and other wildlife from road-related mortality (see Figure MP-22). Extending tortoise/wildlife fencing on both sides of the road to the pass at the south end of the McCullough Mountains would help reduce wildlife mortality from Walking Box Ranch to the pass. The fencing and crossings would also facilitate safe travel for other wildlife species.



Nipton Road

Piute-Eldorado ACEC Management Plan EA

Piute-Eldorado ACEC Boundary

Proposed Tortoise Fencing (25.39 miles)

Existing Tortoise Fencing (13.19 miles)

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FIGURE MP-22

Proposed Reconfiguration of Desert Tortoise Fencing along Nipton Road

Habitat Connectivity Management Action 4: Modification of Designated Routes.

As mentioned previously in this document, changes to the route designation (open or closed) in the LVFO RMP are not part of this ACEC Management Plan, nor are they analyzed in the Environmental Assessment. Routes designated in 1998 as open would remain open until Transportation and Travel Management occurs in the future.

HC-MA-5: Maintenance of routes designated as open would continue as normal with the exception of the LORAN Station Road. Repairing or modifying this road is needed to reduce the risk of an unstable portion of pavement collapsing, reduce erosion, reduce negative effects to wildlife, and improve visual quality. Repair or modification of the LORAN Station Road will be pursued through ROW terms and conditions with separate NEPA compliance analysis completed prior to any work. Repair or modification options include the following:

- **Realigning the roadway and diverting stormwater runoff:** Remove asphalt and grade as a native surface road to restore elevation to more natural conditions. The road would be realigned to add a variety of curves to change stormwater flow, reduce stream power (velocity of water flow), and reduce erosion potential. Stormwater flow would be guided away from the roadway at frequent intervals using water turnouts. Where feasible, broad swales would be added along the road shoulder designed to carry water away from the road and to the surrounding landscape. In addition, road dips, rip-rap, and other improvements would be installed along the road.
- **Keep existing alignment and remove asphalt:** Remove asphalt along the existing road alignment. Maintain natural surface road by adding graded fill to keep road smooth, leveled, and crowned. Where feasible, broad swales would be added along the road shoulder designed to carry water away from the road and to the surrounding landscape. In addition, road dips, rip-rap, and other improvements would be installed along the road.

3.3 Improving Vegetation and Wildlife Habitat Quality

3.3.1 Habitat Quality Objectives

Habitat Quality (HQ) Objective 1: Reduce the impact of non-linear disturbances on vegetation and wildlife.

HQ-Indicator-1: Acres of non-linear disturbance in-use measured from initial assessment and post-treatment monitoring.

HQ-Indicator-2: Acres of non-linear disturbance categorized to an improved condition class based upon agreed upon assessment protocol.

Habitat Quality Objective 2: Monitor and manage invasive plants that reduce habitat quality and increase the risk of catastrophic wildfire.

HQ-Indicator-3: Miles of green fuel breaks (swaths aligned with roads or other geographic features) treated with herbicide to reduce invasive grasses and other

invasive species abundance, to alter fire behavior, and provide defensible firefighting space.

HQ-Indicator-4: Number of early detection and rapid response treatments resulting in local eradication of new invasions by species such as buffelgrass.

Habitat Quality Objective 3: Improve the condition of springs within and adjacent to the ACEC.

HQ-Indicator-1: Number of springs with improved hydrological and riparian function as measured by BLM Primary Functioning Condition Survey, Assessment, Inventory and Monitoring data, and Southern Nevada Interagency-Spring Stewardship Institute surveys and USGS water quality assessments.

HQ-Indicator-2: Number of springs modified to exclude feral cattle while maintaining access by bighorn sheep and other wildlife.

HQ-Indicator-3: Acres of spring riparian habitat where invasive plant cover is reduced below 10 percent relative cover or other standard or agreed upon thresholds.

3.3.2 Habitat Quality Management Actions

Habitat Quality Management Action 1: Implementation of Restoration Techniques.

Standard restoration techniques include using native plant seeds and seedlings to re-vegetate disturbed areas, installing vertical mulch, raking soil to hide vehicle tracks, and installing barriers to discourage off-route driving. In a small number of areas, mechanical seeding and planting techniques would include the use of tractor, or skid-steer, mounted augers or backhoes to dig holes, rakes for ripping and de-compacting soil, graders or scrapers for re-distributing soil, imprinter drums for creating divots for seed and water catchments, loaders, and UTV or other equipment to transport plant material or water.

