

6.0 CONSERVATION PROGRAM

6.1 Biological Goals and Objectives

6.2 Conservation Measures – Avoidance and Minimization

6.3 Measures to Mitigate the Unavoidable Take

A central component of the conservation strategy is the creation and management of a Reserve System. The Reserve System serves as the primary means of mitigating the impacts of the covered activities on the Covered Species. The Reserve System is being assembled through the application of criteria, data and analysis and a habitat quality analysis (as described in Section 5.4), to ensure that areas included in the Reserve System provide habitat value equal to or better than that being impacted through covered activities of the MSHCP Amendment.

Roughly 89 percent of Clark County is owned and managed by the federal government. BLM manages the largest portion of Clark County, approximately 2.7 million acres (52.8 percent of Clark County). The amount and location of the remaining state, local, and private land is insufficient to create a viable Reserve System that would protect and enhance the Covered Species and ecosystems enough to mitigate the impacts of the covered activities to the maximum extent practicable. Therefore, the Reserve System (Figure 6-6) is composed of private and public lands. It primarily consists of more than 350,000 acres of BLM-managed land that will continue to be administered by BLM but managed in collaboration with the Permittees through Cooperative Management Agreements (CMAs) for each BLM-managed Reserve System unit. Management of this land will be shifted from undesignated multiple-use or disposal to special management status.

Private and local government lands are included in the Reserve System where it is feasible for the County to acquire or place lands under easement. This includes the Boulder City Conservation Easement (BCCE) and County-owned riparian habitat along the Muddy and Virgin Rivers, i.e. Riparian Reserve Units. These lands are incorporated into the Reserve System and continue to be managed to benefit Covered Species. About 88,000 acres of private land have been incorporated into the Reserve System to date, and XX acres of Riparian Reserve Unit lands are incorporated to jump start mitigation for the MSHCP Amendment. The BCCE was purchased by Clark County in 1995 to mitigate effects on the desert tortoise, and it is now managed to provide mitigation for other Covered Species as well. Private land available for acquisition from willing sellers in fee title or through conservation easements is included in the Reserve System to protect high-quality habitat for Covered Species from development pressure and to provide riparian and other restoration opportunities.

Finally, Reserve System lands will be managed to maintain habitat quality, reduce threats and avoid harm to Covered Species. The Riparian Reserve Units and the BCCE each have specific management plans with management goals, objectives, actions, and effectiveness measures (Appendices X and Y). The management of and restrictions on the federally-owned portion of the Reserve System are defined in the Southern Nevada Economic Development and Conservation Act (SNEDCA) and individual management plans will be developed for each special management area (SMA) to provide further detail. The individual management plans are in addition to the CMAs. The CMAs will provide detail on the roles and responsibilities of each party participating in the collaborative management of the SMAs.

The SMAs, the Riparian Reserve Units and the BCCE are referred to in this MSHCP Amendment as Reserve Units and collectively as the Reserve System.

6.3.1 Federal Land

Most of the Reserve System consists of federal-owned, BLM-administered land that is managed in collaboration with the Permittees through an IA and Reserve Unit specific CMAs. The process of designing the federal-owned portion of the Reserve System has been iterative and spanned many years. SNEDCA, which was introduced in **September 2023**, formally defines the SMAs to be included in the Reserve System. SNEDCA stipulates the management and land use constraints for the SMAs as well. The sections that follow describe the federal land Reserve System design methodology and process and provide descriptions of the individual SMAs, including their ecological characteristics, mitigation values and management.

6.3.1.1 Federal Land - Reserve System Design

The Reserve System has been developed through an iterative process. Initially, the Reserve Units were selected by first identifying potentially available land based on ownership, jurisdiction and land management categories and then evaluating these areas relative to predetermined Reserve Design Criteria and species habitat models that incorporated occurrence and distribution information. These initial Reserve Units were then nominated to be designated as Areas of Environmental Concern (ACECs) through the BLM's anticipated Las Vegas Resource Management Plan (RMP) revision process. BLM then refined the nominated ACEC boundaries and the DCP reassessed and refined the proposed ACEC boundaries further to ensure sufficient quality habitat. This included review for incorporation of habitat for species subsequently added for coverage and to avoid potential conflicts with anticipated development and infrastructure projects. The timeline for the BLM Las Vegas RMP revision process did not align with the schedule needed to have the MSHCP Amendment finalized and ITP issued. Therefore, SNEDCA was introduced and passed to legislatively define the federal lands in the Reserve System and what would be incorporated into the next revision of the Las Vegas RMP. This provided the USFWS assurance that the Reserve System would be as described in the MSHCP Amendment. Following SNEDCA introduction, additional changes to the Reserve System were made. SNEDCA defines nine federal-owned SMAs which replace and modify the boundaries of the proposed ACECs. Each of the design phases for the federal-owned portion of the Reserve System are described in greater detail below.

6.3.1.1.1 Initial Reserve System Design

As a starting point, ownership data, jurisdiction data and designated land-management categories were integrated into a GIS data layer and classified into 30 different land-use types. While covered activities and associated impacts will not occur above 4,000 feet, elevation was not used to limit the potential availability of land considered for inclusion in the Reserve System, thereby retaining greater flexibility for consideration of reserve design alternatives. Areas that were considered for further review for inclusion in the Reserve System were predominantly in BLM management and non-federal ownership. Based on this classification, approximately 2.5 million acres of land were considered potentially available for inclusion in the reserve design.

Reserve Design Criteria

The following reserve design criteria were developed based on principles of conservation biology (Soule and Wilcox 1980; Soule 1986; Primack 1993; Noss et al. 1997; Margules and Pressey 2000; Groom et al. 2006) to evaluate areas for inclusion in the Reserve System. All land selected for the Reserve System met one or more of the following criteria and most lands met multiple criteria.

1. Provide high quality habitat for Covered Species at the local level. High quality is defined using various parameters such as high abundance and diversity of native species, intact natural processes and ecosystem functions, and few roads or other evidence of human disturbances.
2. Be large enough to support sustainable populations of Covered Species, maximize the protection of biodiversity, and mitigate impacts of covered activities. Large reserves tend to support more species for longer periods of time than small reserves, are more resilient to environmental changes (e.g., fires, droughts, climate change) contain a range of environmental gradients (see Criterion 4, below). Large reserves are generally more cost-effective to manage on a per-acre basis and allow for better large-scale management treatments and the maintenance of natural disturbance regimes, such as flooding.
3. Provide connectivity to other high-priority conserved lands for Covered Species within or outside of the Plan Area, or provide buffers between high-value conserved lands and areas where impacts are likely to occur. Connectivity facilitates the exchange of genetic material, species migration, dispersal, and colonization; and increases the integrity of the network of reserves (i.e., reducing the extent of reserve edge that is in contact with adjacent land uses). Linking reserves may require acquisition of disturbed habitats that can be restored to facilitate better habitat and wildlife movement value. Preserving connectivity will also tend to minimize habitat fragmentation. When adjacent to existing urban areas or planned urban areas, the Reserve System should include buffer lands within its boundaries in order to reduce indirect effects on Covered Species and ecosystems from urban development.
4. Provide a diversity of contiguous environmental gradients (e.g., topography, elevation, soil types, geologic substrates, slopes, and aspects) to allow for shifting species distributions in response to gradual and catastrophic events (e.g., fire, prolonged drought, severe flooding) or anthropogenic change (e.g., climate change).
5. Provide opportunities for habitat enhancement and restoration for the long-term benefit of Covered Species. Degraded communities may need to be protected to capture unique habitats or populations of Covered Species, to link reserve units together or with other protected sites, or to provide opportunities for habitat restoration.
6. Minimize the length of land use edges detrimental to the Reserve System, such as urban development, highways, and mines to minimize the indirect effects of adjacent land uses on the Reserve resources and to minimize management costs. Reserves should tend toward round or square configurations rather than long and narrow ones, except for where low area-to-perimeter ratios are appropriate, such as riparian systems or movement corridors.

Biological Data and Habitat Suitability Models

As is typical for most large-scale, conservation-planning efforts, detailed biological data were not available comprehensively throughout the Plan Area. Limitations of time, funding, and access to conduct surveys require that conservation planners rely on best available data and surrogates to estimate the distribution of suitable habitat for most species. Areas recommended for special protective designation status in the Conservation Management Strategy for Nine Low Elevation Rare Plants in Clark County prepared by The Nature Conservancy (TNC 2007), were taken into consideration as well as GIS-based habitat

suitability models, which were used to understand the probable distribution of habitat for the Covered Species.

Species habitat suitability models used for the initial Reserve System assembly were based on a variety of habitat attributes including vegetation, ecosystem, satellite imagery, geology, and soil type. The habitat models were not based solely on occurrence data, which are often limited or incomplete, but occurrence data was used to test and validate the models. The species distribution models included the occurrence and distribution of known locations, occupied habitat, and potential/predicted habitat for each of the Covered Species. The species habitat models do not include species abundance data and the occurrence data is not comprehensive as systematic surveys were not conducted throughout the entire Plan Area. Additional background and the limitations of each individual species model are described in Appendix A.

Reserve Analysis

The Reserve Design Criteria, biological data and habitat suitability models were then analyzed relative to the lands selected for potential inclusion in the Reserve System, as described in a step-wise fashion below.

