# 3.0 Affected Environment

This chapter describes the existing physical, biological, social and economic environment in the project vicinity that would be affected by implementation of the alternatives. The chapter focuses on current resource conditions as well as environmental trends based on current management. For some resource values, the discussion addresses conditions beyond the Proposed Project area to ensure an adequate analysis of offsite and cumulative impacts subsequently discussed in Chapter 4, Environmental Consequences. The information in this chapter is based on existing resource data or the reports the BLM specifically required for the Searchlight Wind Energy Project.

## Geographic Setting

The Proposed Project is located within southernmost Nevada in an unincorporated portion of Clark County More specifically, the proposed site is 0.5 miles northeast to 3 miles southeast of the town of Searchlight which is at the junction of US-95 and Cottonwood Cove Road. This is approximately 60 miles south-southeast of Las Vegas, 40 miles north of Laughlin, and 1.5 miles east of the western boundary of the Lake Mead National Recreation Area. Western's proposed Federal action is located within the eastern boundary of the Proposed Project area. If descriptions for the affected environment for the proposed switching station differ, the differences are noted in this chapter.

Clark County extends over 8,091 square miles within the Basin and Range geomorphic province, an area of broad, flat valleys bordered by block-faulted bedrock mountains. Clark County borders with: Lincoln County, Nevada to the north; Nye County, Nevada to the west; the Arizona state line to the east; and the California state line to the southwest.

Clark County's elevation varies from approximately 482 feet above mean sea level (msl) at the Colorado River below Hoover Dam to 11,918 feet above msl atop Mount Charleston in the Spring Mountains (for topography refer to Figure 1.3-1 and Figure 1.3-2). . Clark County is predominantly terrestrial, (approximately 98 percent or 7,911 square miles), with only 2 percent (180 square miles) of the land area covered by water features. The most dominant water feature consists of the lower Colorado River inclusive of Lake Mead and Lake Mohave. The primary desert habitat within Clark County consists of creosote bush scrub (*Larrea tridentata*). Terrain consists of desert valleys, basins, alluvial fans/valleys, and mountain ranges.

The Proposed Project site comprises approximately 18,949 acres of BLM-administered lands. Terrain of the project location consists of the northeast edge of the Piute Valley and the low, west flanking hills of the southernmost portion of the Eldorado Mountains, inclusive of Fourth of July Mountain. Area elevations vary from approximately 1,700 feet msl to more than 3,450 msl feet. Existing land uses in the Proposed Project area and vicinity are characterized by a rural-recreation service community, limited livestock grazing on private lands, dispersed recreation, traditional and renewable utilities, and mineral exploration and development. Transportation and utility corridors and facilities predominate along the western edge of the project area. A north-south oriented major transmission line corridor is located to the east of the project area.

# 3.1 Geology, Soils, and Minerals

## 3.1.1 Region of Influence

This section identifies the geology, soils, and mineral resources within and adjacent to the Proposed Project site that would be affected by construction, O&M, and decommissioning of the Proposed Project, and discusses applicable regulations. Information in this section is largely based on information collected by the U.S. Geological Survey (USGS) and the Nevada Bureau of Mines and Geology.

## 3.1.2 Existing Environment

### 3.1.2.1 Topography

The Proposed Project site is located on the east side of the Piute Valley in the low hills bordering the western flank of an unnamed range of mountains that includes Fourth of July Mountain. This area is within the Basin and Range geomorphic province, an area of broad, flat valleys bordered by block-faulted bedrock mountains.

Elevations in the Searchlight area range from approximately 1,700 feet to more than 3,450 feet for the unnamed highlands on part of the Proposed Project area. Part of the area is occupied by the Piute Valley, which drains to the south. The sediments that fill the Piute Valley are relatively thin compared to other valleys in the Basin and Range physiographic province, no deeper than about 700 m (Ludington et al. 2006). The sediments that fill the Las Vegas Valley range up to 1,500 m in depth (Plume 2000)

### 3.1.2.2 Geologic Setting

The geology of the Searchlight area is summarized in the Geology and Mineral Deposits of Clark County, Nevada (Longwell et al. 1965). The following geological formations of the Searchlight area are greatly simplified from descriptions from the geologic figures of the area (Ruppert and Faulds 1998, Faulds et al. 2006). The bedrock and valley-fill deposits may be categorized into five types: (1) alluvial deposits, (2) older gravels, (3) volcanic bedrock, (4) granite bedrock, and (5) metamorphic bedrock. Alluvial deposits occur in the valley floor area and include interbedded gravel, sand, silt, and clay. These deposits are generally unconsolidated but may be cemented with calcite or silica where mineralized water was present. Older alluvial gravels of early Tertiary (from 65 to 1.8 million years before present) to early Quaternary age (1.8 million years or younger) crop out near the Searchlight area. These deposits are generally weakly consolidated conglomerate and sandstone. Volcanic bedrock of Quaternary and Tertiary age crop out in the Searchlight area. These rocks include different types of extrusive volcanic lava and extrusive air-fall tuff, along with intrusive volcanic rock. Granite bedrock is Tertiary and Precambrian (older than 540 million years) in age, and metamorphic rocks comprising schists and gneisses are Precambrian in age.

The major geologic structures in the Searchlight area include normal faults (Ruppert and Faulds 1998, Faulds et al. 2006). The major recognized fault is the Searchlight fault, located about 1.5 miles northwest of Searchlight, which is thought responsible for truncation and significant offset of orebodies in the Searchlight mining district (Faulds et al. 2001). Several unnamed normal faults (displacement down on the east) are mapped trending northeast through the Project Site (Faulds et al. 2006). None of the major normal faults in the area (e.g., Searchlight fault or unnamed faults) cut Quaternary deposits. Geological relations in the area suggest that fault movement on the Searchlight Fault had probably ceased by approximately 11 million years ago (Faulds et al, 2001).

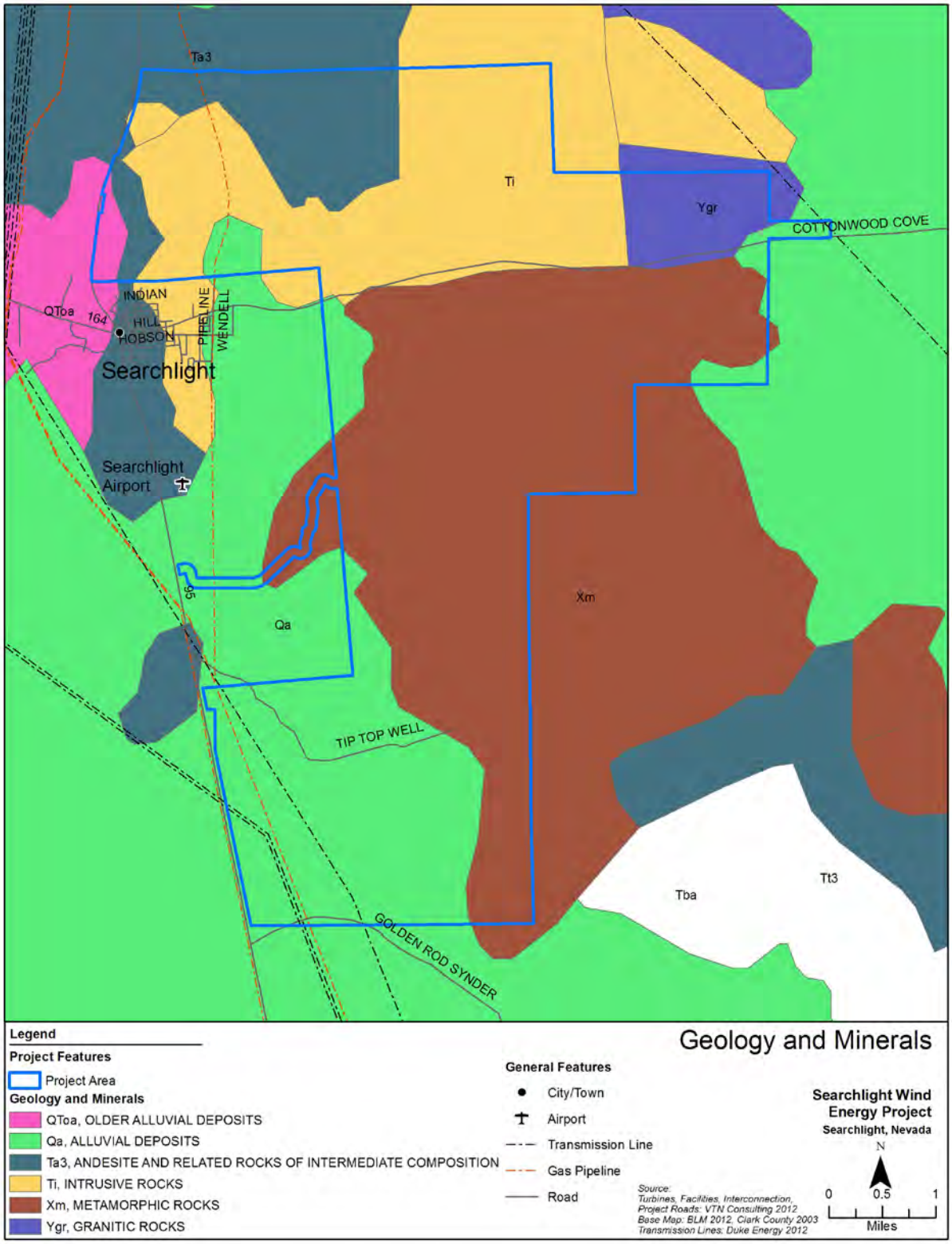


**Figure 3.1-1. Geology and Minerals within the Proposed Project Area**

#### 3.1.2.3 Seismicity

A published map showing the location of earthquakes in Nevada from 1852 to 1996 (DePolo and DePolo 1999) shows historical earthquakes in the vicinity of Hoover Dam. As noted by DePolo and DePolo (1999), "Another earthquake area of note in Nevada is the Lake Mead area, where earthquakes may be partly reservoir induced by the filling of Lake Mead." This map shows no mapped historical earthquakes within a 20-mile radius of the town of Searchlight.

#### 3.1.2.4 Faulting

The nearest potentially active fault (activity in last 1.8 million years) is the Black Hills Fault located about 30 miles north of the site. According to the USGS (2009), it is a normal fault. On the basis of estimated ages of faulted deposits and scarp profile interpretation, the most recent surface faulting event on the Black Hills Fault probably occurred in the mid to late Holocene (less than 5,000 years before present). This is the nearest reported fault with the potential to produce earthquakes that might affect the Project Site. The faults at the site are Pre-Quaternary faults (not active in the last 1.8 million years) with a very low risk for displacement.

#### 3.1.2.5 Seismic Shaking

The Proposed Project site, as well as most of the southern Nevada region, might experience ground shaking from possible future earthquakes in the region. Searchlight is located within Seismic Zone 2B (ground acceleration of 0.15g), defined by the Uniform Building Code as an area of moderate damage potential from seismic hazards. Seismic zones range from Zone 0 (ground acceleration of 0.0g) to Zone 4 (ground acceleration of 0.40g).