HQ-MA-1: Seeding

- Hand seeding would be used for direct sowing of native seed into small divots created with a hand tool and covered with a thin layer of soil, broadcasted native seed onto the surface of the ground or raked into the surface to bury seed. The broadcasting technique may also include using sterile commercial seed such as millet to divert ants and rodents from consuming the native seed and/or enlisting their help in caching and potentially increasing germination from unused caches.
- Mechanical seeding would be used in severely disturbed areas. This technique includes the use of an imprinter drum, ripper, or other equipment to scarify or decompact soil prior to or during seeding. Seed is sown with a seed drill or similar tractor- or UTV-drawn equipment.
- Native seed would be collected from within the ACEC from Provisional Seed Transfer Zones (Figure MP-23). Acres of disturbance within each Provisional Seed Transfer Zone were calculated by overlaying linear transportation disturbance and other disturbance areas. An average width of linear transportation disturbance was based on random samples of these disturbances and combined with miles of disturbance to calculate the acres of disturbance (Table MP-4). The resulting table of disturbed acres within each seed zone

would be used to guide collection activities. This data may also be used to select appropriate collections for seed increase/grow out contracts.

- Seeds could also be collected from appropriate seed transfer zones identified by USGS (DeFalco 2019) outside the ACEC using Seeds of Success protocols as a guideline (BLM 2019). Under the Seeds of Success protocols, seed collections would be made from at least 50 plants sampled across a single population. Multiple collection dates can occur throughout a growing season, as long as no more than 20 percent of ripe seeds are taken from a population on any given collection day. The goal of the Seeds of Success protocol is to establish high quality, accurately identified, genetically representative and well documented native plant seed collections for specific geographic areas (BLM 2019).

Table MP-4 Acres of Disturbance within each Provisional Seed Transfer Zone[2]

Disturbance Type	Acres
Zone 20	18.5
Zone 21	20.8
Zone 23	66.8
Zone 25	461.7
Zone 33	11.1

HQ-MA-2: Planting

- Planting would be accomplished by digging holes using handheld gas-powered augers, skid-steer, or tractor-powered augers, and hand tools. Augured holes typically would not exceed one square foot of displaced soil. Mechanical augers would only be used for highly disturbed areas with compacted soils or large areas where mechanization is cost-effective and can be accomplished with little or no collateral damage to existing native plants.
- Cones/tree shelters: Tree shelters and solid plastic cones provide effective protection against herbivory and harsh elements such as wind and sandblast. These shelters are costly, however, and may have other effects such as increasing temperatures (Oliet and Jacobs 2007; L. DeFalco, USGS, Personal Communication) and temporarily altering growth (Bainbridge 2007, Devine and Harrington 2008). Cones and tree shelters work best for upright and tall plant growth forms.
- Natural material shelters: Rock mulch, cairns, and dead plant material can be strategically placed around a plant to provide a natural form of shelter. While these shelters may degrade more quickly over time compared to artificial shelters, using materials gathered from on-site are less costly and can provide a natural look to the site. When constructed carefully, they can provide protection against herbivory and harsh elements. When using on-site materials, no more than 10 percent of materials should be gathered from a given area, within 30 meters of the plot or as determined by consultation with field offices.

[2] Not all these disturbed areas will need seeding, only a portion of these acres would need planting/seeding. For example, passive restoration would be employed for all but the beginning and ending segments of linear disturbances. Also, disturbances on desert pavement, for example, will be handled with techniques like rock staining, flipping rocks varnish side up, or other techniques that don't include seeding.

Piute-Eldorado ACEC Management Plan EA

Piute-Eldorado ACEC Boundary

Provisional Seed Zones

- Zone 20
- Zone 21
- Zone 23
- Zone 25
- Zone 33

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Miles

FIGURE MP-23

Provisional Seed Transfer Zones within ACEC

- Cages: Wire cages can protect against herbivory but do little against harsh elements like wind. Mesh size can play a role in which herbivores are protected against, as too big of a size may allow small rodents and large herbivorous insects into the cage.

HQ-MA-3: Vertical Mulching

- Vertical mulching would be used in conjunction with seeding, planting, physical barriers such as berms or rocks, "restoration in progress signs," or as a stand-alone technique. Vertical mulching is conducted by digging or augering holes and placing dead material within the holes and backfilling the soil as if planting a live seedling. Coarse woody debris, rocks, and other local materials are incorporated into vertical mulching to create a natural look, improve microsite habitat conditions, and create physical impediments for motorized off-road travel.

HQ-MA-4: Installing Barriers and Topographic Modifications

- Heavy equipment would be used to create berms, pits, or other topographic features and to move boulders to serve as barriers to discourage illegal motorized vehicle use on closed routes or restored/recovering disturbed areas.