1. Overlay each habitat-suitability model on the potential Reserve System lands map and analyze the distribution of each species individually and of all species viewed together.
2. Evaluate the distribution of the high-priority species first (e.g., desert tortoise), then identify “hot spots” where habitat for the high-priority species overlaps most or all of the other desert species. Avoid areas with high OHV use, or high likelihood of future solar-energy development.
3. Delineate Reserve Units on public lands that are large, contiguous blocks of habitat, preferably at least 100,000 acres each.
4. Avoid including private land in the non-riparian Reserve System where possible. Although private land was included in the review category, private land was avoided because it is typically distributed on small and scattered parcels and is often partially developed or disturbed (or more likely to be during the permit term).

After potential Reserve Units were identified, GIS overlay analysis was used to calculate the acres of modeled habitat conserved within each alternative Reserve Unit. This quantitative analysis provided important information for use in evaluating the relative merits of each Reserve Unit to conserve each of the Covered Species and contribute to meeting the conservation goals of the MSHCP Amendment. Reserve Units were designed such that the Reserve System would be at least 215,000 acres, equivalent to the take authorization requested by the MSHCP Amendment. It was also recognized that continued management of the BCCE has the potential to provide conservation benefits to species in addition to the desert tortoise.

6.3.1.1.2 BLM Refinement of Reserve Unit Boundaries

BLM reviewed the relevance and importance of each existing and nominated ACEC, as defined in 43 Code of Federal Regulations (CFR) 1610.7-2 and BLM Manual 1613. BLM also evaluated whether the boundaries or management of existing ACECs should be changed. At the time of the evaluation, there were 22 existing ACECs totaling 974,531 acres and 21 ACEC nominations. A

draft of the proposed revision to the Las Vegas RMP was published in 2014; however, it was never finalized.

Through this process, BLM developed a range of alternatives for various ACEC boundaries, sizes and management prescriptions, which are documented in the 2014 Draft Las Vegas RMP. Clark County then adopted the ACEC boundaries as refined by BLM through this ACEC evaluation process.

6.3.1.1.3 *DCP Reassessment of ACECs*

DCP reassessed the Reserve System design once again as Covered Species continued to evolve and plans were developed for infrastructure and development projects that would potentially conflict with the proposed Reserve System. In order to ensure sufficient high quality habitat, Gale Hills, the Desert Tortoise Protective Corridor and Mesa Milkvetch were added to the proposed Reserve System. Specifically, Gale Hills and Mesa Milkvetch were added to increase habitat for Covered Plants and the Desert Tortoise Protective Corridor was added in exchange for the Ivanpah ACEC to eliminate conflict with a flood control infrastructure project for the Southern Nevada Supplemental Airport. The California Wash Reserve Unit boundary was also adjusted in order to avoid conflict with a solar development project.

6.3.1.1.4 *SNEDCA Reserve System Boundary Revisions and Special Management Areas*

SNEDCA, as introduced in September 2023, establishes nine SMAs, which closely align with the proposed ACEC boundaries and are intended to make up the Reserve System under the MSHCP Amendment. The legislation states that the purpose of the SMAs is “to provide for the conservation and recovery of the diversity of natural habitats and native species of plants and animals in the County covered by the MSHCP and to mitigate the impacts of any amendment to the applicable Federal incidental take permit or amendments to the MSHCP.” A significant change to the ACECs included in SNEDCA is an expansion of the Stump Springs SMA to improve connectivity of desert tortoise habitat. The MSHCP Amendment will adopt the SMAs in SNEDCA, in addition to the BCCE and Riparian Reserve Units, as further described in this chapter.

6.3.1.2 Federal Land – Reserve System Description

The Reserve System currently includes nine federal-owned SMAs that are administered by the BLM, as defined in the SNEDCA. Each SMA is described below, including an explanation of mitigation values, as expressed in Qualified Acres. The Qualified Acreage of Covered Species habitat for each Reserve Unit was calculated for mitigation purposes using the habitat quality index, as described in Section 5.4. Figure 6-6 shows all Reserve Units in the Plan Area and the presence of different ecosystems, Figure 6-7 shows the Reserve Units with land cover types, and Figure 6-8 displays the Reserve Units and how they connect or extend existing lands managed with conservation goals. Existing encumbrances which may overlap the Reserve Units, such as grazing allotments or energy corridors are shown in Figure 6-9. Table 6-3 at the end of this section conveys the habitat quality indices for each Covered Species habitat group within each Reserve Unit, and Figures 6-10 through 6-18 show each of the habitat quality model results and the Reserve System.

6.3.1.2.1 *Stump Springs SMA*

Stump Springs SMA is currently an undesignated multiple-use area in the western portion of Clark County. The Stump Springs SMA covers 141,455 acres and is located in western Clark County north and east of the town of Sandy Valley. The southwestern boundary borders California, and

the northwestern boundary generally follows the watershed of Wheeler Wash leading to one of the springs. One paved road crosses the SMA: Nevada Highway 160 in the northern portion of the unit. Several well-used, unpaved roads used to access Sandy Valley also cross the SMA. To the south, the SMA boundary is adjacent to private lands in the town of Sandy Valley.

The remainder of the SMA is bordered by federal lands. Lands administered by the BLM lie to the southeast and north, and USFS lands—the Spring Mountains National Recreation Area (NRA) portion of Humboldt-Toiyabe National Forest—also borders the SMA on the north and east. At its northern-most edge, Stump Springs borders the Mt. Stirling Wilderness area proposed under SNEDCA. The Stump Springs SMA will ensure high quality habitat remains connected and will maintain linkages to existing conservation areas managed by the BLM and USFS.

The majority of the SMA lies on the floor of Pahrump Valley; the valley floor is at an elevation of 2,600 ft to 3,000 ft. The SMA ascends the northeastern slopes of Pahrump Valley in foothills of the Spring Mountains, reaching a high point of about 6,000 ft in the northern portions of the SMA. Smaller isolated hills and ridges occur in the southern portion of the SMA. The major drainage direction is northeast to southwest; major named washes include Wheeler Wash, Lovell Wash, and Potosi Wash.

The dominant ecosystem type is Mojave Desert scrub, which covers more than half of the SMA at 62%. Blackbrush is common at higher elevations and covers an additional 36% of the SMA. Small amounts (1% or less) of salt desert scrub, mesquite/acacia and pinyon/juniper occur within the SMA as well.

There are known occurrences of desert tortoise, loggerhead shrike, golden eagle, western burrowing owl, Le Conte's thrasher, Bendire's thrasher and Arizona Bell's vireo within this SMA. Covered Plants occurring in this SMA include Pahrump Valley buckwheat and Joshua tree.

For mitigation purposes, the Qualified Acres of Covered Species habitat groups within this SMA are included in Table 6-3. The predominant groups are Mojave Desert scrub and mesquite acacia (51,610 Qualified Acres) and hydrology dependent (10,337 Qualified Acres). There are also 41,924 Qualified Acres of blackbrush, 20,810 Qualified Acres of sandy soil, and 9,347 Qualified Acres of playa. Finally, there are about 23,311 Qualified Acres of gypsiferous soil.

Existing Encumbrances and Uses

There are thirty-six authorized Right of Ways (ROWs) and twelve pending ROWs. The authorized ROWs consist of utilities, material sites, overhead electric transmission lines, fiber optic lines, communication sites and access, roadways/highways, tortoise fencing, ground water monitoring wells and information kiosks sites. Several of the ROWs are managed by the Nevada Department of Transportation. The linear ROWs typically parallel the road ROWs concentrating the impacts. The SMA is open to Off Highway Vehicle (OHV) use but is restricted to trails, existing roads, and dry washes. The county road from Sandy Valley to Good Springs is listed by BLM as a pending application. Gridliance West Transco LLC has a pending ROW that is 275 feet wide and approximately 97,000 feet long (612 acres) for a 230 kV or 500 kV transmission line within the SMA. There are four pending ROW applications for cell towers, including three to be added to an existing site. Two existing utility corridors bisect the Stump Springs SMA. A 3,500-foot-wide corridor established in 2009 as a component of the Energy Policy Act of 2005 runs for approximately 18 miles in a northwest-southeast direction. The corridor designated in the Las Vegas RMP does not have a specified width, but BLM believes it to be 2,640 feet. It runs parallel but not contiguous to the 2009 corridor for most of its length. The RMP corridor intersects with the wind farm project southeast of the unit boundary.

There are no known hazardous material sites. A closed sanitary landfill near Sandy Valley was last inspected in 1993 and the BLM case file was closed in 1999. The landfill was on land leased to Clark County from the BLM. The potential exists for illegal dumping on or near the site.

There are eighteen active mining claims. There are active lode mining claims. There are no active oil and gas leases within the SMA, however, oil, gas and other fluid mineral leases could be authorized. There are 611 mining claims that potentially impact the unit. Most of these are concentrated in the Spring Mountain foothills on an approximate 6,000-acre block in the southeast corner of the unit. Validity exams have not been conducted on any of the claims. Three entities hold the majority of the claims. The BLM has designated one community mineral materials site for commercial sales with approximately 6,400 acres located in the unit near Sandy Valley. The last recorded use of this site was in 1994.