#### 3.1.2.6 Liquefaction and Seismic Ground Failure

Liquefaction is a form of seismic ground failure that occurs when there is a sudden loss of strength of saturated soils during seismic shaking. Saturated granular soils with low strength might be susceptible to liquefaction. The potential for liquefaction at the project site is low for the portion of the site underlain by bedrock because the igneous and metamorphic rocks are generally not susceptible to liquefaction. The potential for liquefaction is also low in the Quaternary alluvium at the site because the alluvium is generally unsaturated to depths greater than 250 feet, based upon review of water levels in local water wells.

Other types of seismic ground failure include lateral spreading, seismic subsidence, and collapse. Lateral spreading is a form of ground failure that involves lateral movement of soil towards a free face during seismic shaking. Because the site is underlain by either bedrock materials or alluvial materials that are gently sloping, without a free face, the potential for lateral spreading at the site is very low. Seismic subsidence and collapse can occur as a result of compaction of loosely compacted materials during seismic shaking. Seismic subsidence and collapse are not likely in areas of volcanic, igneous, and metamorphic rock at the site because of the density and strength characteristics of these bedrock materials. There might be a moderate potential for seismic subsidence and collapse of areas of the site underlain by Quaternary alluvial deposits.

#### 3.1.2.7 Landslides

There are no mapped landslides in the project area. Landslides usually occur on steep slopes underlain by materials that have a potential for failure due to saturation from rainfall, loss of strength during seismic shaking, or loss of support of graded slopes. The potential for landslides at the project site is low because the slopes are generally composed of volcanic, igneous, and metamorphic rocks, which have a low potential for slope failure. The potential for landslides in areas mapped as Quaternary alluvium is also low because of the absence of steep slopes and unsaturated conditions.

#### 3.1.2.8 Soils

The soils in the Searchlight area are medium-textured saline and alkaline soils in the lowland areas; shallow, gravelly coarse-textured soils over the alluvial fans; and discontinuous, rocky gravelly coarse-textured soils in the mountain areas (BLM 1992).

Thirteen soil figure units have been characterized in the Proposed Project area by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) (USDA 2009) (Figure 3.1-2). A figure unit is a delineation of an area dominated by one or more major soil types. The objective of figuring is not to delineate pure taxonomic soil classes but rather to separate the landscape into landforms that have similar use and management requirements. The different kinds of soils found within a figuring unit are called soil series, which is a group of soils that have horizons similar in arrangement and characteristics. Ranges in properties of soils of a series vary over a relatively narrow range. Figure units often consist of two or more soil series.

The soils in the Searchlight area are susceptible to erosion by wind and water. The potential for erosion is generally slight except where the soils have been disturbed or along the banks of washes. There is also the potential for localized landslides of surficial soils on the steep slopes of the upland areas. The erosion susceptibility of the soils in the area ranges from low to moderate (BLM 1992).

The project area soil types have the following general characteristics:

- Thicknesses of less than 2 feet
- Located on slopes ranging from 4% to 75%
- Slight erosion potential by surface runoff
- Slight erosion potential by aeolian processes

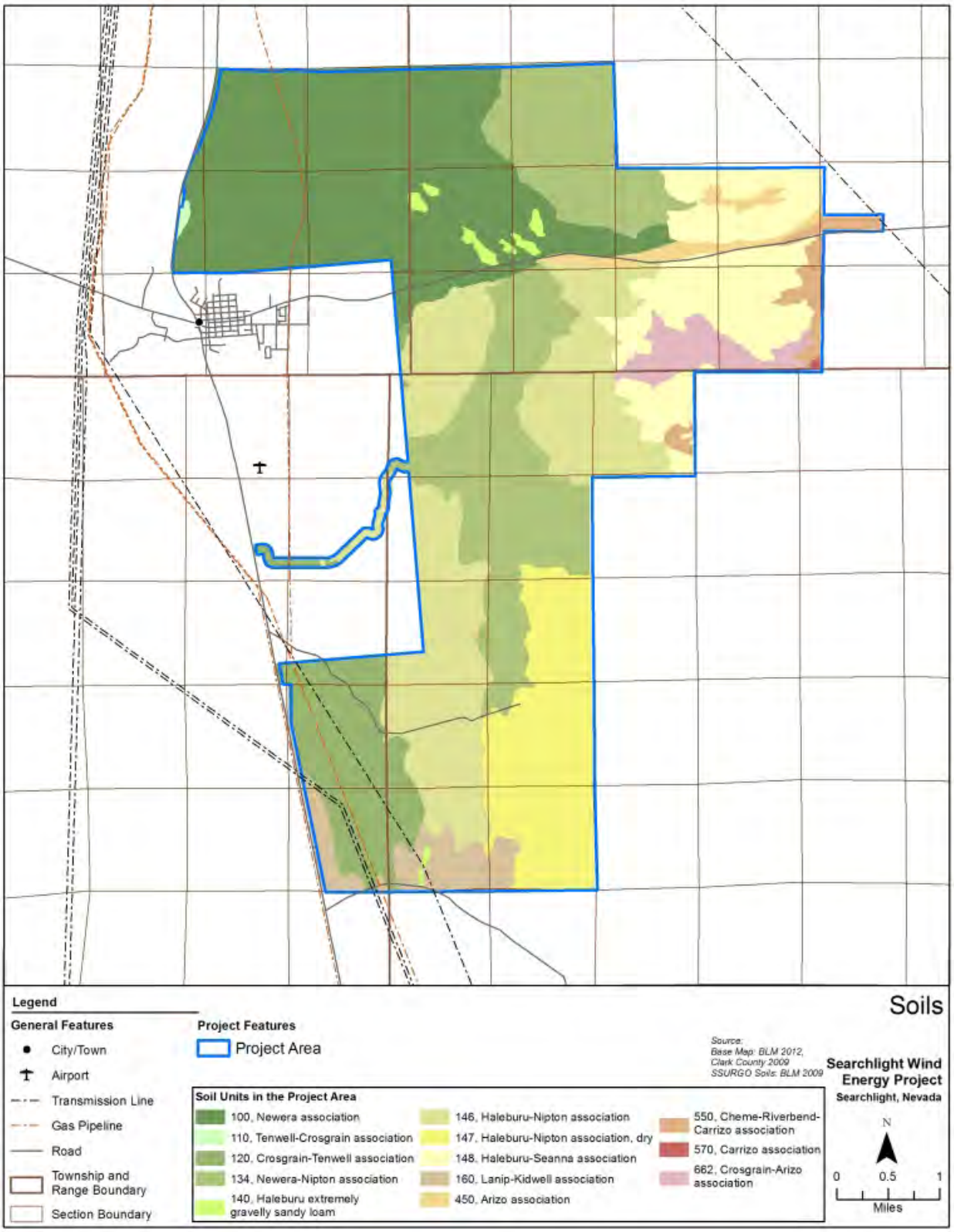


**Figure 3.1-2. Soil Figure Units within the Proposed Project Area**

These data were obtained from the USDA NRCS Web soil survey (USDA 2009) and the Clark County soil survey (USDA 2006). Table 3.1-1 summarizes the surficial areal extent of each figure unit within the project area, including the area of Western's proposed switching station, which would be located on the Cheme-Riverbend-Carrizo association (Figure unit 550).

**Table 3.1-1. Lateral Extent of Soil Figure Units within the Proposed Project Area**

| Figure Unit Symbol | Figure Unit Name | Percentage within Project Area | Acreage within Project Area |
|---|---|---|---|
| 100 | Newera association | 24.6 | 4,274.9 |
| 110 | Tenwell-Crosgrain association | 0.1 | 23.9 |
| 120 | Crosgrain-Tenwell association | 7.6 | 1,311.8 |
| 134 | Newera-Nipton association | 19.4 | 3,377.0 |
| 140 | Haleburu extremely gravelly sandy loam, 4 to 15% slopes | 0.6 | 106.9 |
| 146 | Haleburu-Nipton association | 19.3 | 3,347.5 |
| 147 | Haleburu-Nipton association, dry | 9.7 | 1,690.2 |
| 148 | Haleburu-Seanna association | 10.2 | 1,771.6 |
| 160 | Lanip-Kidwell association | 3.2 | 563.3 |
| 450 | Arizo association | 1.4 | 241.7 |
| 550 | Cheme-Riverbend-Carrizo association | 1.4 | 248.4 |
| 570 | Carrizo association | 0.1 | 8.2 |
| 662 | Crosgrain-Arizo association | 2.3 | 403.9 |
| | **Total** | **100.00** | **17,369.3** |

Biological crusts or biological soil crusts are a community of organisms that live at the surface of desert soils. No biological crusts have been figured by the NRCS within the project area (USDA 2006). However biological soil crusts may occur within the project area.

#### 3.1.2.9 Minerals

The Proposed Project site lies on undeveloped lands administered by the BLM in Clark County, Nevada. The BLM (1998) indicates there is a low potential in the Searchlight area for fluid minerals (oil, gas, and geothermal resources), a high potential for leasable minerals, saleable minerals (common sand, gravel, and rock), and a high potential for locatable minerals (metallic and nonmetallic mineral deposits). The BLM has defined the level of potential for development of these mineral types (BLM 1998). The area includes part of the historic Searchlight mining district, which has produced millions of dollars in gold, silver, copper, and lead since 1897 (Ludington et al. 2006). Mineral deposits in the Searchlight mining district are in gold-bearing veins that are hosted primarily in Tertiary volcanic rocks. There is potential for undiscovered gold deposits and other minerals within the Searchlight mining district (Ludington et al. 2006). Identified mineral resources within the Proposed Project site are described below.

The BLM defines three types of mineral resources (leasable, locatable, and saleable):

- Leasable minerals are divided into solid and fluid resources and include, but are not limited to, solid (such as coal and oil shale) and fluid (such as oil and natural gas and geothermal resources) that are extracted through a competitive leasing program managed under 43 CFR 3100.
- Locatable minerals consist of metallic and non-metallic minerals such as gold, silver, copper, and gypsum that are developed within a defined geographic area and must be located on a mining claim. They are managed under 43 CFR 3800.
- Saleable minerals consist of common varieties of sand, gravel, and other aggregates that are sold at fair market value. They are managed under 43 CFR 3600.

### Locatable Minerals

The areas surrounding Searchlight have a mix of high and low potential for locatable minerals. A high potential for locatable minerals exists in the historic Searchlight mining district. The area to the south of Searchlight has a mix of high and low potential for locatable mineral materials (BLM 1998). Therefore, a high potential for locatable minerals occur within the portions of the Project Site generally northeast of Searchlight, north of highway 164 and east of Searchlight.

Locatable mineral resources available within the Proposed Project site were identified by compiling data from the BLM's Land & Mineral Legacy Rehost 2000 System-LR2000. There are 561 active mining claims that have been filed and 1,872 closed mining claims on land within/adjacent to the Proposed Project (Table 3.1-2, Figure 3.1-3).