HQ-MA-5: Using Erosion Control Fabrics

- Organic materials or fabrics such as straw (loose or consolidated in bales, woven into mats, or dispersed in long cylindric waddles), coir (fibrous coconut by-products), or jute (fiber woven into twine and stitched into a loose, open grid) can be placed over an existing area of erosion to reduce wind and water erosion by raindrops and surface flows. These materials all have been used with some success and are biodegradable. These natural fabrics also act as mulch and can contribute to higher seedling emergence (Bainbridge 2007). However, broadcast straw can influence soil water content and soil temperatures thus negatively or positively influencing the germination of seed species (Ostler and Hansen 2003, Caldwell et al. 2009). Only products that minimize the risk of introducing weed seed or live vegetative material would be considered for use.

HQ-MA-6: Maintaining Structures

- Maintenance of degraded restoration structures (e.g., signs, vertical mulch, plant shelters and catchments) is recommended due to the high costs associated with completely re-installing a structure versus maintaining an existing structure before complete degradation. Monitoring of restoration structures would be performed on every visit to the project site.

Habitat Quality Management Action 2: Managing Noxious Weeds

The Third Party would develop a Noxious Weed Management and Monitoring Plan, implement weed treatments, report, and monitor treatment sites for the ACEC, as detailed below. Most of these actions would be covered under the BLM Las Vegas Programmatic Weed Treatment Environmental Assessment.

HQ-MA-7: Preparation of a Noxious Weed Management Plan for the ACEC.

- Spatial Analysis of High-Risk Areas: This portion of the plan would spatially define high risk areas, including disturbance features like roads that serve as weed vectors and areas of known weed distribution.
- An Early Detection and Rapid Response Schedule: The frequency, timing and techniques for inventory and monitoring visits to high-risk areas would be proposed and agreed upon by BLM managers and stakeholders.
- Identification and Mapping of Weed-Infested Areas (most correspond with mapped disturbed areas): Additional weed infested areas described in the Current Conditions Section.
- Treatment Prescriptions: To include descriptions of schedules, chemical, mechanical and biological control methods, standard operating procedures, and Best Management Practices for the use of herbicides approved in the *Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States PEIS and Record of Decision* (BLM 2007) and *Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on BLM Lands in 17 Western States PEIS and Record of Decision* (BLM 2016).
- Pesticide Use Permit Applications: Submitted to the BLM Weed Program Manager for approval by the Nevada State BLM Director.
- Tracking and Reporting: Pesticide use in Pesticide Application Reports and annual reports to BLM managers and stakeholders.

HQ-MA-8: Implementation of Weed Treatments.

- Puncture vine and Russian thistle at McCullough Springs, Pine Spring, and the Wee Thump Corral camping area at the southeastern edge of the Wee Thump Wilderness.
- Sahara mustard, Russian thistle, and other invasive plants in washes that cross major roadways and highways throughout the ACEC, particularly north along the I-15 corridor.
- Treat areas determined to be at a high cover of invasive annual grass that could result in the spread of fire, particularly areas with Mediterranean grass invasions.
- Invasive species that have begun to spread along utility corridors, including pipeline and transmission line corridors.
- The Third Party will identify camping sites with weed infestations and conduct weed treatments. Relocate parking lots if needed to avoid weed distribution[3]
- Increase compliance inspections in the ACEC for weed mitigation and restoration needs within ROWs
- Prepare, administer, and manage contracts for weed control projects.

Habitat Quality Management Action 3: Spring Restoration Projects.

The Third Party would review the results of Spring Stewardship Initiative surveys and make recommendations to BLM managers and stakeholders for spring restoration projects. Incorporate

[3]Add locations. Steve mentioned a comprehensive inventory method be used for this. JJ will have Adam come up with a draft and send to Steve/Kenny for review.

the information from the interagency surveys of springs throughout southern Nevada as it becomes available and use the survey results to develop spring restoration projects.

HQ-MA-9: Restoration of Ora Hanna Spring.

Located near the western boundary of the Highland Range Crucial Bighorn Sheep Area, this small spring was developed in historical times by digging an adit. The adit has silted in, restricting access to wildlife, particularly small mammals, and potentially endangering them. Recommended modifications include:

- After a cultural resources survey, only approved materials would be moved. Any identified cultural features would be avoided as much as feasible.
- Manually remove non-historical development materials, any foreign objects, and excess sediment or vegetation necessary to avoid endangering animals.

HQ-MA-10: Restoration of Cow Spring.