A BLM Proposed Utility Corridor (pending) is also within the SMA. The Wheeler Wash Grazing Allotment overlaps the SMA. It spans about 45,000 acres of the SMA that is open to grazing, but has been inactive since 1998. The Wheeler Pass Horse and Burro Management Area (WPHBMA) overlaps the SMA. The Red Rock HMA has an Appropriate Management Level (AML) of 50 burros and 50 horses. This HMA includes 25,000 acres within the unit. The Wheeler Pass HMA includes approximately 22,000 acres in the unit and has an AML of 47-66 horses and 20-35 burros. The USFS has adjoining units called "Territories" with 147 horses and 145 burros.

The Las Vegas RMP indicates the management of mesquite and acacia woodlands and identifies a general location for special status plant species within the central and western portions of the SMA. Nevada Department of Wildlife (NDOW) Hunt Unit 262 includes and surrounds the Stump Springs Unit. An approximately 640-acre cultural ACEC is enveloped by but is excluded from this SMA.

There is one vested water right for irrigation, one certificate water right for stock watering, and one permit water right for wildlife. There are certified water rights at two locations. One is a stock water right not currently in use, the other is the Cave Spring water right held by Clark County.

One motorized off-highway-vehicle event occurs within the unit – Barstow to Las Vegas motorcycle race – was held in 2010 and expected to continue annually. The race course is on existing roads and trails. There are no OHV courses separate from existing routes.

6.3.1.2.2 *Bird Springs Valley SMA*

The Bird Springs Valley SMA is approximately 37,910 acres west of Interstate 15. It is bordered to the east by the Sloan Mining District) and the west by the Red Rock Canyon National Conservation Area. This area includes low mountainous areas to valley floor terrain. The elevation ranges from approximately 2,600 ft to a high of 4,700 ft. A set of low mountain ridges bisects the area, and both portions of the area generally drain from the southwest to the northeast.

The dominant ecosystem is Mojave Desert scrub at 78%. There is also a significant portion of blackbrush (22%). Golden eagles (and their nests) have been documented within this SMA, as well as desert tortoise and loggerhead shrike. Documented plant species include Joshua tree.

Regarding mitigation values, this SMA includes about 20,110 Qualified Acres of Mojave Desert scrub and mesquite acacia and 11,433 Qualified Acres of blackbrush Covered Species habitat

groups. It also contains Qualified Acres of hydrology dependent (2,797), gypsiferous soil (7,290) and sandy soil (4,387). Further detail is included in Table 6-3.

Existing Encumbrances and Uses

There are nine authorized ROWs within the Bird Springs SMA, of which Clark County has six. The Upper Duck Creek Detention Basin ROW N-76038 is located on approximately 110 acres in the north central portion of the SMA. The Starr Avenue alignment ROW N-75246 is for roadway and drainage. The Mountains Edge Parkway ROW N-99836 is for roadway, drainage, and public utilities. A ROW N-77084 for drainage occurs along the south side of Starr Avenue between Rainbow Boulevard and Buffalo Drive. A ROW N-80402 consisting of roadway and drainage occurs along Starr Avenue west of Buffalo Drive. BLM has one pending ROW N-95141 and is for Common Garden Experimental Areas and is one of several proposed to be installed throughout southern Nevada to study the genetic variability of native plants. Valley Electric has a ROW N-59100 for a 139 kV aerial power line. The Nevada Hospital Association has a ROW N-90056 for a fiber optic line.

There are 35 active mining claims within the SMA. There is one current/active saleable mineral action area for BLM Community Pit (N-49688) located in the northeast portion of the SMA for the Arden Quarry Community Pit. There are no active oil and gas leases within the SMA. There are no certified water rights in the unit.

There are no grazing allotments within this SMA. The Bird Springs SMA is overlapped by the Las Vegas Valley Special Recreation Management Area (SRMA) in the northern and central portions. Management within the Las Vegas Valley SRMA includes closing off the SRMA to off-road use except for the Nevada 400 course that occurs once a year and the Nellis-Dunes off-road vehicle Area. The proposed unit includes a portion of Hunt Unit 262 which surrounds the Bird Springs Unit. The Bird Springs Unit also falls within the Red Rock Wild Horse and Burro Herd Management Area which has an Appropriate Management Level (AML) of 50 burros and 50 horses. The Spring Mountain Herd area includes approximately 4,800 acres within the unit and does not have an established AML. The Bird Springs Valley SMA includes OHV use in the Nelson Hills/Eldorado SRMA. A maximum of nine events are authorized within the area. These events include speed-based events yearly, including five motorcycle/All-Terrain Vehicle and four buggy events. The BLM RMP identifies a general location for special status plant species within/adjacent to the eastern boundary in the northwest portion of the SMA.

6.3.1.2.3 Desert Tortoise Protective Corridor SMA

The Desert Tortoise Protective Corridor (Corridor) SMA encompasses 42,958 acres in the southwest portion of the Plan Area, southeast of Interstate 15, approximately 4.5 miles due east of the Town of Jean. The Corridor SMA is roughly linear in shape and connects with the Boulder City Conservation Easement to the northeast and the California/Nevada State Line, between Interstate 15 and Highway 164, to the southwest. At this border, the SMA overlaps with the Lucy Gray Wilderness Area proposed in the SNEDCA. The SMA also abuts the South McCullough proposed Wilderness Addition to the north. The Corridor SMA includes portions of the McCullough Range and flat, low-lying desert basins. Elevations within the Corridor range from about 2,600 to nearly 4,900 feet.

The majority of the Corridor SMA is covered by the black Mojave Desert scrub ecosystem (74%), with lower coverage by the blackbrush (25%) and mesquite acacia (1%) ecosystems. The Corridor has been identified as a high priority area to provide connectivity for genetic exchange for desert tortoise. It was designed to function as a key corridor for this species. In addition to

desert tortoise, golden eagle, desert pocket mouse, banded Gila monster, loggerhead shrike, Le Conte's thrasher, Joshua tree, and white-margined beardtongue have all been documented to occur within the this SMA.

The Corridor SMA provides important mitigation value as it contains about 18,604 Qualified Acres of Mojave Desert scrub and mesquite acacia, 10,973 Qualified Acres of blackbrush habitat, and 9,031 Qualified Acres of sandy soil (Table 6-3). The SMA also includes about 6,413 acres of gypsiferous soil habitat and 621 Qualified Acres of hydrology dependent Covered Species habitat.

Existing Encumbrances and Uses

There are sixteen currently authorized and two pending ROWs with the SMA. The ROWs consist of fiber optic lines, communication site and access, rain gage sites and rain gage site with access, and overhead transmission lines. The City of Los Angeles has one pending ROW for stormwater erosion in multiple locations on the NVCC-018367 alignment.

There are twenty-six active mining claims in the SMA. There are active load claims within the SMA. There are no active oil and gas leases within the SMA. There are four certificated and active water rights for stock watering and wildlife.

There are no HMAs within this SMA. The Hidden Valey Grazing Allotment overlaps a small area in the northwest portion of SMA. The grazing allotment is currently active and leased. The Corridor is completely overlapped by Jean/Roach Dry Lake SRMA. The SRMA manages non-vegetated parts of the dry lake beds as open to unrestricted OHV use. Permit high-speed, competitive ORV events, casual ORV uses, and other recreational and commercial activities can also occur. A portion of the eastern boundary in the Corridor is identified as an Area of Critical Environmental Concern (ACEC) on the BLM Geo Navigator Map. Two branches of a BLM proposed utility corridor ranging from 1,400 to 3,000 feet in width cross through the northeastern and southwestern portion of the SMA.

6.3.1.2.4 Jean Lake SMA

Jean Lake encompasses approximately 2,669 acres in the southern portion of the Plan Area, southeast of Interstate 15 and roughly 7.5 miles due south of the City of Las Vegas. It is located roughly 2.5 miles north of the Desert Tortoise Protective Corridor and 4 miles west of the Boulder City Conservation Easement. It also borders the Sloan Canyon National Conservation Area to the north. The eastern boundary of Jean Lake also encompasses a small portion of the McCullough Range. It is the smallest SMA, and the majority of Jean Lake occurs in a flat desert basin containing a dry wash. Elevations in Jean Lake range from 2,995 to 3,878 feet.

Jean Lake is covered by the Mojave Desert scrub ecosystem, with trace (less than 1%) coverage by the blackbrush ecosystem. High densities of white-margined beardtongue have been documented within Jean Lake in suitable sandy soil habitat.

For mitigation purposes, Jean Lake contains about 1,669 Qualified Acres of sandy soil and 1,375 Qualified Acres of Mojave Desert scrub and mesquite acacia (Table 6-3). It also contains about 100 Qualified Acres of hydrology dependent habitat and 316 Qualified Acres of gypsiferous soil habitat.

Existing Encumbrances and Uses

Within the SMA, there are two authorized ROWs associated with access from Las Vegas Boulevard to Sloan Canyon National Conservation Area and Hidden Valley.

The SMA contains two active Placer (160 acres or less) mining claims. There are no active oil and gas claims. There is one active water right for stock watering.