**Table 3.1-2. Active and Closed Mining Claims**

| Township | Section | Number of Active Claims | Closed Claims |
|---|---|---|---|
| T28S, R63E | 23 | 4 | 126 |
| | 24 | 0 | 38 |
| | 25 | 18 | 72 |
| | 26 | 20 | 106 |
| | 27 | 51 | 160 |
| | 36 | 163 | 260 |
| T28S, R64E | 19 | 0 | 102 |
| | 20 | 0 | 0 |
| | 27 | 0 | 61 |
| | 28 | 0 | 5 |
| | 29 | 0 | 21 |
| | 30 | 9 | 72 |
| | 31 | 4 | 85 |
| | 32 | 0 | 82 |
| | 33 | 0 | 72 |
| | 34 | 0 | 7 |
| T29S, R63E | 01 | 40 | 131 |
| | 11 | 32 | 56 |
| | 12 | 26 | 44 |
| | 13 | 36 | 4 |
| | 14 | 36 | 51 |
| | 24 | 34 | 2 |
| | 25 | 14 | 2 |
| T29S, R64E | 04 | 0 | 30 |
| | 05 | 0 | 29 |
| | 06 | 0 | 47 |
| | 07 | 18 | 59 |
| | 08 | 0 | 27 |
| | 17 | 0 | 23 |
| | 18 | 36 | 26 |
| | 19 | 19 | 5 |
| | 20 | 0 | 22 |
| | 29 | 0 | 0 |
| | 30 | 1 | 0 |
| | **TOTALS** | **561** | **1,827** |

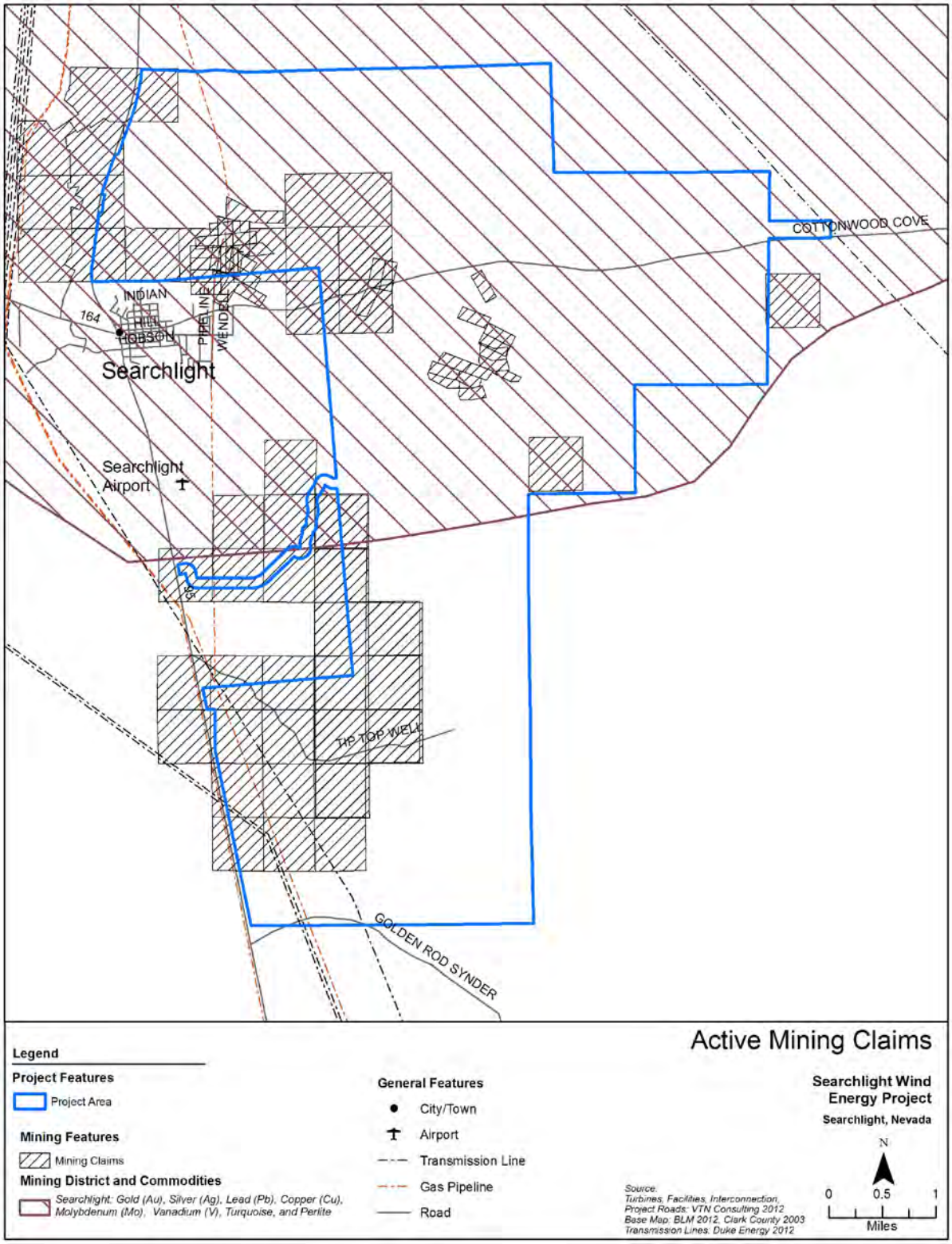


**Figure 3.1-3. Active Mining Claims**

The BLM requires that a mining claim be properly located, although its precise location cannot be mapped easily because the Mining Law of 1872 did not have an orientation system and the claimants are not required to survey their corners with a global positioning system and submit this data to be incorporated on maps. A claim has specific dimensions equaling approximately 20 acres, unless it is an association claim, and can be located in any orientation on the ground and, due to its size, is not defined by traditional legal land descriptions, except down to quarter-section resolution.

## Saleable Mineral Resources

Saleable materials, such as sand, gravel, and other construction materials, are sold and permitted under the Mineral Materials Sale Act of 1947. Much of the project area has a high potential for saleable mineral materials, but the BLM's 1998 RMP (BLM 1998) restricts free-use saleable mineral mining permits to government agencies within 0.5 mile of U.S. Interstate 95 (US-95) and Nevada SR 164 within the Piute-Eldorado ACEC. However, the area around Searchlight, including the Project Site, is not within the Piute-Eldorado ACEC. Therefore, the area of the Project Site remains open for mineral sales. The potential for saleable minerals is identified on 1998 Las Vegas RMP Map (Figure 3.1-4) . The nearest commercial source of sand and gravel is Silver State Materials Corporation, which is located approximately 36 miles north of the project site near Boulder City, Nevada.

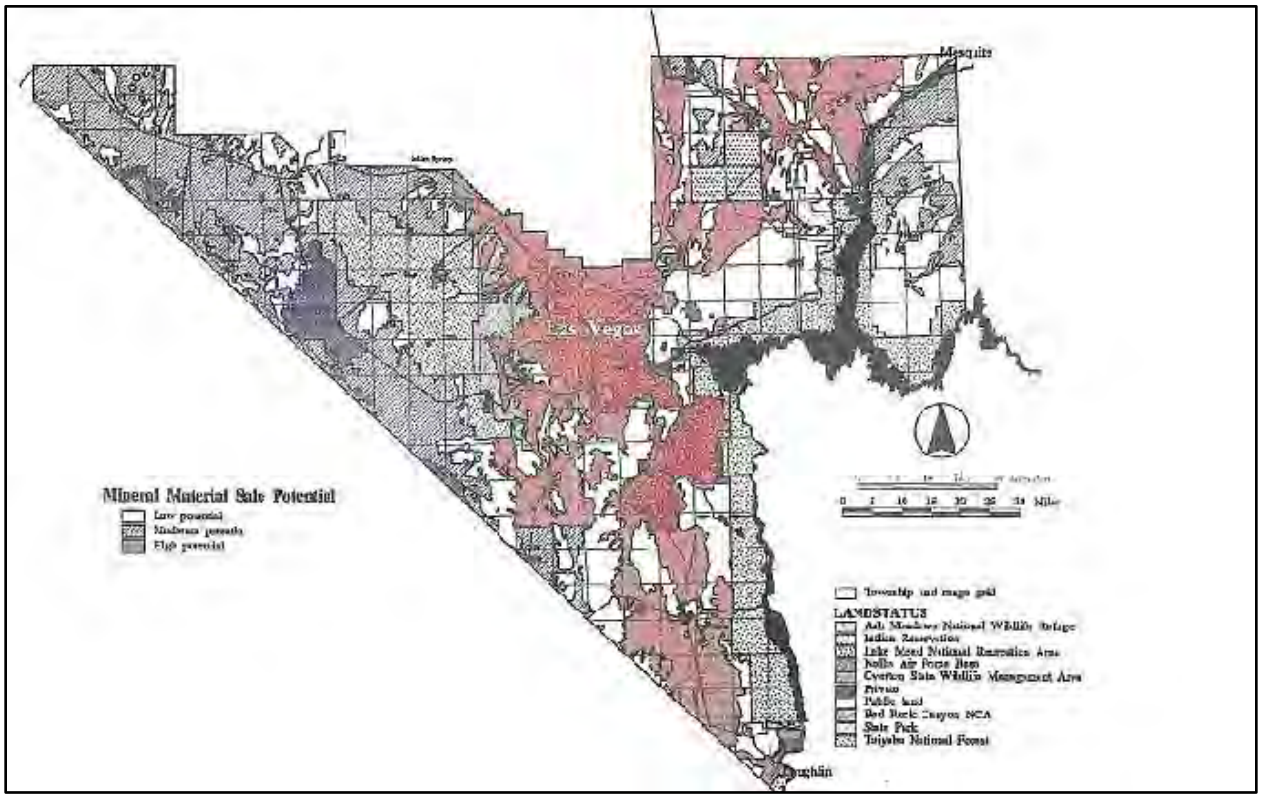


**Figure 3.1-4. Saleable Minerals**

## Fluid Leasable Mineral Resources

The project area, as well as the surrounding BLM Las Vegas Field Office (LVFO) planning area, has a low potential for oil and gas deposits (BLM 1998). Currently, there are no fluid mineral leases within the Proposed Project Area.

# 3.2 Paleontological Resources

This section describes potential impacts on paleontological resources within and adjacent to the Proposed Project site. Additionally, this section discusses applicable regulations governing paleontological resources.

## 3.2.1 Region of Influence

The ROI evaluated for paleontological resources encompass those locations within the project area that might be disturbed by construction, O&M, and decommissioning of the Proposed Project.

## 3.2.2 Existing Environment

For this analysis, paleontological resources can be defined as the remains of prehistoric life preserved in the geologic record. These resources include fossilized plant and animal remains, casts or impressions of such remains, and unmineralized remains. Paleontological resources are classified as nonrenewable scientific resources and are protected by several federal and state statutes, which are described below.