Located on the eastern side of the Highland Range within approximately 1,300 feet of the ACEC boundary, this spring provides water for bighorn sheep and other wildlife throughout a large area of the ACEC. The spring has been significantly altered by past ranching activities and now consists of three adits, supported by timbers that are visible just inside the entrances. Cattails and other vegetation partially block access to the water, and stray cattle have trampled and churned the area just outside one of the adits. Recommended modifications include:

- After a cultural resources survey, only approved materials would be moved. Any identified cultural features would be avoided as much as feasible.
- Remove non-historical development materials.
- Monitor the spring for invasive plant species and apply aquatic-appropriate, BLM herbicides as necessary.

HQ-MA-11: Restoration of Highland Spring.

Located on the southern end of the Highland Range within approximately 2,600 feet of the ACEC boundary. This spring has been degraded by past ranching activities and current significant degradation by feral cattle use. Recommended modifications include:

- After a cultural resources survey, only approved materials would be moved. Any identified cultural features would be avoided as much as feasible.
- Remove non-historical development materials, any foreign objects, and excess sediment or vegetation. Remove black plastic tubing used in the recent past to pipe water down to a trough and corral. Tubing would be carried out by hand down through the wash to a vehicle parked at the corral, which is located at the end of a designated route.
- Monitor the spring for invasive plant species and apply aquatic-appropriate, BLM herbicides as necessary.

3.4 Improve Visual Quality

3.4.1 Visual Quality Objectives

Visual Quality (VQ) Objective 1: Reduce the landscape scars caused by unauthorized OHV activity, mining, and other land use practices.

VQ-Indicator-1: Number of linear disturbance intersections hidden from casual view using vertical mulching, planting, and other techniques.
VQ-Indicator-2: Miles of midground or background linear scars blended into the substrate using rock stain, vertical mulching, or other techniques.
VQ-Indicator-3: Acres of disturbance hidden from casual view by using the above techniques.

Visual Quality Objective 2: Removal of trash.

VQ-Indicator-4: Tons of trash removed through cleanup efforts and events.

3.4.2 Visual Quality Management Actions

Visual Quality Management Action 1: Activities to improve general visual quality.

VQ-MA-1: Activities that would be conducted to improve general visual quality within the ACEC include trash cleanup; restoration of disturbances; repair of the LORAN Road; and maintaining signage.
VQ-MA-2: The use of rock stain, applied with hand sprayers, is an effective technique for replicating the visual characteristics of a disturbed site. Disturbed sites visible from designated conservation areas, such as the Wee Thump Wilderness, would be identified by the Third Party.

- Where disturbances have overturned varnished rocks or exposed caliche or less weathered portions of coarse rock material, a stain may be used to mimic natural processes that darken desert surfaces above the soil line. Commercial, water-based stains use the same mineral (manganese, iron) oxides responsible for discoloration of the surface. This technique would be used to treat sensitive areas like desert pavements, highly visible disturbances like mining scars and areas with little natural vegetative cover.
- Due to a lack of standard restoration techniques for desert pavement, incorporate experimental research using rock stain, raking, or other techniques. Restoration of linear disturbances that lead to or through areas of particularly well-developed pavements identified by the Third Party will be used.

3.5 Improving Soil Conditions

3.5.1 Soil Conditions Objectives

Soil Condition (SC) Objective 1: Restore and protect areas of biological soil crust and desert pavement.

SC-Indicator-1: Number of biological soil crust and desert pavement areas protected by discouraging off-road travel with vertical much, rock stain, boulders, post and cable fencing or other techniques.

Soil Condition Objective 2: Restore natural drainage, erosion, and sedimentation patterns.

SC-Indicator-2: Number of disrupted drainages restored to original paths through road re-engineering (LORAN Road).

3.5.2 Soil Conditions Management Actions

Soil Condition Management Action 1: Investigate Opportunities to Fund Biological Soil Crust and Desert Pavement Research.

SC-MA-1: Mitigation funds ($30,000) from Dry Lake SEZ development were used (outside the ACEC and the scope of this management plan) to fund research into biological soil crust mitigation. A similar approach for North American warm desert pavement is needed to increase knowledge of the distribution of desert pavements within the ACEC and appropriate restoration techniques for these unique soil units. The Third Party would investigate opportunities to fund desert pavement restoration research and propose research projects to BLM managers and stakeholders.

SC-MA-2: The Third Party would also document desert pavement and biocrust resources when encountered during the assessment phase of restoration implementation and prioritize the restoration of disturbances in these areas.

Soil Condition Management Action 2: Restoration of Disrupted Drainages.

SC-MA-3: Projects including the repair and modification of the LORAN Road would reduce erosion and sedimentation. Restoration of unauthorized linear and non-linear disturbances would increase soil stability locally and may enhance biological soil crust resources. The Third Party would develop indicators for quantifying the mitigation impact of this work.