The Jean/Roach Lake SRMA is managed by the BLM for intensive recreation opportunities, including competitive OHV races (in accordance with the USFWS Biological Opinion for race events) and other recreational events, as well as dispersed recreational use and commercial activities along existing roads, trails, and dry washes (BLM RMP 1998). Other recreational activities include recreational OHV use, movie, commercial, and music video filming, rock climbing, target shooting, hunting, horseback riding events, and hiking.

Hunting within the Jean/Roach Lake SRMA occurs primarily within the mountain areas, including the Lucy Grays. The proposed project area is within hunting Unit 263 and includes quail hunting, 7 bighorn sheep tags and 19 mule deer tags (Units 261 through 268).

OHV recreation within the Jean/Roach Lake SRMA includes competitive organized events, commercial tours, and dispersed recreation. Special recreation permits are required by the BLM for competitive organized OHV racing events within the Jean/Roach Lake SRMA. These permits are typically applied for six months in advance of the event. OHV high speed events are restricted during tortoise active periods and typically occur during the winter and summer months.

Commercial touring companies use the Jean/Roach Lake SRMA to lead OHV tours. Currently, two companies are permitted to operate in the Jean/Roach Lake SRMA Hidden Valley area: Vegas Off-Road Experience (VORE), and American Adventure Tours. Commercial touring visitation within the Jean/Roach Lake SRMA is approximately 10,000 visits per year (BLM 2015 Amendment to Sloan Canyon National Conservation Area Trails Master Plan DOI-BLM-NV-S020-2013-0010-EA).

A general area designated within/close to the SMA boundary which has been identified for special management to protect white-margined beardtongue, a Covered Species. The entirety of Jean Lake occurs within the Hidden Valley Grazing Allotment which is active and leased (Figure 6-8).

6.3.1.2.5 *Gale Hills SMA*

The Gale Hills SMA covers 16,411 acres in central Clark County. The Gale Hills SMA is currently an undesignated multiple-use area situated on the Gale Hills and portions of Government Wash and West End Wash. The Gale Hills SMA shares a southern and western boundary with the Lake Mead National Recreation Area, and it overlaps with the Muddy Mountains Wilderness Area proposed addition in the SNEDCA. It also overlaps with NPS Wilderness to the south. The Gale Hills SMA is situated southeast of Muddy Peak and south of the upper reaches of Government Wash. The Bowl of Fire and Pinto Valley are to the east of Gale Hills SMA, and to the south is Callville Bay and Las Vegas Bay. To the west of Gale Hills is Gypsum Wash and its associated development. The Gale Hills SMA ranges in elevation from a minimum of 1,427 ft to a maximum of 3,015 ft. There are no major roads in the Gale Hills SMA; however, the entire southern boundary is in close proximity to Northshore Road.

The dominant ecosystem type in the Gale Hills SMA is Mojave Desert scrub, which covers more than 99% of the SMA. The only other component ecosystems present in the Gale Hills SMA is

the mesquite and acacia ecosystem. The Gale Hills SMA has documented occurrences of four Covered Species, Las Vegas bearpoppy, silverleaf sunray, desert tortoise, and desert pocket mouse.

The habitat quality analysis yielded about 11,270 Qualified Acres of gypsiferous soil habitat in the Gale Hills SMA. Las Vegas bearpoppy and silverleaf sunray are both associated with gypsiferous soil habitat. Additionally, Gale Hills SMA contains about 8,182 Qualified Acres of Mojave Desert scrub and mesquite acacia habitat, which is associated with desert tortoise and desert pocket mouse. The Gale Hills SMA also contains hydrology dependent (2,107 Qualified Acres), wind-blown sand (1,526 Qualified Acres), and sandy soil habitat (1,664 Qualified Acres). The number of Qualified Acres of the habitats are presented in Table 6-3.

Existing Encumbrances and Uses

There are four authorized Rights of Way (ROW) and one open litigation file within the SMA. Three of the authorized ROWs are linear in nature for a power line, access roads, and a water line. The fourth authorization is for the Congressionally designated Muddy Mountain Wilderness Area. The litigation case may involve up to 320 acres.

There are 32 lode mining claims (20 acres or less), 9 placer mining claims (160 acres or less) and 3 mill site claims (5 acres) within the SMA. Most of them (28 claims) are in a single range. None of the 44 claims appear to have had any authorized activity as there are no associated BLM actions at this time.

Six applications for milling and mining use have been submitted but are currently pending. There are no active oil and gas leases within the SMA. Future fluid mineral leases could be authorized. A general area designated within and close to the southern SMA boundary has been identified for special management to protect one or more plant species. There are no active water rights in the SMA.

There are no grazing allotments within this SMA (Figure 6-8). There are no HMAs within this SMA. OHV recreation within the Gale Hills SMA is limited to existing roads, trails, or washes.

6.3.1.2.6 California Wash SMA

The California Wash SMA is located in the northeast portion of the County, close to the Bitter Springs and Muddy Mountains SMAs. It overlaps with the Moapa Indian River Reservation expansion under SNEDCA. It lies southeast of Highway 15, between Las Vegas and Moapa. As one of the smaller SMAs, California Wash is just 8,205 acres. Positioned between the Muddy Mountains and the Sheep Range, the terrain is relatively flat and only changes 500 feet in elevation, from 2,000 to 2,500 feet. California Wash is currently BLM-managed with no additional designation.

The vast majority of this SMA is Mojave Desert scrub (97%), with a remaining 3% of mesquite/acacia ecosystem. There have been documented occurrences of desert tortoise, loggerhead shrike and threecorner milkvetch in this SMA.

For habitat value, California Wash has 4,339 Qualified Acres of Mojave Desert scrub and mesquite acacia and 3,352 Qualified Acres of wind-blown sand. This SMA also contains about 1,560 Qualified Acres of sandy soil, 1,214 Qualified Acres of gypsiferous soil and 2,384 Qualified Acres of hydrology dependent habitat as shown in Table 6-3 below.

Existing Encumbrances and Uses

There are three currently authorized ROWs and one pending. The currently authorized temporary ROW consists of areas needed for the installation of the gen-tie in transmission lines (N-84631-02; expires 12/2023). The pending ROW is for existing dirt roads/trails to be used during construction of the solar thermal renewable energy power generation facility. One ROW is for a rain gauge site access. One ROW crosses the eastern portion of the SMA for a proposed Solar Energy Facility and associated appurtenances. The ROW is irregular in shape and covers a total of approximately 1,172 acres within the SMA.

There are no active mineral rights within the SMA. There are no active oil and gas leases within the SMA. There is one active abrogated water right within the SMA for mining and milling. There are no grazing allotments within this SMA. There are no HMAs within this SMA. The California Wash SMA is currently open to off highway vehicle use but is restricted to existing roads, trails, and dry washes. The Muddy Mountains SRMA is managed by BLM to provide semi-primitive recreation opportunities (non-motorized and motorized) and integrated management of wildlife habitat, cultural resources, and other recreational uses. The southern half of the SMA (south of the Valley of Fire Highway) is overlapped by the Muddy Mountain SRMA.

6.3.1.2.7 *Bitter Springs SMA*

Bitter Springs SMA encompasses 61,711 acres in the eastern portion of the Plan Area, approximately 12 miles southeast of Interstate 15. The southern and eastern boundaries of Bitter Springs are adjacent and generally parallel to Northshore Road. The northern boundary of Bitter Springs SMA is contiguous with the Muddy Mountains SMA and it overlaps entirely with the Muddy Mountains Wilderness Additions proposed under SNEDCA. Bitter Springs occurs within the Muddy Mountains, and contains West Longwell Ridge, East Longwell Ridge, and East Longwell Ridge South. Elevations within the Bitter Springs range from 1,509 to 4,432 feet.

The majority (98%) of the Bitter Springs is covered by the Mojave Desert scrub ecosystem, with low coverage by the blackbrush (2%) and mesquite acacia (less than 1%) ecosystems. Desert tortoise, loggerhead shrike, sticky ringstem, Las Vegas bearpoppy, silverleaf sunray, Las Vegas buckwheat, and sticky buckwheat have all been documented within Bitter Springs.

Bitter Springs contains about 34,458 Qualified Acres of gypsiferous soil habitat (Table 6-3) and 30,911 Qualified Acres of Mojave Desert scrub and mesquite acacia habitat. This SMA also contains significant Qualified Acres of sandy soil (10,212 Qualified Acres), and hydrology dependent habitat (4,454 Qualified Acres). There are also 1,261 Qualified Acres of blackbrush and 561 Qualified Acres of wind-blown sand.

Existing Encumbrances and Uses

There are no authorized Rights of Way (ROW) other than mineral actions. There are approximately one thousand four hundred one active mining claims in the SMA. There are no active oil and gas claims. There is one certificate water right is for wildlife to the National Park Service District in the northwest of the SMA.

The SMA is overlapped entirely by the Muddy Mountain SRMA which is part of the Stateline Extensive Recreation Management Area. The management objectives for the Muddy Mountain SRMA include hiking, camping, sightseeing, and interpretation. Recreation opportunities also include hunting, camping, picnicking, hiking, sightseeing, touring and off-roading. 78,480 acres of

the SRMA will be managed for semi-primitive non-motorized recreation opportunities. 44,897 acres of the SRMA will be managed for semi-primitive motorized recreation opportunities.