The Potential Fossil Yield Classification (PFYC) system is used to determine the potential impacts on paleontological resources on BLM-administered lands (BLM 2007b). This system provides the ability to review the geology and attribute a general assumption as to the potential for this type of geology (at the surface) to provide for paleontological resources. There are five classes, with Class 1 being Very Low Potential and Class 5 being Very High Potential. These are defined by BLM as follows:

- A Class 1 paleo-resource area provides a very low potential for significant paleontological resources.
- A Class 2 paleo-resource area indicates a low potential for significant paleontological resources.
- A Class 3 paleo-resource area is defined as a moderate (3a), or unknown (3b) potential for significant paleontological resources (i.e., [a] the geology is known to have sporadic occurrences of fossils, or [b] there is not adequate information to determine the potential for paleontological resources). Work in both Class 3a and 3b areas may require preconstruction surveys.
- A Class 4 paleo-resource area has a moderate to high potential for significant paleontological resources, but has a varying potential for human or environmental degradation due to the presence or absence of protective covering, such as soil or vegetation. Work in Class 4 areas requires preconstruction surveys.
- A Class 5 paleo-resources area has a high potential to contain fossiliferous geologic units that consistently and predictably produce scientifically significant vertebrate or invertebrate fossils.

Based on literature reviews and record searches, the Proposed Project area is composed of geology that results in a PFYC of Class 1 and Class 2. As described above, a paleo-resource area classified as Class 1 is considered to be of very low potential for paleontological resources. The Class 1 areas of the Proposed Project site are designated as Quaternary alluvium. This indicates that there is rapid movement of sediment from flowing water, which would likely have carried away any potential paleontological resources. Also, the sediments might be too young to yield fossils of scientific significance. The majority of the Proposed Project area is classified as a Class 2 paleo-resource area. These Tertiary igneous rocks generally do not contain fossils of any kind. Based on the results of the literature and records reviews for the Proposed Project, no paleontological resources have previously been identified on the surface in this area, and the likelihood of such resources occurring belowground is low.

# 3.3 Water Resources

Water resources encompass surface water and groundwater systems that could be affected by water withdrawals and discharges, and spills or stormwater runoff associated with construction and O&M of the Proposed Project. Existing water resources in the Proposed Project area include surface water, groundwater, floodplains, and wetlands.

## 3.3.1 Region of Influence

While the ROI for the water resources analysis is focused on the project area, it includes a discussion on water resources within the watersheds (hydrologic basins) to establish a regional setting for the Proposed Project.

## 3.3.2 Existing Environment

The existing conditions described herein are based on the BLM's resource management concerns within the BLM 1998 Las Vegas RMP and associated ROD and the 2009 BLM Land Use Handbook standards. Specific issues raised during scoping for this project include protection of water quality and quantity during construction and appropriate issuance of permits.

### 3.3.2.1 Watershed Boundaries and Water Quality

The Watershed Protection and Flood Prevention Act (16 United States Code [USC] Sections 1001-1009) and the Nevada Water Quality Standards in the Nevada Administrative Code (NAC), Chapter 445A.118-445A.225, are the primary regulations governing activities that could affect water quality. The Clean Water Act (Section 303[d]) requires states, tribes, and territories to develop lists of impaired waters that do not meet set water quality standards. According to Nevada's 2006 303(d) list of impaired waters, none occur within or adjacent to the Proposed Project area. A draft 2008-2010 list is not yet available for review.

The project area encompasses approximately 30 total square miles (18,949 acres of BLM-managed land), spread across portions of two Hydrographic Flow Regions; the Central Region and the Colorado River Basin Region, both of which are a part of the greater Colorado Regional Flow System (Harrill et al. 1988). Figure 3.3-1 depicts the project area relative to hydrologic basin boundaries. The administrative hydrographic basins, or sub-basins, in the project area include (1) the Central Flow System's Eldorado Valley (31,608 acres) to the north, (2) Piute Valley (20,052 acres) to the west, and (3) Colorado River Valley (33,217 acres) to the east, both part of the Colorado River Basin. Western's proposed switching station is located in Colorado River Valley.

The chemical character and quality of a natural water source is determined by mineral content of the rock that water flows across or through and the ease with which the rock minerals dissolve into the water. Among the variables that influence the concentrations of dissolved constituents in water are contact time between water and rock minerals, evaporation (which reduces the volume of water and causes salts to concentrate), temperature (which influences solubility), and the concentration and character of the mineral constituents in the rock or sediment. Existing data in the project area are inadequate to characterize groundwater quality in the project area, which is set across variable geologic conditions and varying elevations. Both surface water and groundwater quality in and around the project area can be expected to vary significantly.

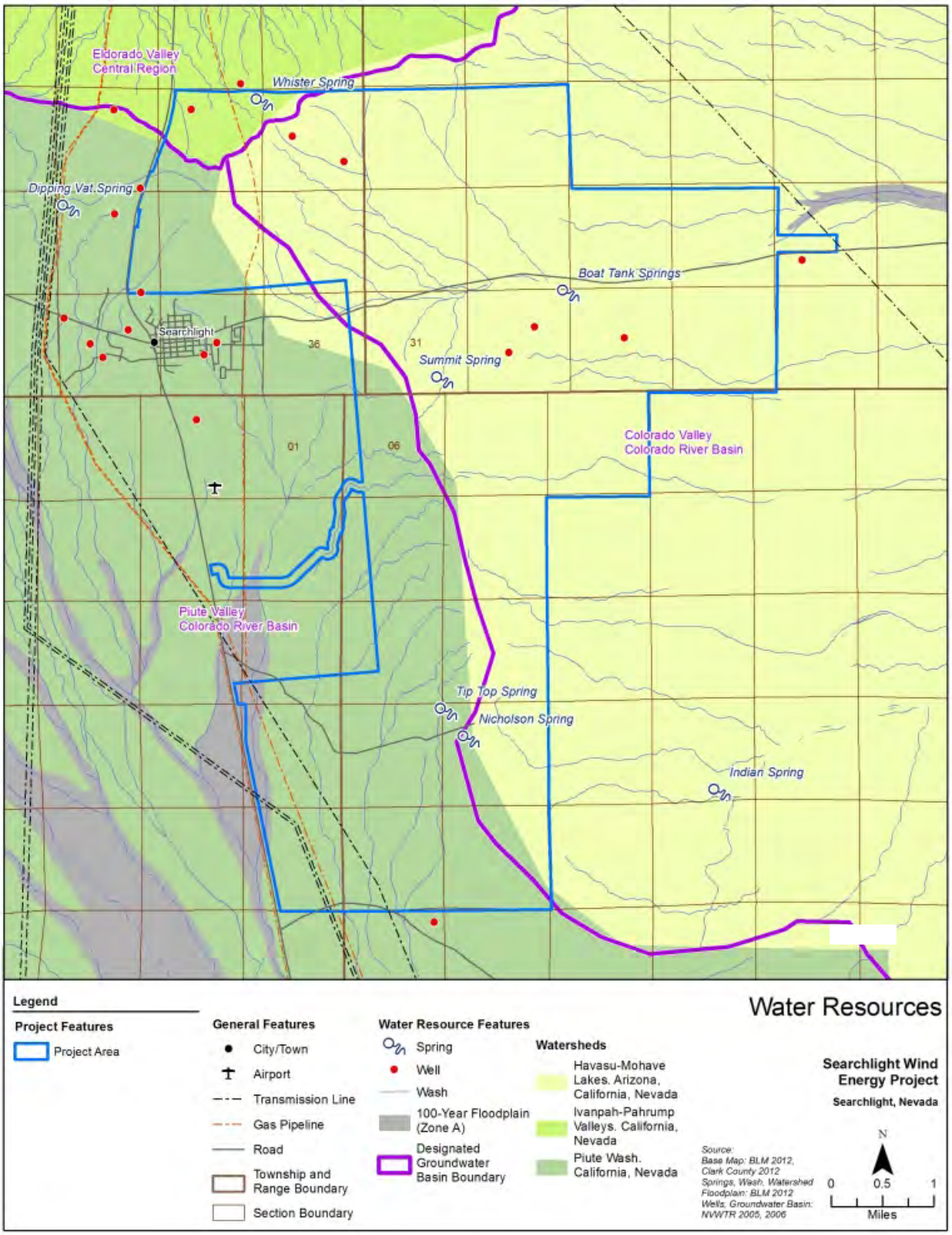


**Figure 3.3-1. Project Area Water Resources**

Watershed health is important to federal and state agencies as a means for protecting water quality. The BLM's Land Use Planning Handbook encourages a watershed-based approach for managing its lands and requires the BLM to identify watersheds that might need special protections for human health concerns, ecosystem health, or other public uses. Further, the BLM must ensure that proper measures are taken for enhancing watershed functions and conditions (BLM 2005a).

In October 2005, the U. S. Environmental Protection Agency (EPA) developed the *Draft Handbook for Developing Watershed Plans to Restore and Protect our Waters*. The handbook describes how to develop and implement a watershed plan to meet water quality standards that protect water resources. Because the project area encompasses multiple watersheds, it is important that the Proposed Project analysis includes consideration of the BLM's management directives for developing sites within watersheds that include proper hydrologic functions and conditions.

BMPs are identified by the State of Nevada to minimize contributions from both point and non-point sources of pollution from public land management actions (BLM 1998). The BLM also must ensure that any nonpoint source BMPs and rehabilitation techniques meet state and local water quality requirements (BLM 2005a). Clark County's 2008 Land Use Plan encourages the use of landscaping for buffering, erosion control, and stormwater runoff control for maintaining acceptable water quality conditions. In addition, use of conservation programs via water reuse is encouraged in the Clark County Land Use Plan. Application of these local measures and programs for the Proposed Project would be encouraged by the BLM in support of local water quality requirements. For example, the Applicant would need to see that construction and use of access roads for the Proposed Project do not negatively affect water quantity and quality. These measures could be achieved by implementing a Clark County-approved stormwater protection plan during construction, O&M, and decommissioning of the Proposed Project.

#### 3.3.2.2 Surface Water

Within the Proposed Project area, no perennial surface waters are present. However, numerous ephemeral desert washes pass through the project area. These washes flow only in conjunction with storm events and are known locations of flash floods. When these washes flow, much of the water percolates into the coarse alluvium overlying the valley slopes. Because evaporation greatly exceeds rainfall in the valleys, salts tend to be transported from the higher elevations to the valleys, where they accumulate. Therefore, water quality tends to decline as it moves downstream within the basins. The BLM supports the Clark County Regional Flood Control District (CCRFCD) Master Plan as a means to lessen damages caused by flash floods (CCRFCD 2008a). In some instances, the CCRFCD Master Plan requires the installation of flood control features such as conveyance measures and detention basins.

According to the USGS data, five springs occur within the project area: Whister Spring in Southern Eldorado Valley, Boat Tank Springs and Summit Spring in the Colorado River Valley, and Tip Top Spring and Nicholson Spring in Piute Valley (Nevada Division of Water Resources [NDWR] 2006) (Figure 3.3-1). Springs could be a source for wetland conditions, and some are known to have an average flow of 5.5 gallons per minute (gpm), with high flows of up to 75 gpm (CCRFCD 2008a).