3.6 Improving Recreation Opportunities, Public Outreach, and Education Efforts

3.6.1 Recreation, Outreach, and Education Objectives

Outreach and Education (OE) Objective 1: Increase visitor contacts for interpretation, recreation, and law enforcement.

OE-Indicator-1: Monthly law enforcement patrol hours or miles.
OE-Indicator-2: Monthly park ranger patrol hours or miles.
OE-Indicator-3: Collect and manage visitor use data using BLM's Recreation Management Information System

Outreach and Education Objective 2: Improve BLM and partner interaction with the local communities to garner support for conservation.

OE-Indicator-4: Number of public meetings and special events attended to respond to questions, provide general information, or recruit community involvement in activities such as raven management through trash control efforts.

OE-Indicator-5: Number of volunteer or interpretive events held for cleanup, restoration, and interpretation.

OE-Indicator-6: Number of programs and presentations geared for school-aged children, such as Every Kid Outdoor and Leave No Trace.

Outreach and Education Objective 3: Improve quality and condition of signs and information kiosks.

OE-Indicator-7: Percentage of route intersections with functional signs.

OE-Indicator-8: Number of kiosks with up-to-date information and clean, welcoming setting.

3.6.2 Recreation, Outreach, and Education Management Actions

Education and Outreach Management Action 1: Focused Park Ranger and Law Enforcement Patrols.

OE-MA-1: The Third Party would develop communication mechanisms for keeping BLM law enforcement officers and the ACEC Park Ranger informed about any observed activities or patterns of use related to vandalism, trash dumping, off-road driving or other illegal activities. BLM law enforcement would use this information to structure the timing, frequency, and location of patrols.

OE-MA-2: Enforce 45 mile per hour speed limit along Cottonwood Cove Road.

OE-MA-3: Park Ranger and Third Party would patrol high-use sites/areas, monitor signage conditions, and serve as point of contact for the recreating public.

OE-MA-4: Collect visitor use data by installing traffic counters at access points to high-use sites/areas and documenting recreation use observations (i.e., recreation activities, number of participants, and mode of transportation).

Education and Outreach Management Action 2: Development of Outreach Materials, Strategies, and an Education and Communications Plan.

OE-MA-5: The Third Party would develop outreach materials and strategies for deployment including holding education events, developing and disseminating information by social media, presentations, and visitor contacts, and creating printed material for use in kiosks and the BLM office. Community outreach materials would carry messages to guide visitor use and reinforce positive perspectives on natural resource conservation and protection in the ACEC. Sensitive resource issues, such as Mojave Desert tortoise, bighorn sheep and desert pavement impacts, should also be included in interpretive message and outreach education materials.

OE-MA-6: The Third Party would develop outreach materials and programs specifically tailored for school-aged children. Age-appropriate outreach materials and programs would carry messages of responsible recreation on public lands and other general conservation principles. Sensitive resource issues, such as Mojave

Desert tortoise, bighorn sheep and desert pavement impacts, should also be included in interpretive message and outreach education materials.

OE-MA-7: The Third Party would propose an Education and Communication Plan that incorporates activities of the BLM Ranger like conducting focused visitor contacts to educate the public about ACEC rules, recreational use, resource use, and outdoor ethics and/or user etiquette. The plan would also include engagement with area communities, particularly Searchlight, on waste disposal issues, at a municipal level and business community level. This engagement would focus on the role of food waste related to raven population growth. Engagements with municipal waste management, restaurant management and employees would focus on training and education about keeping dumpsters closed.

Education and Outreach Management Action 3: Improvement of Signs.

OE-MA-8: The Third Party would create a data point file for signs including road closed, restoration in progress, designated route signs and kiosks. This information would be incorporated into the existing state geodatabases. The Third Party would collaborate with the ACEC Park Ranger to evaluate signs along the Walking Box Ranch Road to the Castle Dome Mine site and choose the location to add or relocate tortoise caution signs, as needed. If no agreement exists with NDOT for the current posted 35-mile-per-hour speed limit, these signs would be replaced by 25 miles per hour speed limit signs to conform with ACEC rules. The Third Party would also order replacement signs, stickers, and carsonite posts for replacement in the field as sign deficiencies are encountered during ACEC Park Ranger and Third Party monitoring. Sign placement, damage, replacement, or other maintenance would be recorded in the ACEC transportation network geodatabase.

OE-MA-9: Install desert tortoise crossing sign along Cottonwood Cove Road.