There are no grazing allotments or HMAs within Bitter Springs SMA.

6.3.1.2.8 *Muddy Mountains SMA*

The Muddy Mountains SMA is currently an undesignated multiple-use area in the northeastern portion of Clark County. The Muddy Mountains SMA covers approximately 31,000 acres and is located south of the town of Moapa and west of the town of Moapa Valley. The southern boundary borders the Bitter Springs SMA, and the northern boundary is in close proximity to and crosses the Muddy River just below the confluence of the Meadow Valley Wash and the Muddy River. The eastern boundary generally follows the eastern border of the Valley of Fire State Park. The western boundary partially shares a border with the Moapa River Indian Reservation, and other portions of the western boundary consist of BLM administered lands. The Muddy Mountains Wilderness Additions proposed under SNEDCA overlap with the Muddy Mountains SMA. One paved road crosses the SMA: Valley of Fire Highway in the southern portion of the SMA. The Muddy Mountains SMA will ensure functional habitat remains connected and will maintain linkages to existing conservation areas managed by the State of Nevada, the BLM, the NPS, and the USFS.

The southern half of the Muddy Mountains SMA is comprised of the upper reaches of tributaries to the California Wash; while the northern half of the Muddy Mountains SMA is bounded by the California Ridge to the west and the Weiser Ridge to the East. The southernmost portion of the Muddy Mountains SMA ascends into the northern slopes of the Muddy Mountains. The elevation within the Muddy Mountains SMA ranges from a low point of about 1,440 ft to a high point of about 4,120 ft.

The dominant ecosystem type is Mojave Desert scrub, which covers more than 99% of the SMA. The remaining minor component ecosystems include the blackbrush, desert riparian, mesquite/acacia ecosystems.

The Muddy Mountains SMA has documented occurrences of six Covered Species, which includes the Las Vegas bearpoppy, silverleaf sunray, desert tortoise, loggerhead shrike, Arizona Bell's vireo, and Townsend's big-eared bat. Las Vegas bearpoppy and silverleaf sunray are both associated with gypsiferous soil habitat. Desert tortoise, loggerhead shrike, Arizona Bell's vireo, and Townsend's big-eared bat are associated with the Mojave Desert scrub and mesquite/acacia habitat.

Regarding Qualified Acres for mitigation, the Muddy Mountains SMA contains 14,912 Qualified Acres of gypsiferous soil habitat (Table 6-3) and 16,567 Qualified Acres of the Mojave Desert scrub and mesquite/acacia habitat. It also contains significant Qualified Acres of sandy soil (6,311 Qualified Acres), hydrology dependent (4,345 Qualified Acres), and wind-blown sand (3,122 Qualified Acres). Small amounts of Qualified Acres for blackbrush (209 Qualified Acres) and desert riparian marsh (8 Qualified Acres) are also included.

Existing Encumbrances and Uses

There are five authorized ROWs that consist of access roads, fish barriers, sand and gravel pit, communication site, railroad facilities and solar photovoltaic energy facilities. One pending ROW is approximately 1,760 acres within the northwest portion of the SMA that is for a photovoltaic energy facility. One pending ROW is 560 acres for a photovoltaic energy facility in the northwest

portion of the SMA. The railroad facilities are under BLM review for potential termination. This SMA is open to off highway vehicle use but is restricted to trails, existing roads, and dry washes.

There are 45 active mining claims. Future fluid mineral leases could be authorized, but no active gas leases within the SMA. There are no active water rights within the SMA.

The SMA is overlapped by a portion of the Muddy Mountain SRMA which is part of the Stateline Extensive Recreation Management Area. The primary objectives for the SRMA include recreation opportunities for hiking, sightseeing, camping, and interpretation. Recreation opportunities also include hunting, camping, picnicking, hiking, sightseeing, touring and off-roading. There are no HMAs within this SMA. There is one open but inactive grazing allotment (Muddy River) within this SMA that covers 9,000 acres of the northern portion of the SMA.

6.3.1.2.9 *Mesa Milkvetch SMA*

The Mesa Milkvetch SMA, located in the northeastern portion of Clark County, is currently within the Moapa Valley disposal boundary, but will be removed from disposal status and placed into conservation status. The Mesa Milkvetch SMA covers 8,430 acres and is situated adjacent to the Muddy River, just east of the town of Moapa Valley and north of the Overton Wildlife Management Area. The Mesa Milkvetch SMA is situated between the developed areas along the Muddy River's eastern bank and the Mormon Mesa's southwestern most ridge. The Mesa Milkvetch SMA extends just north of the Bowman Reservoir, and it extends south almost reaching the Overton Wildlife Management Area and the Lake Mead National Recreation Area. The Mesa Milkvetch SMA is bisected by Mormon Mesa Road and Whipple Avenue; in addition, it is host to a network of less developed roads. There is minimal elevation change within the Mesa Milkvetch SMA, ranging generally between 1,300 feet and 2,000 feet.

The dominant ecosystem type in the Mesa Milkvetch SMA is Mojave Desert scrub, which covers more than 99% of the SMA. The remaining minor component ecosystem is the open water ecosystems. The Mesa Milkvetch SMA has documented occurrences of two Covered Species, the threecorner milkvetch and the silverleaf sunray.

The greatest portion of Qualified Acres in the Mesa Milkvetch SMA is wind-blown sand habitat (5,321 Qualified Acres) and sandy soil habitat (about 4,530 Qualified Acres). Threecorner milkvetch is associated with wind-blown sand habitat, while sticky buckwheat is associated with sandy soil habitat. The Mesa Milkvetch SMA also contains Mojave Desert scrub and mesquite/acacia (3,374 Qualified Acres), hydrology dependent (2,518 Qualified Acres), and gypsiferous soil (1,788 Qualified Acres). The Qualified Acres by Covered Species habitat is presented in Table 6-3.

Existing Encumbrances and Uses

There are fifteen authorized ROWs that exist in a linear or non-linear manner. The ROWs that are linear are for power line, access roads, and water lines. The non-linear ROWs consist of a water reservoir (Bowman Reservoir) and a Clark County Landfill. One pending ROW is located in the central portion of the SMA consisting of 5 acres. This ROW appears to be part of a Bureau of Reclamation (BOR) acquisition for wildlife habitat along the Virgin River, but case file was not available for review. This SMA is open to off highway vehicle use but is restricted to trails, existing roads, and dry washes.

There are no active mining claims. There are no active oil and gas leases within the SMA. There are three water right certificates within or immediately adjacent to the SMA that are for

irrigation in the Lower Moapa Valley Basin and irrigation and domestic use in the Lower Moapa Valley Basin.

The eastern border of this SMA partially overlaps the Lower Mormon Mesa grazing allotment which is closed (Figure 6-8). The BLM RMP identifies special plant management areas within or close to the SMA boundary. Sections along the western boundary of the SMA may overlap the Moapa/Glendale disposal boundary. There are no HMAs within this SMA.

6.3.1.3 Federal Land – Reserve System Management

Reserve management is designed to maintain and enhance habitat for covered and other native species, native biological diversity, and ecosystem function. Habitat management, including ecosystem enhancement and restoration, is a key component to maintaining habitat quality in the Reserve for mitigating impacts on Covered Species.

Management of the SMAs is defined in SNEDCA and additional detail will be provided in the individual SMA management plans. SMAs must be managed to conserve, protect and enhance the purposes for which the SMA is established and in accordance with SNEDCA, the Federal Land Policy and Management Act of 1976, and any other applicable law. Provisions include:

- Motorized Vehicles – Except as needed for emergency response or administrative purposes, the use of motorized vehicles in the SMAs shall be permitted only on roads and motorized routes designated for the use of motorized vehicles in the management plan.
- New Roads – No new permanent or temporary roads or other motorized vehicle routes shall be constructed within the SMAs after the date of enactment of SNEDCA.
- Interests in land which become part of an SMA shall be withdrawn including mineral those for mineral leases.

SNEDCA stipulates that no later than 1 year after the date of enactment of SNEDCA, the Secretary of Interior shall enter into a CMA with the County that provides for the joint management and long-term protection of the SMAs, and develop management plans for each SMA. The SMA management plans will address the following topics: habitat restoration and enhancement, law enforcement, invasive plant management, fire control and response, and recreational use and public access. Management goals, objectives and actions will be developed in alignment with the overall BGOs of the MSHCP Amendment. SNEDCA further states that the Las Vegas RMP will need to be amended to incorporate provisions of the IA and CMAs.

Between the enactment of SNEDCA and the development of the CMAs and Las Vegas RMP amendment, the SMAs will be managed according to the Interim Management described in SNEDCA Section 205 (i)(2). During Interim Management, SNEDCA states that no authorizations shall be allowed which may be contrary to the purpose of the SMAs. This includes disposal, rights of way, leases, livestock grazing, infrastructure development or mineral entry may not be authorized in the SMAs during the Interim Management period. The Secretary is precluded from authorizing the establishment of a new utility facility or right of way outside of existing designated transportation and utility corridors. Existing utility facilities and appurtenant ROWs and new utility ROWs within existing designated transportation and utility corridors are otherwise not affected.