#### 3.3.2.3 Floodplains

FEMA designates floodplain zones. Zone A indicates an area is "subject to inundation by the 1-percent-annual-chance flood event," and mandates the purchase of flood insurance. The Zone A designation does not include floodways, which occur within floodplains and inhibit development encroachment activities (FEMA 2009). Figure 3.3-1 shows 0.32 square mile of a FEMA-designated 100-year floodplain within and along the southwestern boundary of the Proposed Project area. Another designated 100-year floodplain lies immediately outside the northeastern boundary of the project area (north of Cottonwood Cove Road). Western's proposed switching station site does not lie within a designated 100- or 500-year floodplain.

Although the project area is not located within the boundaries of the CCRFCD, the CCRFCD is updating the *2003 Flood Control Facilities Pla*n for the town of Searchlight (Clark County 2008a). Because Searchlight is nearby and down-gradient from a portion of the Proposed Project, any flood control conveyance plans designed for the project within the 100-year floodplain would need to complement a finalized flood control plan for Searchlight. For example, the CCRFCD Master Plan includes proposed detention and conveyance structures designed to detain a 100-year flow event and reduce downstream flows (Clark County 2008a). Application of this Master Plan supports the BLM's watershed approach to managing its lands, as discussed above in Section 3.3.1.

#### 3.3.2.4 Groundwater Resources

The Proposed Project area encompasses portions of the Central Region and Colorado River Basin hydrographic areas, which includes the Eldorado Valley, Piute Valley, and the Colorado Valley groundwater basins.

Groundwater in Eldorado Valley is derived primarily from two sources: recharge over the basins and subsurface inflow from Hidden Valley (Rush and Huxel 1966). The recharge derived from flow from Hidden Valley is believed to be less than 300 acre-feet per year (acre-feet/year) (Rush and Huxel 1966). Piute Valley is recharged by precipitation and snowmelt runoff from the Piute Range, the Castle Mountains, and the McCullough Range, as well as groundwater flows from the adjacent, upgradient Ivanpah Valley. The Colorado River Valley is recharged primarily from precipitation and snowmelt runoff from the Eldorado Mountains, as well as groundwater inflow from Eldorado Valley.

The depth to water in the project area is believed to be highly variable. NDWR on-line records list several wells located within the project area (NDWR 2011). Static water depths in these wells range from approximately 170 feet to over 270 feet below surface grade.

Groundwater in Eldorado Valley is predominantly a sodium-bicarbonate type with high concentrations of total dissolved solids (TDS) and a medium-to-high salinity hazard (Rush and Huxel 1966). Groundwater in the southern and southeastern parts of Piute Valley is sodium bicarbonate in character and ranges in TDS content from 196 to 329 milligrams per liter (mg/L). Analyses of water from one well near Goffs, California, shows fluoride concentrations ranging from 1.0 to 1.7 mg/L. Water from a well near Searchlight has calcium-sodium sulfate-bicarbonate character with a TDS content of 698 mg/L (DWR 1954). Historic analyses of the groundwater in some areas of the surrounding valleys indicate that concentrations of TDS, sulfate, and chloride exceed drinking water standards. The presence of historic mining districts suggests that soluble metals and other trace constituents might be present in portions of the bedrock aquifer. According to information on file with the Clark County Department of Health Services, iron, lead, manganese, mercury, and nitrate have been detected in groundwater at levels exceeding their respective maximum contaminant levels in the Searchlight area (Buqo and Giampaoli 1988). However, the annual *Water Quality Report for Searchlight Water System* (SNWA 2010), the water service provider closest to the project area, shows that the treated water meets all primary Safe Drinking Water Act standards. The report does not, however, present influent data from the two supply wells.

There are a number of springs in the project area, but the combined discharge rate of these springs varies seasonally and should not be relied upon for a consistent source of operational water. The more significant springs include Whister Spring in Southern Eldorado Valley, Boat Tank Spring and Summit Spring in the Colorado Valley, and Tip Top Spring and Nicholson Spring in Piute Valley. These springs are an important source of water and habitat for wildlife.

Water for the Proposed Project would be obtained from an existing utility or an existing water right. Based on NDWR well log data, eight groundwater wells occur within the project area. Unfortunately, the well logs do not specify quality of water for the wells. None of the eight wells drilled on public lands within the project area are located within the Proposed Project's construction area footprint (BLM 1998).

The Searchlight Water System (SWS) is owned and operated by the Las Vegas Valley Water District. The SWS service area is supplied by two wells located in Piute Valley. It should be noted that these two wells are set in an alluvial aquifer, whereas the eight wells located within the project area are likely to be screened in either fractured granite or thermally altered bedrock. Well S-2 is the primary well, and the backup well, S-1, is used mainly in emergencies.

#### 3.3.2.5 Water Use and Discharge

The Nevada State Water Engineer has recorded the Eldorado Valley and the Piute Valley as Designated Groundwater Basins. The Colorado River Valley is Irrigation Denied.

The Eldorado Valley has committed groundwater resources of 2,390 acre-feet/year, which is more than four times the estimated perennial yield of 500 acre-feet per year. The Piute Valley has committed groundwater resources of 5,039 acre-feet/year, which is over 16 times the estimated perennial yield of 300 acre-feet/year. The Colorado River Valley has committed groundwater resources of 4,547 acre-feet/year, which is over 22 times its estimated perennial yield of 200 acre-feet/year. Appropriated water rights are registered primarily to mining and milling operations and municipalities, with minor quantities of water appropriated for quasi-municipal, stock watering, and industrial use (NDEP 2011).Table 3.3-1 presents a summary of appropriated water rights, in acre-feet, for the three valleys in the project area.

**Table 3.3-1. Summary of Appropriated Water Rights (in acre feet)**

| Manner of Use | Eldorado Valley | Piute Valley | Colorado Valley |
|---|---|---|---|
| Commercial | - | 10.08 | 5.71 |
| Environmental | - | - | 3605.47 |
| Industrial | 2.95 | - | 128.14 |
| Mining/Milling | 1743.14 | 299.17 | 58.18 |
| Municipal | 500 | 4358 | 3.28 |
| Quasi Municipal | 0.12 | 311.19 | 610.1 |
| Recreation | - | - | 134.45 |
| Stock Water | 9.83 | 60.65 | - |

Source: NDEP 2011

Clark County Water Reclamation District (CCWRD) operates a wastewater treatment facility located in the southwestern portion of Searchlight. Water users not connected to the Searchlight Water Resource Center sewer system discharge their wastewater to private septic systems. The CCWRD system treats an estimated 500,000 gallons of wastewater per day. The wastewater is treated in a series of oxidation ponds, where the effluent either evaporates or flows into an adjacent wash.

#### 3.3.2.6 Jurisdictional Waters, Drainages, and Riparian Areas

The Proposed Project area encompasses approximately 8 unnamed ephemeral desert washes and approximately 15 tributaries (USGS 2003 data). As shown on Figure 3.3-1, the project area lies across a portion of the 100-year return flood zone; therefore, a jurisdictional delineation was required by the U. S. Army Corps of Engineers (USACE) in accordance with the Clean Water Act (33 USC Section 1251). Delineations are done to assess the existing conditions and document the presence of potential jurisdictional waters of the United States.

A formal jurisdictional delineation was conducted within the project area and identified areas under the jurisdiction of the USACE throughout the southern portion of the project area. No USACE jurisdictional wetlands occur within the project area. The USACE jurisdictional non-wetland waters of the U.S. (WOUS) within the project area total 0.174 acre (Figure 3.3-2) That comprise a tributary to Piute Wash, a named wash located approximately 3 miles south-southeast of the project area (Figure 3.3-2). The

USACE will require a Section 404 Permit for the construction of an access road and drainage system crossing jurisdictional waters located within the boundaries of the Proposed Project.

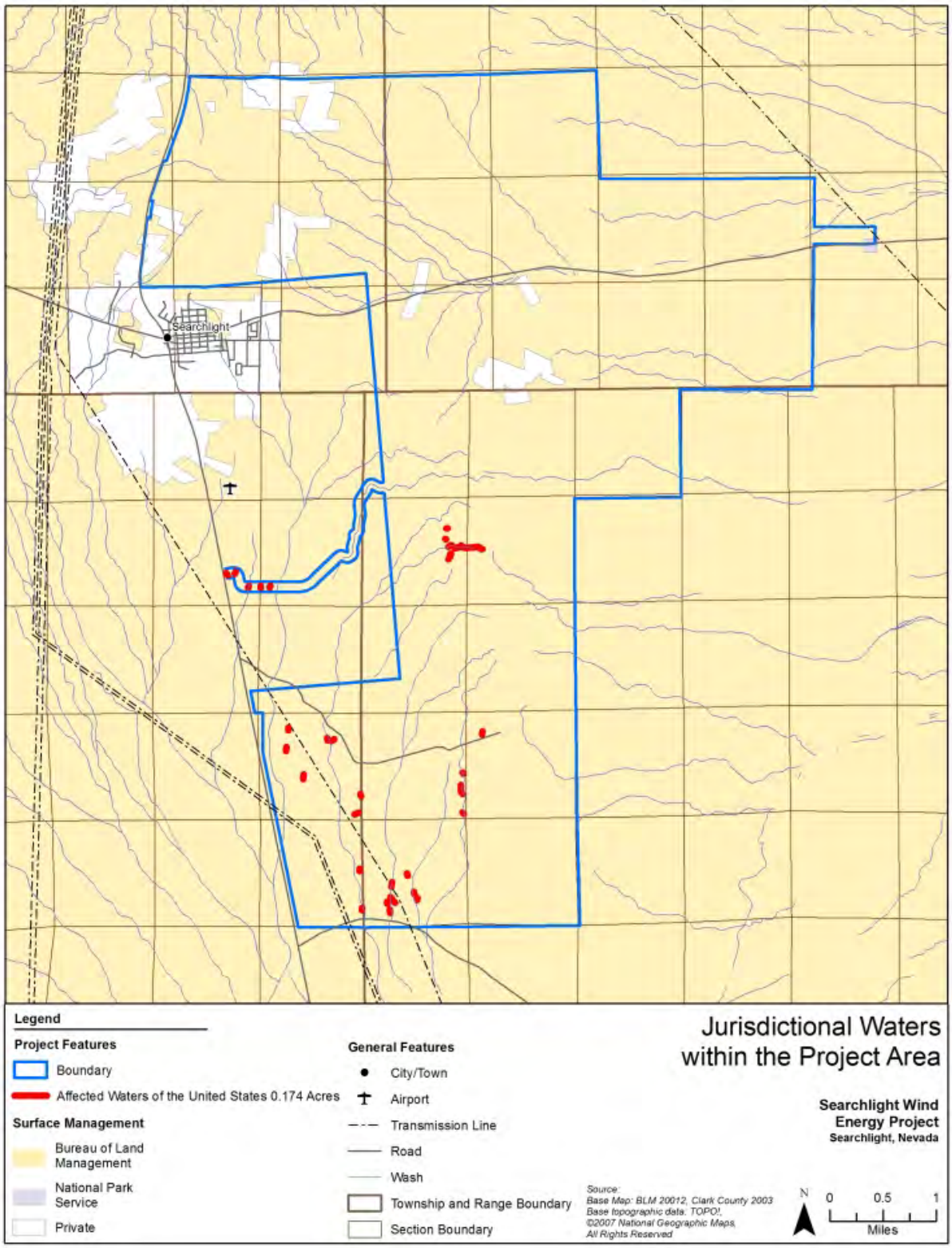


**Figure 3.3-2. Jurisdictional Waters in the Proposed Project Area**

Additionally, application of BMPs would be necessary to see that activities upstream (in the project area) do not negatively affect water quality standards downstream. Such management practices would be mandated by the NAC, Chapter 445A.118-445A.225, and enforced by the CCDAQEM through NDEP Bureau of Water Quality Planning, if determined to be necessary.