OE-MA-10: Install additional kiosks, message boards, or other informational signage/devices at staging areas and/or critical access points. These devices should carry information that includes applicable rules and regulations, responsible recreation principles, and reinforce positive perspectives on natural resource conservation and protection in the ACEC.

4.0 Prioritizing Restoration Treatments

The Third Party would develop a Work Plan to include recommendations for prioritizing restoration treatment projects. The Work Plan would require approval by BLM managers and stakeholders. Considerations for prioritizing restoration are detailed below.

4.1 Considerations for Prioritizing Restoration of Disturbances

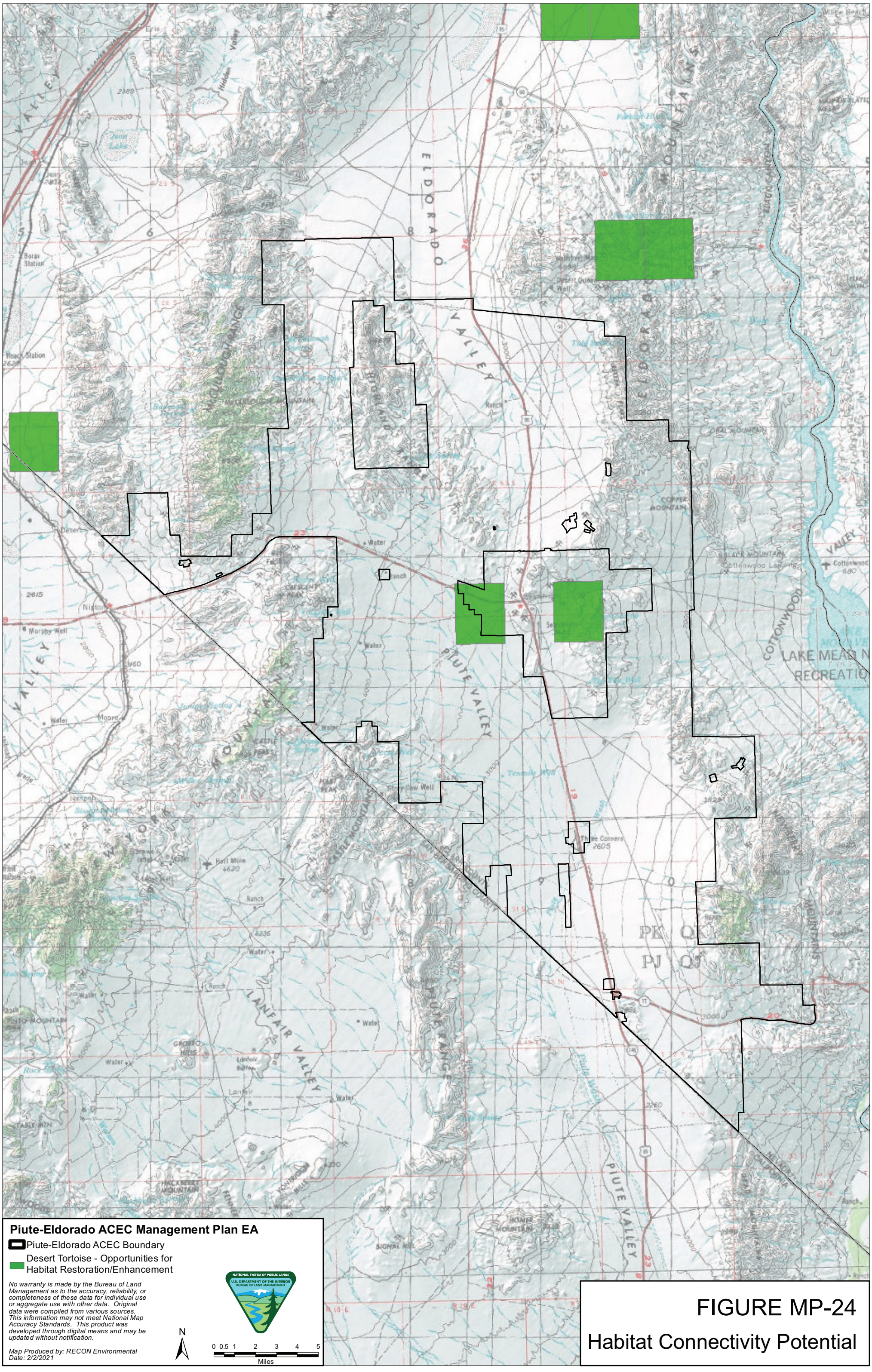
In general, restoration treatments would be focused on areas of the ACEC where there is a high potential for mitigation (Figure MP-24). Areas that are relatively unimpacted by anthropogenic activity would benefit less from restoration actions. Likewise, areas with a high level of urban development, major roads or other cultural features are poor candidates for restoration.