6.3.2 Boulder City Conservation Easement – Design, Description and Management

In addition to the public BLM lands, the Reserve System also includes the BCCE, which is predominantly Mojave Desert scrub. The BCCE is an 87,310-acre easement purchased by Clark County from Boulder City in 1995 to protect the desert tortoise and other species. Boulder City

is responsible for permitting activities under city ordinances, and Clark County provides for law enforcement and management of the BCCE. The BCCE is located in the Eldorado Valley south and southwest of the populated portions of Boulder City. The land slopes gently towards the Eldorado Dry Lake Bed, and most of the BCCE lies at 1,800–2,500 feet elevation.

U.S. Highway 95 runs north-south through and adjacent to portions of the BCCE, and Nevada State Highway 165, Nelson Road, runs east-west through the BCCE. The easement has 105 miles of unpaved roads that are open for regulated vehicle use. An additional 202 miles of unpaved roads have been closed by signage and/or restoration throughout the easement. The easement is surrounded on the south, west, and southeast by BLM-administered lands, including the Sloan Canyon National Conservation Area to the west. Lake Mead NRA borders the easement to the east.

The vast majority of the BCCE consists of Mojave Desert scrub ecosystem (97%). There are also small amounts (1%) of mesquite acacia and salt desert scrub. Much of the BCCE has been designated desert tortoise critical habitat by the USFWS and occurrences of the species have been documented. The BCCE also provides suitable habitat for the western burrowing owl, and occurrences have been recorded throughout the BCCE. Banded Gila monster, loggerhead shrike, and Le Conte's thrasher have also been documented within this Reserve Unit. The BCCE has not been systematically surveyed for Covered Plant Species.

Based on the habitat quality analysis, the BCCE contains a significant quantity of Mojave Desert scrub and mesquite acacia (47,699 Qualified Acres). It also contains about 10,879 Qualified Acres of sandy soils, 10,646 Qualified Acres of gypsiferous soil, 2,246 Qualified Acres of hydrology dependent, and 1,312 Qualified Acres of wind-blown sand habitats. The Qualified Acres by Covered Species habitat is presented in Table 6-3.

The Boulder City Conservation Easement Management Plan (DCP 2021a; Appendix Y) defines management goals, objectives and actions for the BCCE, and was developed in alignment with the existing MSHCP BGOs. The BCCE management goals and objectives are included below and the management actions and associated details can be found in the management plan. The management plan will be updated to reflect the MSHCP Amendment BGOs following its approval.

Goal 1: Protect and manage the BCCE for the desert tortoise and its habitat.

- Objective 1.0 - Restore and enhance habitat for desert tortoise
- Objective 2.0 - Install and maintain infrastructure that controls tortoise movement
- Objective 3.0 - Identify and decrease direct stressors to desert tortoise, as needed

Goal 2: Protect and manage the BCCE for other MSHCP Covered Species.

- Objectives to be developed.

Goal 3: Manage the property and public uses to meet conservation obligations and legal requirements.

- Objective 4.0 - Promote a road network that supports conservation and provides appropriate access for management and public use
- Objective 5.0 - Provide law enforcement
- Objective 6.0 - Control invasive plant species and noxious weeds
- Objective 7.0 - Promote responsible recreation and inform the public on current activities
- Objective 8.0 - Manage allowable uses

- Objective 9.0 - Manage prohibited uses

6.3.3 Riparian Reserve Units

Condition K of the Section 10(a)(1)(B) incidental take permit associated with the existing MSHCP stipulates that take of covered avian species is conditioned upon the acquisition of private lands in desert riparian habitats along the Muddy and Virgin Rivers and the Meadow Valley Wash (USFWS 2001). These riparian systems are being targeted because of the existing riparian bird habitat and development pressure. Much of the riparian habitat in Clark County is privately-owned; therefore, voluntary acquisitions and conservation easements from willing sellers are being pursued to meet habitat protection targets. Land acquisition will occur either through purchase of conservation easements or through purchase of fee title. Riparian restoration will also help to improve habitat quality and contribute to the recovery of the covered bird species.

6.3.3.1 Riparian Reserve Units – Design

To date, the DCP has acquired properties with riparian habitat along the Virgin and Muddy Rivers, totaling 662 acres, as shown in Figures 6-6 and 6-7. Meadow Valley Wash properties have not been included in the Riparian Reserve Units thus far because willing sellers of suitable habitat have not been identified. The Lower Las Vegas Wash and the Lower Colorado River also provide riparian and marsh bird habitat within the Plan Area, but have not been targeted for acquisition under the existing MSHCP because of ongoing conservation and management efforts including the Lower Colorado River MSHCP, low development risk, and limited opportunities for acquisition.

The Nature Conservancy (TNC) assisted Clark County in implementing the early riparian land acquisition program for the existing MSHCP. From 2002 to 2004, TNC acquired nine parcels of land from willing sellers, totaling 116.5 acres, using funds from the Southern Nevada Public Lands Management Act (SNPLMA) account for purchasing of environmentally sensitive lands. TNC managed these properties until they were transferred to Clark County in 2010 and 2011.

Clark County has also acquired property in the lower Virgin River watershed totaling 545.5 acres, including five sites: Bunkerville East, Bunkerville West, Mesquite (sometimes referred to as Mesquite West), Mormon Mesa, and Riverside. The Mormon Mesa property was the first on the Virgin River to be acquired by Clark County when it was transferred from Clark County Parks and Recreation Department to the DCP in 2011. Since then, 15 additional parcels have been acquired as property from willing private sellers becomes available. These already acquired lands will continue to be part of the Reserve System and managed to benefit Covered Species. XX acres of land have been acquired in excess of mitigation requirements for the existing MSHCP, and provide a jump-start to the MSHCP Amendment's mitigation needs for riparian habitats.

Unlike the portion of the Reserve System that is on publicly-owned land and has clearly defined boundaries, the riparian areas are being incorporated into the Reserve System over time based on the availability of willing sellers and accurate surveys and legal descriptions. The DCP developed an acquisition selection tool to rank and prioritize properties based on the environmental and administrative criteria listed in Table 6-2 below.

Table 6-2. Acquisition Selection Criteria

Administrative Criteria
Ease of management Complexity of land acquisition process Potential for degradation of habitat if not purchased for conservation
Environmental Criteria
Species evaluation Proximity to sensitive lands Restoration Potential

Another key component of assembling the riparian units of the Reserve System will be habitat quality assessments. Using the habitat quality index, DCP will ensure that the Qualified Acres of desert riparian habitat are equal to or greater than the Qualified Acres of desert riparian ecosystem impacted. The Riparian Reserve Units descriptions that follow include estimates of Qualified Acres of the Riparian Reserve Units to date, which are captured in Table 6-3. As the Reserve System will require additional Riparian Reserve units to meet mitigation requirements of the MSHCP Amendment, protection of riparian habitats will occur prior to the impact at a rate and level to maintain mitigation consistent with and ahead of the rate of impact. This is consistent with USFWS' Stay Ahead Provision. Riparian restoration projects will also be conducted with a goal to increase suitable breeding habitat for the riparian birds. Mitigation credits for successful restoration projects as defined by success criteria and generally described in Appendix X) will be calculated in addition to the preservation credits estimated through the landscape level analyses of Qualified Acreages. Such that the MSHCP Amendment will estimate mitigation achieved through preservation (as measured by Qualified Acres), and then additional mitigation credit may be granted upon successful completion of restoration projects which provide an uplift or improvement of habitat.

6.3.3.2 Riparian Reserve Units Description

Each of the Riparian Reserve Units are described below, including size, location, surrounding land uses, ecosystem and habitat value, and Qualified Acres of habitat.

6.3.3.2.1 Muddy River Reserve Unit

The Muddy River Reserve is located in northeastern Mojave Desert ecosystem within Moapa Valley and consists of multiple properties. The properties consist of approximately 120 acres, of which 32 acres are considered riparian habitat along the Muddy River and were acquired to conserve habitat for various riparian bird species, including the southwestern willow flycatcher and Yuma clapper rail. Yellow-billed cuckoo, southwestern willow flycatcher, and loggerhead shrike have been documented in this Reserve Unit. Land cover types in the Muddy River Reserve include riparian forest, woodland, and scrub types. This Reserve Unit also includes upland habitats such as about 84 acres of Mojave Desert scrub ecosystem.

The Muddy River Reserve is surrounded by BLM, USFWS and tribal lands, Southern Nevada Water Authority conservation lands, and lands used for residential, agricultural and commercial purposes. The elevation ranges from 1,520 to 1,800 feet, with a narrow to moderately wide floodplain along the river and steep slopes climbing up to the surrounding mesas.

For mitigation purposes, the Muddy River Reserve Unit contains the following Qualified Acreage, as shown in Table 6-3: about 69 Qualified Acres of Mojave Desert scrub and mesquite acacia, 58 Qualified Acres of gypsiferous soil, 37 Qualified Acres of sandy soil, 22 Qualified Acres of wind-blown sand, and 53 Qualified Acres of hydrology dependent habitat. Small areas of desert riparian scrub (8 Qualified Acres) and desert riparian marsh (11 Qualified Acres) are also included.