Eldorado Valley is topographically closed. Surface water drains primarily toward a dry playa in the northeast portion of the valley. Groundwater flow in the valley is presumed to flow eastward through the volcanic rocks of the Eldorado Mountains into the Colorado River Valley. The Piute Valley is open to the southeast. Groundwater flow in the Piute Valley is believed to flow westward from the mountain toward the valley floor, where flow bends toward the southeast. Groundwater in this valley is presumed to discharge into the Colorado River near Needles, California. In the project vicinity, the Colorado River Valley groundwater presumably flows east and discharges into the Colorado River.

Spring systems and ephemeral washes are important ecosystems in arid environments. These resources provide water and habitat for wildlife and plant species. Based on review of aerial images, minor, isolated riparian areas exist in the vicinity of the springs located within the project area. These riparian areas may act as filtering zones, removing sediment and nutrients from spring waters. The vegetation communities, which might include cottonwood, willow, and brush, provide stability and protect from erosion and bank sloughing, which reduces the potential for nutrient loading. For further discussion on vegetation resources, see Section 3.4, Biological Resources.

# 3.4 Biological Resources

This section discusses existing conditions relative to the biological resources within and adjacent to the Proposed Project area that would be affected from construction, O&M, and decommissioning of the Proposed Project. For organizational purposes, general vegetation communities and special-status plant species are addressed first, followed by general wildlife resources and special- status wildlife species.

## 3.4.1 Vegetation

This section addresses vegetation resources within and adjacent to the project area. Vegetation resources discussed in this section include plant communities and noxious and invasive plant species. Special-status plant species, cacti, and yucca are discussed in Section 3.4.2.

### 3.4.1.1 Region of Influence

The ROI evaluated for vegetation resources encompasses those locations within the project area that might be disturbed by construction, O&M, and decommissioning of the Proposed Project.

### 3.4.1.2 Existing Environment

Vegetation resources data were obtained from the Southwest Regional Gap Project (GAP) (USGS 2004; Lowry et al. 2005). According to the GAP data, vegetation communities and land cover types identified within the Proposed Project area include North American Warm Desert Bedrock Cliff and Outcrop; Mojave Mid-Elevation Mixed Desert Scrub; Sonora-Mojave Creosote Bush-White Bursage Desert Scrub; Sonora-Mojave Mixed Salt Desert Scrub; Inter-Mountain Basins Semi-Desert Shrub Steppe; and North American Warm Desert Wash

Listed below are the abbreviated GAP land cover type descriptions for all vegetation communities or land cover types found within the Proposed Project area (USGS 2004).

#### North American Warm Desert Bedrock Cliff and Outcrop

This ecological system extends from subalpine to foothill elevations and includes barren and sparsely vegetated landscapes (generally less than 10% plant cover) of steep cliff faces; narrow canyons; and smaller rock outcrops of various igneous, sedimentary, and metamorphic bedrock types. Botanical species present are diverse and might include elephant tree (*Bursera microphylla*), ocotillo (*Fouquieria splendens*), Bigelow's nolina (*Nolina bigelovii*), teddybear cholla (*Opuntia bigelovii*), and other desert species, especially succulents. Lichens are predominant life forms in some areas.

#### Mojave Mid-Elevation Mixed Desert Scrub (Shrub/Scrub Class)

This ecological system represents the extensive desert scrub in the transition zone above creosote bush – burrobush (*Ambrosia dumosa*) desert scrub and below the lower montane woodlands (elevations of 2,300 to 5,900 feet) that occur in the eastern and central Mojave Desert. It is also common on lower piedmont slopes in the transition zone into the southern Great Basin. The vegetation in this ecological system is quite variable. Examples of codominants and diagnostic species include blackbrush (*Coleogyne ramosissima*), Eastern Mojave buckwheat (*Eriogonum fasciculatum*), rough jointfir (*Ephedra nevadensis*), spiny hopsage (*Grayia spinosa*), buckhorn cholla (*Opuntia acanthocarpa*), Mexican bladdersage (*Salazaria mexicana*), Joshua tree (*Yucca brevifolia*), or Mojave yucca (*Y. schidigera*). Desert grasses, such as Indian ricegrass (*Achnatherum hymenoides*), desert needlegrass (*A. speciosum*), or Sandberg bluegrass (*Poa secunda*) might form an herbaceous layer. Scattered Utah juniper (*Juniperus osteosperma*) or desert scrub species may also be present.

### Sonora-Mojave Creosote Bush–White Bursage Desert Scrub

This ecological system forms the vegetation matrix in broad valleys, lower alluvial fans, plains, and low hills in the Mojave and lower Sonoran Deserts. Desert scrub is characterized by a sparse to moderately dense layer (2% to 50% cover) of xenomorphic microphyllous and broad-leaved shrubs. Creosote bush and burrobush are typically dominants, but many different shrubs, dwarf-shrubs, and cacti may codominate or form typically sparse understories. Associated species may include fourwing saltbush (*Atriplex canescens*), desert holly (*A. hymenelytra*), brittlebush (*Encelia farinosa*), rough jointfir, ocotillo, water jacket (*Lycium andersonii*), and beavertail pricklypear (*Opuntia basilaris*). The herbaceous layer is typically sparse, but might be seasonally abundant with early season annual plants. Herbaceous species such as sandmat (*Chamaesyce* species [spp.]), desert trumpet (*Eriogonum inflatum*), low woollygrass (*Dasyochloa pulchella*), threeawn (*Aristida* spp.), cryptantha (*Cryptantha* spp.), fiddleleaf (*Nama* spp.), and phacelia (*Phacelia* spp.) are common.

### Sonora–Mojave Mixed Salt Desert Scrub

This system includes extensive open-canopied shrublands of typically saline basins in the Mojave and Sonoran Deserts. Stands often occur around playas. Substrates are generally fine-textured, saline soils. Vegetation is typically composed of one or more Atriplex species, such as fourwing saltbush and cattle saltbush (*Atriplex polycarpa*). Species of allenrolfea (*Allenrolfea* spp.), pickleweed (*Salicornia* spp.), seepweed (*Suaeda* spp.), or other halophytic plants are often present to codominant. Graminoid species might include alkali sacaton (*Sporobolus airoides*) or saltgrass (*Distichlis spicata*) at varying densities.

### Inter-Mountain Basins Semi-Desert Shrub-Steppe

This ecological system occurs throughout the intermountain western U.S. at evaluations ranging from 980 feet to 8,200 feet on alluvial fans and flats with moderate to deep soils. Semi-arid shrub-steppe is typically dominated by graminoids (more than 25% cover) with an open shrub layer. Characteristic grasses include Indian ricegrass, blue grama (*Bouteloua gracilis*), saltgrass, needle and thread (*Hesperostipa comata*), James' galleta, Sandberg bluegrass, and alkali sacaton. The shrub or woody layer is often a mixture of shrubs and dwarf-shrubs. Characteristic species include fourwing saltbush, big sagebrush (*Artemisia tridentata*), Greene's rabbitbrush (*Chrysothamnus greenei*), yellow rabbitbrush (*Chrysothamnus viscidiflorus*), jointfir (*Ephedra* spp.), rubber rabbitbrush (*Ericameria nauseosa*), broom snakeweed (*Gutierrezia sarothrae*), and winterfat (*Krascheninnikovia lanata*). Big sagebrush might be present but does not dominate. The general aspect of occurrences might be either open shrubland with patchy grasses or patchy open herbaceous layer.

### North American Warm Desert Wash

This ecological system is restricted to intermittently flooded washes or arroyos that dissect alluvial fans, mesas, plains, and basin floors throughout the warm deserts of North America. Although often dry, the intermittent fluvial processes define this system, which are often associated with rapid sheet and gully flow. The vegetation of desert washes is quite variable, ranging from sparse and patchy to moderately dense, and typically occurs along the banks but might occur within the channel. The woody layer is typically intermittent to open and might be dominated by shrubs and small trees such as catclaw acacia (*Acacia greggii*), desert broom (*Baccharis sarothroides*), desert willow (*Chilopsis linearis*), Apache plume (*Fallugia paradoxa*), burrobrush (*Hymenoclea salsola*), singlewhorl burrobrush (*Hymenoclea monogyra*), mesquite (*Prosopis* spp.), smoketree (*Psorothamnus spinosus*), desert almond (*Prunus fasciculata*), littleleaf sumac (*Rhus microphylla*), or greasewood (*Sarcobatus vermiculatus*).

### Vegetation in the Proposed Project Area

The distribution of the vegetation community types within the project area boundary is shown in Figure 3.4-1.