Roadside fencing and culvert management projects would occur within areas of low mitigation potential, but their effects on conservation elements extend into larger areas of the ACEC by improving habitat connectivity and reducing road-related mortality. Similarly, spring restoration projects and recommendations for sensitive land acquisition and boundary adjustments affect conservation elements at a landscape level.

Projects that address visual quality may also occur in areas that are considered to have low mitigation potential because the potential for uplift in visual quality was not part of the REA analysis of mitigation potential. Visual quality is assessed in relation to nearby specially designated areas, such as the Wee Thump Wilderness and mountain ranges, and changes to the landscape visible from the areas.

Initial disturbance assessments would provide insight into current disturbance levels and the likelihood of restoration being successful. A brief analysis of assessment data would provide the basis for generating broad categories of disturbances and making recommendations for efficiently using resources and optimizing outcomes. Possible classifications include:

- **Old Disturbances:** Ground-based assessments used to verify or enhance the satellite imagery interpretation would help differentiate those disturbances that might be recovering naturally with little or no evidence of on-going disturbance from OHV or other sources. These areas may require only weed monitoring or periodic, light restoration treatments to maintain a favorable rate of recovery, or, in some cases, vertical mulching to disguise entrances to discourage further disturbance.
- **Inactive Disturbances:** Some newer or older disturbances may show no signs of recent disturbance but would require standard restoration activities to initiate or accelerate natural recovery. Seeding, raking, vertical mulching near possible entry points or along sight lines from nearby roadways, emplacement of rock or fence barriers, signage or other techniques may be prescribed.


Piute-Eldorado ACEC Management Plan EA
Piute-Eldorado ACEC Boundary
Desert Tortoise - Opportunities for Habitat Restoration/Enhancement
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.
Map Produced by: RECON Environmental
Date: 2/2/2021
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U.S. DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT
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FIGURE MP-24
Habitat Connectivity Potential

- **Active Disturbances:** Some disturbances, including some unauthorized transportation linear disturbances, springs, shooting areas, and trash dumps may receive nearly daily use. These areas require a strategic approach to ensure recourses are used effectively. For example, a heavily used unauthorized transportation linear disturbance making a logical connection in the existing network of designated routes may be difficult or impossible to restore. Disturbances such as these may be addressed more effectively with broad community involvement in a future travel and transportation management planning effort. Linear disturbance features to be considered for restoration include closed routes that have been "re-opened" by unauthorized use and other linear transportation-related disturbance features caused by unauthorized motorized use. These routes, as well as linear disturbances created by unauthorized off-road travel are shown in Figures MP-14a through MP-14b and Figure MP-16. The following criteria must apply for these disturbances to be restored under this ACEC Management Plan and associated NEPA process. The unauthorized linear disturbance feature is not a route designated as open in the LVFO RMP. Changing the designation or alignment of open routes would be analyzed under a separate Travel and Transportation Management planning effort and NEPA planning process in the future. This ACEC Management Plan includes only limited modifications to designated route characteristics (such as surfacing material) as described in the Modification to Designated Routes section.
- **Special Places:** Some disturbed areas are popular for target shooting, staging vehicles and trailers for OHV recreation, camping, or other uses. Restoration of some of these areas would be ineffective without a strategic, comprehensive approach that includes park ranger outreach, education efforts, focused law enforcement patrols and high levels of restoration intervention such as fencing, signage and landscape barriers.

5.0 Restoration Protocol

The Third Party will develop an assessment protocol for disturbances based on existing methodologies including the DIRT protocol (BLM and USGS 2020) and restoration protocols in development for California BLM route restoration projects (USGS 2020). The assessment will include components similar to the below steps adapted from these efforts.

5.1 Step 1: Site Assessments

a. Classify disturbances into site condition and disturbance severity.
b. Assess the estimated amount of use on 1998 RMP closed routes.
c. Delineate polygons to subdivide the ACEC and use these to calculate metrics such as the distance of linear disturbance per unit area (i.e. disturbance density) and to facilitate assessment and monitoring.
d. Identify or establish reference plots. Use existing scientific data from Assessment, Inventory, and Monitoring plots or establish reference sites within 1 kilometer of disturbances to establish target restoration objectives based on existing soil and vegetation characteristics including the amount of soil biocrust, species composition and density, and the abundance of invasive plants, etc.
e. Incorporate disturbance/restoration data from the BLMs databases into ground assessments.