6.3.3.2 *Virgin River Reserve Unit*

Clark County currently owns approximately 550 acres in the Virgin River Reserve Unit. This includes an 80-acre parcel on the lower reach of the Virgin River that consists of approximately 67 acres of riparian habitat within the 100-year floodplain and 13 acres of Mojave Desert Scrub habitats. Adjacent land uses include golf courses, residential neighborhoods, agriculture, BLM multi-use, and wildlife habitat protection within the Overton Wildlife Management Area. Much of the surrounding land is managed by BLM, NPS, and NDOW. Elevations range from 1,260 to 1,600 feet; the floodplain is relatively flat, but there are steeper climbs from the floodplain to the surrounding uplands (Orr et al. 2013).

The primary ecosystem in this Reserve Unit is desert riparian (68%) with land cover types that include riparian forest, woodland, and scrub and mesquite bosques. The Reserve Unit is also about 16% Mojave Desert scrub and 16% disturbed. The remaining 1% is mesquite acacia ecosystem. This Reserve Unit has documented occurrences of the desert pocket mouse, Yellow-billed cuckoo, southwestern flycatcher, loggerhead shrike, Arizona Bell's Vireo, three-corner milkvetch and sticky buckwheat. The dominant vegetation type in this riparian zone is tamarisk and is located in critical habitat for the southwestern willow flycatcher.

Regarding Qualified Acres, the Virgin River Reserve Unit has relatively equal proportions of sandy soil (245 Qualified Acres) and Mojave Desert scrub and mesquite acacia (148 Qualified Acres). It also contains about 93 Qualified Acres of desert riparian marsh and 202 Qualified Acres of desert riparian scrub and woodland habitats. Finally, it includes hydrology dependent (279 Qualified Acres), wind-blown sand (about 111 Qualified Acres) and gypsiferous soil (57 Qualified Acres), as shown in Table 6-3 below.

6.3.3.3 Riparian Reserves Management

The Riparian Reserves Management Plan (DCP 2021b; Appendix X) includes management goals, objectives and actions that relate to the BGOs of the existing MSHCP. The goals and objectives are listed below and the management actions and associated details can be found in the Riparian Reserves Management Plan. The management plan will be updated to reflect the MSHCP Amendment BGOs following its approval.

Goal 1: Manage reserves to provide habitat for the six MSHCP covered avian species.

- Objective 1 – Restore, create, and enhance habitat for riparian bird species

Goal 2: Manage reserves to support resource values for other MSHCP Covered and sensitive Species when practicable

- Objective 2. Manage habitat to avoid harm to aquatic species

Goal 3: Manage reserves to meet conservation and landowner obligations

- Objective 3.0 - Control invasive plant species and noxious weeds
- Objective 4.0 - Reduce threat of fire and maintain safe conditions
- Objective 5.0 - Manage property rights and property infrastructure
- Objective 6.0 - Build and maintain positive relationships in the community

Goal 4: Expand property holdings of desert riparian habitats for MSHCP Covered Species

- Objective 7.0 - Acquire title to private lands from willing sellers
- Objective 8.0 - Acquire conservation easements to public and private lands from willing landowners as appropriate

Additional non-federal Reserve Units are expected to be added to the Reserve System over time through acquisition and conservation easements, consistent with the MSHCP Amendment Conservation Strategy. As expansion of the Reserve System occurs, new Riparian Reserve Units will be incorporated into the Riparian Reserves Management Plan and new management plans will be developed and/or updated, similar to the BCCE Management Plan.

6.3.4 Reserve System Qualified Acreage Summary

Table 6-3 below presents the Qualified Acres of each habitat group across all Reserve Units, as calculated using the habitat quality index (also shown in Figures 6-10 through 6-18). The habitat groups are not necessarily mutually exclusive but overlap in some instances because vegetation characteristics may span more than one habitat group.

Table 6-4 below relates the Qualified Acres of the Reserve System presented above to the Qualified Acres of proposed impact from Chapter 5. As stated above, the habitat groups overlap in some instances. In a few cases, the Qualified Acres of proposed impact to a particular habitat exceed the Qualified Acres within the existing Reserve System. As the MSHCP Amendment continues to acquire and conserve private lands through easements or purchase, the Qualified Acres of these habitat groups will be increased to meet or exceed to proposed impacts. Restoration will also be conducted and restoration projects that are completed successfully will provide additional mitigation credits for those habitat groups. Mitigation will be conducted at a pace such that it stays at pace or ahead of impacts to stay in compliance with USFWS' Stay Ahead Provision.

Table 6-3. Approximate Qualified Acres of Ecosystems or Habitat Group by Reserve Unit

Reserve Unit	Qualified Acres of Ecosystem/Habitat Group								
	Mojave Desert Scrub and Mesquite Acacia	Blackbrush	Desert Riparian Scrub and Woodland	Desert Riparian Marsh	Hydrology Dependent	Wind-blown Sand	Gypsiferous Soil	Sandy Soil	Playa
Mesa Milkvetch	3,374	-	-	-	2,518	5,321	1,788	4,530	-
Tortoise Corridor	18,604	10,973	-	-	621	94	6,413	9,031	-
Bird Spring Valley	20,110	11,433	-	-	2,797	0	7,290	4,387	-
Muddy Mountains	16,567	209	0	8	4,345	3,122	14,912	6,311	-
Bitter Springs	30,911	1,261	-	-	4,454	517	34,458	10,212	-
Muddy River	69	-	8	11	53	22	58	37	-
Virgin River	148	-	202	93	279	111	57	245	-
Gale Hills	8,182	-	-	-	2,107	1,526	11,270	1,664	-
Jean Lake	1,375	10	-	-	100	-	316	1,669	-
Boulder City Conservation Easement	47,699	-	-	-	2,246	1,312	10,646	10,879	-
California Wash	4,339	-	-	-	2,384	3,352	1,214	1,560	-
Stump Springs	51,610	41,924	-	-	10,337	-	23,311	20,810	9,347
TOTAL	202,989	65,810	210	112	32,242	15,376	111,733	71,338	9,347

Table 6-4. Comparison of Qualified Acres of Proposed Impact and Conservation in the MSHCP Amendment.

Ecosystem or Habitat Groups	Qualified Acres		
	Proposed Impact Area	Proposed Low Impact Area	Proposed Reserve System Area
Mojave Desert Scrub and Mesquite/Acacia Ecosystem	136,565	75,050	202,989
Blackbrush Ecosystem	7,350	0	65,810
Desert Riparian Scrub and Woodland Ecosystem	1,763	968	210
Desert Riparian Marsh Ecosystem	1,298	877	112
Hydrology Dependent Ecosystem	47,216	11,027	32,242
Wind-blown Sand Ecosystem	17,825	9,612	15,376
Gypsiferous Soil Ecosystem	67,507	33,240	111,733
Sandy Soil Ecosystem	67,861	33,317	71,338
Playa Fringe Ecosystem	4,601	0	9,347

6.4 Monitoring and Adaptive Management Plan

6.5 Reporting

Ch 6 References

Anderson, D. R., Burnham, K.P., Lubow, B.C., Thomas, L., Corn, P.S., Medica, P.A., and Marlow, R.W., 2001. Field trials of line transect methods applied to estimation of desert tortoise abundance. *Journal of Wildlife Management* 65:583-597.

Averill-Murray, R. C., and Averill-Murray, A., 2005. Regional-scale estimation of density and habitat use of the Desert Tortoise (*Gopherus agassizii*) in Arizona. *Journal of Herpetology* 39:65-72.

Bellamy, C., C. Scott, and J. Altringham. 2013. Multiscale, presence-only habitat suitability models: fine-resolution maps for eight bat species. *Journal of Applied Ecology* 50:892-901.

Benito Garzon, M., R. Blazek, M. Neteler, R. Sanchez de dios, H. Sainz Ollero, and C. Furlanello. 2006. Predicting habitat suitability with machine learning models: The potential area of *Pinus sylvestris* L. in the Iberian Peninsula. *Ecological Modelling* 197:383-393.

Bossard, C.C., J.M. Randall, and M.C. Hoshovsky. 2000. *Invasive Plants of California's Wildlands*. Berkeley, California: University of California Press.

Cariveau, A. B., H. L. Holt, J. P. Ward, L. Lukens, K. Kasten, J. Thieme, W. Caldwell, K. Tuerk, K.A. Baum, P. Drobney, R. G. Drum, R. Grundel, K. Hamilton, C. Hoang, K. Kinkead, J. McIntyre, W. E. Thogmartin, T. Turner, E. L. Weiser, and K. Oberhauser. 2019. The integrated monarch monitoring program: from design to implementation. *Frontiers in Ecology and Evolution* 7: 167. 8pp. Doi: 1-.3389/fevo.2019.00167.

Clark County, 2000. Final Clark County Multiple Species Habitat Conservation Plan and Environmental Impact Statement for Issuance of a Permit to Allow Incidental Take of 79 Species in Clark County, Nevada.

Conway, C. J. 2009. Standardized North American Marsh Bird Monitoring Protocols, version 2009-2. Wildlife Research Report #2009-02. U.S. Geological Survey, Arizona Cooperative Fish and Wildlife Research Unit, Tucson, AZ.