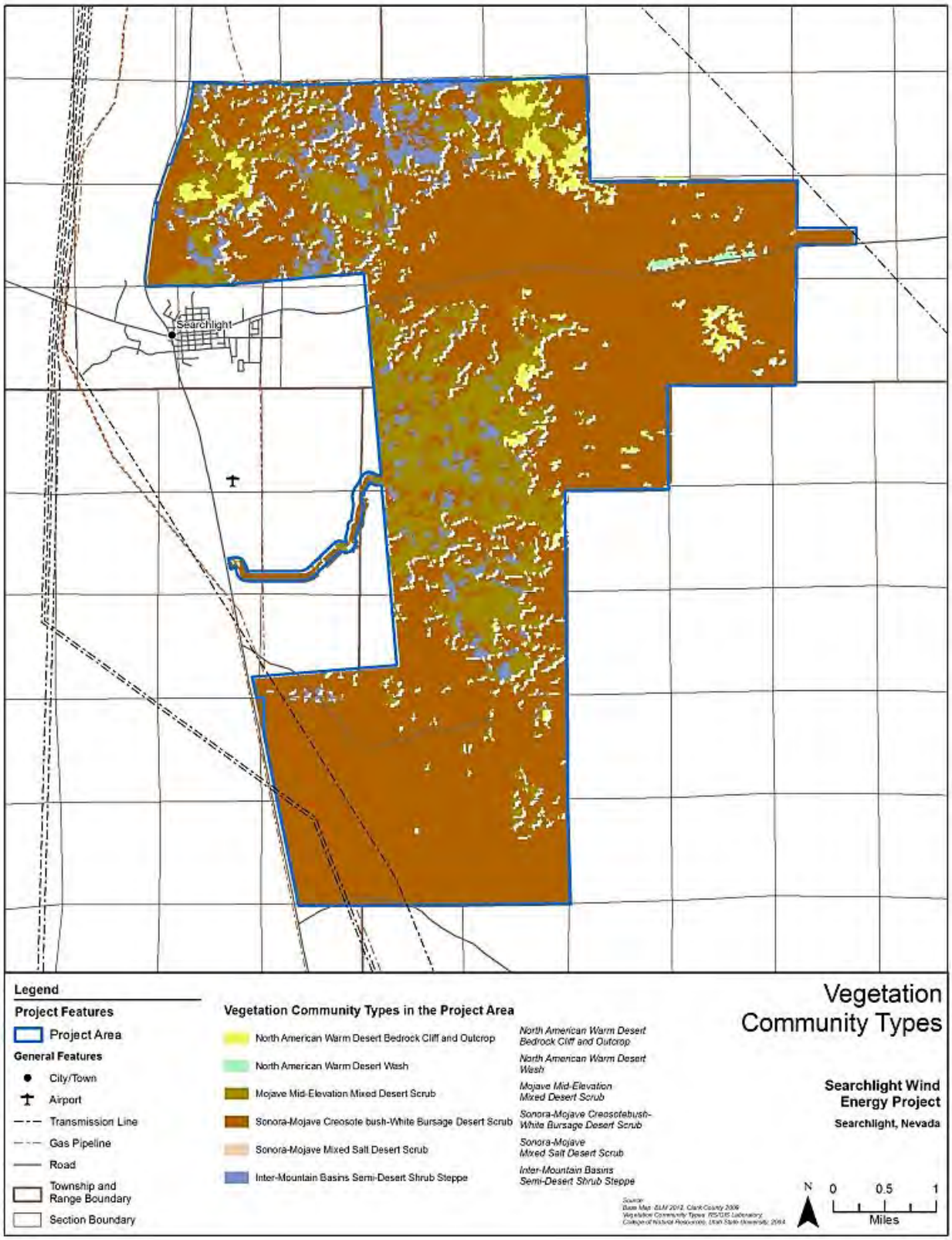


**Figure 3.4-1. Vegetation Community Types**

As illustrated byFigure 3.4-1, Sonora-Mojave Creosote Bush-White Bursage Desert Scrub covers 73.2% and is the dominant ecological system in the project area. Mojave Mid-Elevation Mixed Desert Scrub is the second most common ecological system (19%); the third most common is the Inter-Mountain Basin Semi-Desert Shrub Steppe (4.7%). The three remaining ecological systems comprise the remaining 3% of the project area. Ecological systems, acres, and percentages of each land cover type within the project area are displayed in Table 3.4-1.

**Table 3.4-1. Vegetation Community Types of the Proposed Project Area**

| Ecological System | Acres (in Project Study Area) | Acres (at Western's Switching Station) | % of Project Area |
|---|---|---|---|
| Sonora-Mojave Creosote Bush-White Bursage Desert Scrub | 13,860 | 7 | 73.2 |
| Mojave Mid-Elevation Mixed Desert Scrub | 3,608 | N/A | 19.0 |
| Inter-Mountain Basins Semi-Desert Shrub Steppe | 892 | N/A | 4.7 |
| North American Warm Desert Bedrock Cliff and Outcrop | 494 | N/A | 2.6 |
| North American Warm Desert Wash | 76 | N/A | 0.4 |
| Sonora-Mojave Mixed Salt Desert Scrub | 19 | N/A | 0.1 |
| **Total** | **18,949** | **7** | **100.0** |

N/A = not applicable

### Noxious and Invasive Species

A noxious weed is a legal and regulatory designation. Nevada Revised Statute (NRS) 555.005 states that noxious weeds are "any species of plant which is, or is likely to be, detrimental or destructive and difficult to control or eradicate." The State of Nevada maintains a list of designated state noxious weeds (NAC 555.010). Currently 47 species are included on the Nevada Noxious Weed List.

Sahara mustard (*Brassica tournefortii*) was the only Nevada noxious weed species observed in the Proposed Project area. This species is considered a Category B; therefore, control is required by the State in areas where populations are not well established or previously unknown to occur.

Additionally, several non-native invasive species were observed throughout the Proposed Project area including Mediterranean grass (*Schismus sp.*), red brome (*Bromus rubens*), and red-stemmed filaree (*Erodium cicutarium*). An invasive species has no legal designation and therefore, no requirements for control or eradication. However, they can be defined as a species that can out-compete native vegetation, establish monocultures, alter fire regimes, and cause other harm to the natural ecosystem.

For more detailed information on botanical survey methods and results within the Proposed Project area, refer to the 2010 Searchlight Botanical Survey (Alphabiota Environmental Consulting [AEC] 2010). A copy of this report can be obtained from the BLM Searchlight Wind Energy Project website (http://www.blm.gov/nv/st/en/fo/lvfo/blm_programs/energy/searchlight_wind_energy.html) or by emailing a request to the Las Vegas BLM Field Office at BLM_NV_SNDO_SearchlightWindEnergyEIS@blm.gov.

## 3.4.2 Special-Status Plant Species

Special-status plant species are protected under Nevada state law, BLM policies, and the Endangered Species Act (ESA). For the purposed of this EIS, special-status species are defined as:

- Species listed or proposed for listing as threatened or endangered under ESA (50 Code of CFR 17.12 for listed plants and various notices in the Federal Register [FR] for proposed species); FR 40657, June 13, 2002);
- Species that are candidates for possible future listing as threatened or endangered under the ESA (967, FR 40657, June 13, 2002);
- Species that are federal species of concern ;

- Species or habitats included in BLM Manual 6840, Special Status Species Management;
- Species that are listed or proposed for listing by the State of Nevada as threatened or endangered (NRS 527.260-3000 and NRS 527.0600-120);
- Species listed in the Clark County Multiple Species Habitat Conservation Plan (MSHCP) (Clark County, 2000); and
- Species that are protected under NRS 527.060-527.120, Nevada State Protection of Christmas Trees, Cacti, and Yucca.

#### 3.4.2.1 Methodology and Survey Results

In order to assess the special-status plant species (excluding cactus and yucca) that have the potential to occur within the Proposed Project area, a biologist reviewed several data sources. Some of these sources included the Nevada Natural Heritage Program, U.S. Fish and Wildlife Service (USFWS) special status species and critical habitat database, Nevada Native Plant Society online database, BLM on-line resources, and the USFWS National Wetlands Inventory Geographic Information System database (AEC 2010). After comparing potential plants species' soil requirements with the soils types in the area, a list of target species was developed (AEC 2010). It was determined that three species had a high likelihood of occurring within the Proposed Project area, including white-margined beardtongue (*Penstemon albomarginatus*), yellow two-toned beardtongue (*Penstemon bicolor* spp. *bicolor*), and rosy two-toned beardtongue (*Penstemon bicolor* spp. *roseus*). Subsequently, botanical surveyors used this list of target species to focus survey efforts.

AEC conducted botanical surveys from March 2, 2010 through April 4, 2010, and May 1, 2010 through May 10, 2010. Surveys were conducted to locate and identify potential sensitive plants species and/or populations that could potentially occur within the Proposed Project area. Nevada BLM Intuitive Controlled Survey Protocols were used to survey for special-status plant species. According to the BLM, this method includes a complete survey in habitats with the highest potential for having target species. Teams of biologists walked meandering pedestrian transects at 50 to 100 foot intervals. Four hundred foot-wide survey corridors were developed around the proposed center line of turbine strings, roads, collector lines, and transmission lines. Other features such as the O&M building, substation, and laydown area were buffered by 200 feet from the outer edge. Surveyors determined necessary spacing based on the visual cues of the habitat, topography, and/or accessibility of the terrain.

No special-status plants (excluding cacti and yucca) were found in the Proposed Project area. For more detailed information on botanical survey methods and results within the Proposed Project area, refer to the 2010 Searchlight Botanical Survey (AEC 2010). A copy of this report can be obtained from the BLM Searchlight Wind Energy Project website (http://www.blm.gov/nv/st/en/fo/lvfo/blm_programs/energy/searchlight_wind_energy.html) or by emailing a request to the Las Vegas BLM Field Office at BLM_NV_SNDO_SearchlightWindEnergyEIS@blm.gov.

#### 3.4.2.2 Cacti and Yucca Methodology and Survey Results

AEC biologists completed a Cactus and Yucca Count Estimate Survey within the project area. Cacti and yucca counts were conducted by pedestrian survey within six different areas based on topography and vegetation. Estimates were based on counting the number of each species of cacti and/or yucca within 30 feet of a transect (15 feet on either side of the transect centerline). In total, 69 linear transects (approximately 32 miles) were completed. Cacti and yucca estimates were calculated by extrapolating the transect area data to account for numbers of each species per acre.

Thirteen species of cacti and yucca were detected during the survey count. Table 3.4-2 summarizes the species of cacti and yucca found within the project area and the estimated number of individuals per acre in the survey area.

**Table 3.4-2. Cacti and Yucca Species Found in the Proposed Project Area and Estimated Number per Acre**

| Scientific Name | Common Name | Average Estimated Number per Acre |
|---|---|---|
| *Yucca brevifolia* | Joshua Tree | 14.38 |
| *Yucca schidigera* | Mojave Yucca | 38.92 |
| *Cylindropuntia acanthocarpa* var. *coloradensis* | Buckhorn Cholla | 9.21 |
| *Opuntia basilaris* var. *basilaris* | Beavertail Cactus | 3.04 |
| *Sclerocactus johnsonii* | Pineapple Cactus | 0.14 |
| *Cylindropuntia echinocarpa* | Silver or Golden Cholla | 0.32 |
| *Echinocactus polycephalus* var. *polycephalus* | Cottontop Cactus | 0.33 |
| *Mammalaria tetrancistra* | Fishhook Cactus | 0.03 |
| *Ferocactus cylindraceus* | Barrel Cactus | 0.34 |
| *Echinocereus engelmannii* | Engelmann Hedgehog Cactus | 0.17 |
| *Grusonia parishii* | Parish club-Cholla, Horse Crippler | 0.06 |
| *Cylindropuntia bigelovii* | Teddybear Cholla | 0.55 |
| *Cylindropuntia ramosissima* | Pencil Cholla | 0.29 |

Joshua tree (approximately 14 individuals per acre) and Mojave yucca (approximately 39 individuals per acre) were estimated to be the most abundant species with the Proposed Project area. Collectively, cactus plants were estimated at approximately 15 individual plants per acre, with Buckhorn cholla having the highest cactus estimated abundance at approximately 9 plants per acre.

For more detailed information on botanical survey methods and results within the Proposed Project area, refer to the 2010 Searchlight Botanical Survey (AEC 2010). A copy of this report can be obtained from the BLM Searchlight Wind Energy Project website (http://www.blm.gov/nv/st/en/fo/lvfo/blm_programs/energy/searchlight_wind_energy.html) or by emailing a request to the Las Vegas BLM Field Office at BLM_NV_SNDO_SearchlightWindEnergyEIS@blm.gov.