5.2 Step 2: Determine Actions for Restoration

a. Use the results from the initial field site assessment to identify restoration alternatives by following a restoration action decision tree.
b. Determine if additional funding will be needed for restoration activities including planting, seeding, and vertical mulching activities.

5.3 Step 3: Implement Restoration Actions

a. Implement ecological restoration treatments as determined by the Restoration Action Decision Tree.
b. Record treatment activities in DIRT.

5.4 Step 4: Monitoring

a. Perform short-term ecological monitoring to quantify treatment effectiveness and integrity.
b. After the first year, begin long-term ecological monitoring to evaluate ecological recovery.
c. Adjust management or monitoring strategies if deemed necessary through monitoring observations.
d. Perform data quality assurance and quality control.
e. If no successful progress is made at a site, management and restoration actions can be escalated using the Restoration Action Decision Tree.

5.5 Step 5: Determine Project Outcome

a. Follow evaluation guidelines and the results from monitoring to evaluate the condition of indicators and impact on mitigation objectives.

6.0 Monitoring

In addition to applying existing disturbance, restoration, and weed protocols, the Third Party will be responsible for developing monitoring protocols for other management actions based on sound scientific background and concepts outlined in the Dry Lake SEZ Regional Mitigation Strategy and Implementation Plan. Monitoring will be used to verify image-based analyses and to identify and track new damage to infrastructure (fences, culverts, plant protectors, signs and kiosks), desert pavement areas, spring restoration sites, and trash dumping. Indicators based on the agreed upon set of mitigation objectives will be used to quantify and assess the effectiveness and impact of management activities. Third Party monitoring will include the following:

- Conduct ground truthing of non-linear disturbances by:
  - Assessing the true nature of disturbances by classifying as desert pavement (disturbed and undisturbed), recreation-related, mining, trash dumping.
- Monitor for vegetation disturbance along road ROW (i.e., dumping, off road use resulting in vegetation disturbance) and cross-reference disturbance locations with ROW holders, and report disturbance to BLM (project inspectors and Land Division). Make ROW holder aware of disturbance.
- Monitor tortoise/wildlife fencing.
- Monitor culverts by conducting periodic inspections for factors that could cause blockage during flooding and potentially lead to entrapment of wildlife species.
- Develop a Weed Monitoring Plan as part of the Weed Management Plan that would be reassessed annually.

  - Buffelgrass Monitoring: Early detection of buffelgrass is a very high priority and would be conducted by frequent monitoring of known buffelgrass infestation areas as well as checking nearby areas for new plants that may become established. In addition, check similar habitats nearby and associated with travel corridors for buffelgrass presence.
  - Puncture Vine Monitoring: Develop a flexible monitoring plan for puncture vine that would include an emphasis on field inspections following rain events when puncture vine greens up for a brief period.
  - Monitor and treat other invasives.
  - Prioritize invasives/weed monitoring within springs along culverts, roadways, powerlines, pipelines, and areas of known infestations.
- Work with BLM wildlife division to report raven nesting locations to inform raven control practices for power pole nesting/hunting.
- Record route intersections where signs have been removed by management, where signs have been vandalized or stolen, replaced, etc., in the ACEC route inventory point feature database.
- Remove closed road and restoration in progress signs from routes designated as closed in the LVFO RMP if these roads have remained closed and have “brushed in” to the point that they are no longer discernable as potential travel routes to casual users.

7.0 Restoration Implementation Timeline

Table MP-5 Restoration Implementation Timeline

Year 1	Year 2	Year 3	Years 4-5
Develop mitigation objectives Select ecosystem attributes and indicators to monitor Monitoring plan etc. (from descriptions above…) Conduct Pre-treatment site assessments and record data in DIRT Delineate disturbance sectors/polygons within the ACEC Select or establish AIM reference sites Prioritize sectors and disturbances Select restoration treatments for each feature Implement treatments on initial set of disturbance features Perform compliance monitoring	Continue treatments on disturbances in additional sectors/polygons. Continue compliance monitoring Begin implementation monitoring of Year 1 treatments Perform ecological monitoring Compare with previous monitoring forms and reference site for evaluation Maintain restoration structures as needed Reimplement or adjust treatments or monitoring if necessary	Finish implementing restoration treatments Continue compliance and implementation monitoring Begin ecological monitoring Routinely perform data QA/QC on all data sets Maintain restoration structures as needed Determine project outcome based on pre-selected criteria and project goals Reimplement or adjust treatments or monitoring if necessary	Finish compliance and implementation monitoring/report Continue ecological monitoring, compile initial results and report Remove restoration structures where possible. Maintain where needed. Determine project outcome based on pre-selected criteria and project goals

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