Danforth, B. N., 1999. Emergence dynamics and bet hedging in a desert bee, *Perdita portalis*. *Proceedings of the Royal Society of London. Series B: Biological Sciences*, 266(1432), pp. 1985-1994. Desert Conservation Program [DCP]. 2009. Clark County Desert Tortoise Pick Up Transition Plan.

DCP. 2021.a. Clark County Multiple Species Habitat Conservation Plan: Boulder City Conservation Easement Management Plan. Version 3.5.

DCP. 2021.b. Clark County Multiple Species Habitat Conservation Plan: Riparian Reserves Management Plan. Version 1.3 – Draft.

Dilts, T.E., M. O. Steele, J. D. Engler, E. M. Pelton, S. J. Jepsen, S. J. McKnight, A. R. Taylor, C. E. Fallon, S. H. Black, E. E. Cruz, D. R. Craver, and M. L. Forister. 2019. Host plants and climate structure habitat associations of the western monarch butterfly. *Frontiers in Ecology and Evolution* 7:188. 17 pp. doi: 10.3389/fevo.2019.00188.

Dingle, H., M. P. Zalucki, W. A. Rochester, and T. Armijo-Prewitt. 2005. Distribution of the monarch butterfly, *Danaus plexippus* (L.) (Lepidoptera: Nymphalidae), in western North America. *Biological Journal of the Linnean Society* 85: 491–500.

Erb, L. A., Willey, L.L., Johnson, L.M., Hines, J.E., and Cook R.P., 2015. Detecting Long-Term Population Trends for an Elusive Reptile Species. *Journal of Wildlife Management* 79:1062-1071.

Fourcade, Y., J.O. Engler, D. Rodder, and J. Secondi. 2014. Mapping species distributions with MAXENT using a geographically biased sample of presence data: A performance assessment of methods for correcting sampling bias. *PLOS ONE* 9:e97122.

Fusco, E.J., J.T. Finn, J.K. Balch, R.C. Nagy, and B.A. Bradley. 2019. Invasive grasses increase fire occurrence and frequency across US ecoregions. *Proceedings of the National Academy of Sciences* 116(47):23594-23599. Available online at: www.pnas.org/cgi/doi/10.1073/pnas.1908253116. Accessed February 2, 2021.

Gilliland, K. D., Huntly, N. J., & Anderson, J. E., 2006. Age and population structure of Joshua trees (*Yucca brevifolia*) in the northwestern Mojave Desert. *Western North American Naturalist*, 66(2), pp. 202-208.

Hall, Frederick C. 2002. General Technical Report PNW-GTR-526, US Forest Service https://www.fs.usda.gov/pnw/pubs/pnw_gtr526.pdf

Halterman, M. D., Johnson, M. J., Holmes, J. A., and Laymon, S. A., 2016. A Natural History Summary and Survey Protocol for the Western Distinct Population Segment of the Yellow-billed Cuckoo: US Fish and Wildlife Techniques and Methods. Sacramento, California.

Harju, Seth. 2019. Desert tortoise occupancy sampling plan: Simulations, sampling design, and power to detect trends. Report prepared for Clark County Desert Conservation Program. June 26.

Harju, S.M. and Cambrin, S.M. 2019. Identifying habitat correlates of latent occupancy when apparent annual occupancy is confounded with availability for detection.

Heller, N. and E. Zavaleta. 2009. Biodiversity management in the face of climate change: A review of 22 years of recommendations. *Biological Conservation* 142:14-32.

Keith, K., Berry, K. H., and Weigand, J. F., 2008. When desert tortoises are rare: Testing a new protocol for assessing status. *California Fish and Game* 94:75-97.

Kinkead, K. E., T. M. Harms, S. J. Dinsmore, P. W. Frese, and K. T. Murphy. 2019. Design implications for surveys to monitor monarch butterfly population trends. *Frontiers in Ecology and Evolution*. 7:195. 11pp. doi: 10.3389/fevo.2019.00195.

Las Vegas Wash Project Coordination Team. 2009. Invasive Weed Field Guide for the Las Vegas Wash. December. Southern Nevada Water Authority, 92 pages.

Loeb, S. C., Rodhouse, T. J., Ellison, L. E., et al., 2015. A plan for the North American Bat Monitoring Program (NABat). U. S. Forest Service Southern Research Station, General Technical Report SRS-208. http://www.srs.fs.usda.gov/pubs/gtr/gtr_srs208.pdf.

MacKenzie, D.I., Nichols, J.D., Lachman, G.B., Droege, S., Royle, J.A., and Langtimm C.A., 2002. Estimating site occupancy rates when detection probabilities are less than one. *Ecology* 83:2248-2255.

Margules, C. R. and Pressey, R. L. 2000. Systematic conservation planning. *Nature* 405: 243-253

Orr, B., G. Leverich, and T. L. Dudley. 2013. Mormon Mesa Ecohydrology Assessment Final Report

Piaggio, A. 2005. Updated species account for the Townsend's Big-eared Bat (*Corynorhinus townsendii*). Western Bat Working Group. Updated for the Portland Biennial Meeting.

Pollard, E. 1977. A method for assessing changes in the abundance of butterflies. *Biological Conservation* 12: 115-134.

Portman, Z. M., Tepedino, V. J., Tripodi, A. D., Szalanski, A. L., & Durham, S. L., 2018. Local extinction of a rare plant pollinator in Southern Utah (USA) associated with invasion by Africanized honey bees. *Biological Invasions*, 20(3), pp. 593-606.

Powell, E. 1999. Report on 1997 and 1998 Surveys for *Astragalus geyeri* var. *triquetrus* in Lake Mead National Recreation Area. Unpublished Report.

Ralph, C. J., Sauer, J.R., and Droege, S., 1995. Monitoring bird populations by point count. US Department of Agriculture, Forest Service, General Technical Report PSW-149.

RECON Environmental Inc. 2022. Clark County Connectivity Management Plan. Prepared for Clark County Desert Conservation Program. May.

Rosenstock, S.S., Anderson, D.R., Giesen, K.M., Leukering, T. and Carter, M.F., 2002. Landbird counting techniques: current practices and an alternative. *The Auk*, 119(1), pp.46-53.

Royle, J. A., 2004. N-mixture models for estimating population size from spatially replicated counts. *Biometrics* 60, pp. 108–105.

Science Advisor Panel for the Desert Conservation Program. 2016. Biological Goals and Objectives for the Clark County, NV Multiple Species Habitat Conservation Plan - Final. Prepared by TerraGraphics Environmental Engineering. June 22.

Science Advisor Panel for the Desert Conservation Program. 2020. Draft BGO Revisions Memorandum. Prepared by Alta Science & Engineering, Inc., for the Desert Conservation Program. September 30.

Scoles-Sciulla, S. J. and DeFalco, L. A. 2009. Seed reserves diluted during surface soil reclamation in eastern Mojave Desert. *Arid Land Research and Management* vol 23(1) pp1-13.

Sogge, M.K., Ahlers, D., and Sferra, S.J., 2010. A natural history summary and survey protocol for the southwestern willow flycatcher. US Department of the Interior, US Geological Survey.

Skalak, S.L., Sherwin, R.E., and Brigham, R.M., 2012. Sampling period, size and duration influence measures of bat species richness from acoustic surveys. *Methods in Ecology and Evolution* 3:490-502.

Stahlschmidt, P., and Brühl, C.A., 2012. Bats as bioindicators – the need of a standardized method for acoustic bat activity surveys. *Methods in Ecology and Evolution* 3:503-508.

The Nature Conservancy [TNC]. 2007. A conservation management strategy for nine low elevation rare plants in Clark County, Nevada. The Nature Conservancy, Nevada Field Office. Reno, Nevada. 289 pp. plus appendices.

U.S. Fish and Wildlife Service (USFWS). 2001. Clark County Desert Conservation Plan Permit PRT 801045.

USFWS, 2002. Southwestern Willow Flycatcher Recovery Plan. Albuquerque, NM. i-ix. + 210 p.p., Appendices A-O.

USFWS and NMFS. 2016. Habitat Conservation Plan and Incidental Take Permit Processing Handbook.

Weller, T.J., 2008. Using occupancy estimation to assess the effectiveness of a regional multiple-species conservation plan: bats in the Pacific Northwest. *Biological Conservation* 141:2279-2289.

Williams, B. K., R. C. Szaro, and C. D. Shapiro. 2009. Adaptive Management: The U.S. Department of the Interior Technical Guide. Adaptive Management Working Group, U.S. Department of the Interior, Washington, DC. Available at: <https://www.usgs.gov/publications/adaptive-management-us-department-interior-technical-guide>. Most recently accessed: September 29, 2022.

Zalucki, M. P. and R. L. Kitching. 1982. Dynamics of oviposition in *Danaus plexippus* (Insecta: Lepidoptera) on milkweed, *Asclepias* spp. Journal of the Zoological Society of London 198: 103-116.

Zylstra, E. R., and Steidl, R. J., 2009. Habitat Use by Sonoran Desert Tortoises. Journal of Wildlife Management 73:747-754.

Zylstra, E. R., Steidl, R. J., and Swann, D. E., 2010. Evaluating Survey Methods for Monitoring a Rare Vertebrate, the Sonoran Desert Tortoise. Journal of Wildlife Management 74:1311-1318.

DRAFT