## 3.4.3 Wildlife Resources

This section addresses general wildlife resources. It describes common wildlife, specifically reptiles, and small mammals. These species are relatively abundant and do not have state or federal protections. Special-status species, including migratory birds and game, are addressed in 3.4.4-Special-Status Wildlife Species.

### 3.4.3.1 Region of Influence

The ROI for wildlife varies by species, depending on range, mobility, or migratory behavior. Generally, the ROI for small wildlife such as reptiles and small mammals (excluding bats) is limited to the Proposed Project area. Existing Environment

Wildlife found in the Proposed Project area are typically associated with the Sonora-Mojave Creosote Bush-White Bursage Desert Scrub (13,901 acres) and Mojave Mid-Elevation Mixed Desert Scrub (3,608 acres), Inter-mountain Basins Semi-Desert Shrub Steppe (892 acres), and North American Warm Desert Bedrock Cliff and Outcrop (494 acres), which collectively encompass approximately 99%of the Proposed Project area. General wildlife observations were made during terrestrial wildlife surveys and desert tortoise surveys conducted in the spring of 2010 by Southern Nevada Environmental Inc. (SNEI).

#### 3.4.3.2 Existing Environment

**Reptiles**

A wide variety of reptiles may be present in the Proposed Project area. Lizards commonly observed during terrestrial field surveys are representative of typical Mojave wildlife. Species observed included side-blotched lizard (*Uta stansburiana*), Great Basin whiptail (*Aspidoscelis tigris*), zebra-tailed lizard (*Callisuarus draconoides*), long-nosed leopard lizard (*Gambelia wislizenii*), desert spiny lizard (*Sceloporus magister*), desert horned lizard (*Phrynosoma platyrhinos*), chuckwalla (*Sauromalus ater*), and desert iguana (*Dipsosaurus dorsalis*) (Tetra Tech 2011b).

Common snakes observed during field surveys included the western ground snake (*Sonara semiannulata*), Mojave rattlesnake (*Crotalus scutulatus*), speckled rattlesnake (*Crotalus mitchellii*), western patch nosed snake (*Salvadora hexalepis*), and shovel nosed snake (*Chionactis occipitalis occipitalis*) (Tetra Tech 2011b). A variety of other snakes could occur in the vicinity.

**Small Mammals**

The creosote desert scrub communities provide forage and cover for a number of small mammal species within the Proposed Project area. Species that were observed during terrestrial field surveys are representative of those that can be found throughout the Mojave Desert. Species observed include white-tailed antelope ground squirrel (*Ammospermophilus leucurus*), black-tailed jackrabbit (*Lepus californicus*), and pack rat (*Neotoma lepida*). Other small mammals might also be found within the project area, including kangaroo rats (*Dipodomys* spp.), pocket mice ( *Chaetodipus* spp. and/or *Perognathus* spp), and ground squirrels (*Spermophilus* spp.).

**Bats**

Thirteen out of 16 bat species found in the Proposed Project area have some federal or state special status, and bats are one of the principal wildlife concerns associated with wind energy generation facilities. Bats are addressed in Section 3.4.4, Special-Status Wildlife Species.

**Birds**

As most birds are protected under the Migratory Bird Treaty Act (MBTA) as well as other federal and state laws, and birds are often a primary concern associated with wind energy generation facilities, birds are specifically discussed in Section 3.4.4, Special-Status Animal Species.

## 3.4.4 Special-Status Wildlife Species

Special-status animal species are legally protected under Nevada state law, BLM policies, and the ESA. For the purpose of this EIS, special-status species are defined as:

- Wildlife species that are listed as threatened or endangered or species proposed or candidates for listing under the Endangered Species Act of 1973 as amended (50 CFR 17.11 and subsequent notices published in the Federal Register);
- Species or habitats included in BLM Manual 6840, Special Status Species Management, BLM Instruction Memorandum 2008-050, MBTA – Interim Management Guidance (DOI, BLM 2007a);
- Wildlife classified by the State of Nevada as protected and which may have further classification as sensitive, threatened, or endangered (under NAC 503.030-503.080, NRS 501.100-503.104, NRS 527.050, and NRS 527.60-527.300); and
- Game species that are regulated under NRS 503.120 and NAC 502.020-503.025.

To develop a concise list of special-status wildlife species that could occur within the Proposed Project area, data were compiled from the *USFWS Nevada's Protected Species by County (*2011), the Nevada BLM Sensitive Species list, the Nevada State Protected Species List, and the Nevada Natural Heritage Program database. Several biologists reviewed the data to determine which species could occur within the Proposed Project area. Additionally, agency biologists from the USFWS, NDOW, and the BLM were consulted to provide additional input and direction. Species with no potential to occur within the project area due to lack of habitat or limited range were eliminated from this analysis.

#### 3.4.4.1 Region of Influence

The ROI for wildlife varies by species, depending on range, mobility, or migratory behavior. Generally, the ROI for reptiles was limited to the Proposed Project area. Birds and bats, however, are more mobile and migrate over longer distances; therefore, the ROI was considered the project area boundary to the eastern edge of the Pacific Flyway. For game species, the ROI was the relevant hunt unit(s) with which the hunt area overlaps.

#### 3.4.4.2 Existing Environment

##### Desert Tortoise

Pre-project desert tortoise surveys were conducted from April 4 to May 16, 2011, in accordance with USFWS 2010 guidelines. The survey area included a 400-foot wide corridor around the proposed centerline of linear features such as the WTG strings, roads, collector line, and transmission lines; and a 200-foot buffer around other project features such as the O&M building, substation, Western's proposed switching station, and staging areas. Additionally, interior islands (i.e., areas enclosed by project features) were included in the survey area. In total, approximately 3,612 acres were surveyed with 100 percent coverage. Additional belt transects were surveyed at 200, 400, and 600 feet around the perimeter of the survey corridor. Locations of all tortoises and signs of tortoise were recorded with a global positioning system unit.

The results of the Spring 2011 surveys documented that desert tortoises were present within the Proposed Project area. A total of 122 tortoises were found within the survey area (95 in the action area, 19 in the exterior belt transects, and 8 incidentals). Other observed and documented desert tortoise sign included 240 pieces of scat, 95 carcasses, 750 tortoise burrows, and 22 pieces of miscellaneous sign (1 courtship ring, 2 egg shell fragments, and 19 bone/scute fragments).

Tortoise density was calculated using methods found in USFWS 2010 *Preparing for Any Action that may Occur within the Range of the Mojave Desert Tortoise.* Using the USFWS model, the actual number of adult tortoises above 160 millimeters mean carapace length (mcl) in the Proposed Project area was predicted to be approximately 119, with a 95% confidence interval of approximately (60, 234) and an approximate density of 8.2 tortoises per square kilometer ($km^2$) (SNEI 2011).

For more detailed information on desert tortoise survey methods and results within the Proposed Project area, refer to the Desert Tortoise Inventory Survey of the Proposed Duke Energy Searchlight Wind Farm (SNEI 2011). A copy of this report can be obtained from the BLM Searchlight Wind Energy Project website (http://www.blm.gov/nv/st/en/fo/lvfo/blm_programs/energy/searchlight_wind_energy.html) or by emailing a request to the Las Vegas BLM Field Office at BLM_NV_SNDO_SearchlightWindEnergyEIS@blm.gov.

##### Chuckwalla

Chuckwalla (*Sauromalus ater*) are classified as a BLM Nevada Sensitive Species. The chuckwalla is restricted to rocky areas in desert flats, hillsides, and mountains where crevices are available for shelter. The common chuckwalla is widely distributed across western Arizona, southern Nevada, southeastern

California, Baja California, and northwestern Sonora. The chuckwalla is likely to occur anywhere in the Proposed Project area where suitable rocky habitat is present.

During terrestrial surveys (April 3 through May 16, 2011), biologists specifically surveyed the preferred chuckwalla habitat (i.e., rocky outcrops and lava flows) for chuckwalla and their sign. The surveyor corridor and exterior belt transects covered a total of 4,370 acres.

Twenty chuckwallas were observed in the survey area. Additionally, 54 instances of chuckwalla scat were documented. The common chuckwalla was frequently detected within the survey corridor and exterior belt transects. A high proportion of live chuckwallas and chuckwalla scat were concentrated in the northwest section of the project area. This area includes lava flows, rocky outcrops, rocky washes, and large rocky slopes. Additionally, a smaller proportion of chuckwalla were documented on rocky outcrops in the middle and southern end of the project area.

The density of live chuckwalla within the survey area was 0.005 chuckwalla per acre. However, if chuckwalla densities are calculated using only the acreage of suitable habitat (i.e., North American Warm Desert Bedrock Cliff and Outcrop) within the project area, the density is higher at 0.043 chuckwallas per acre. Although little current data are available on chuckwalla abundance throughout its range, older studies suggest chuckwalla densities can be as high as 3 to 6 individuals (Johnson 1965, Berry 1974). This comparison suggests that chuckwalla densities in the Proposed Project areas that were surveyed are low.

For more detailed information on chuckwalla survey methods and results within the Proposed Project area, refer to the Terrestrial Wildlife Survey Report (Tetra Tech 2011b). A copy of this report can be obtained from the BLM Searchlight Wind Energy Project website (http://www.blm.gov/nv/st/en/fo/lvfo/blm_programs/energy/searchlight_wind_energy.html) or by emailing a request to the Las Vegas BLM Field Office at BLM_NV_SNDO_SearchlightWindEnergyEIS@blm.gov.

### Gila Monster

The Gila monster (*Heloderma suspectum*) is classified as a state-sensitive reptile (NAC 503.080) and is protected under Nevada state law (NAC 503.090 and NAC 503.093). Gila monsters prefer habitat comprised of undulating rocky foothills, bajadas, canyons, and desert wash habitats and tend to avoid open sandy plains (Beck 2005).

During desert tortoise and terrestrial surveys (April 3 through May 16, 2011), biologists specifically looked for Gila monster and their sign. Tortoise burrows, mammal holes, and caliche dens were checked for Gila monsters while also looking for desert tortoise. No Gila monsters or sign were located in the survey area. However, the Gila monster rarely is observed and is difficult to detect (NDOW 2007b). Gila monster habitat is present within the Proposed Project area, so it is possible that Gila monsters reside in the area.

### Bats

To determine bat use within the Proposed Project area, bat acoustic surveys were conducted April 2008 through April 2011 at 12 different locations including 3 MET towers and around 2 abandoned mine entrances. In order to capture data on low-flying and high-flying bats, the MET tower locations housed two passive acoustic detectors, one mounted low (approximately 6 feet), and one mounted high (approximately 120 to 150 feet). To examine bat activity in abandoned mines, acoustic detectors near the mine entrances were placed strategically near washes, which bats use for foraging areas and movement corridors. The dispersion of monitoring stations provided an adequate examination of general bat usage over the entire project area. Acoustic bat surveys consist of setting up bat detector devices (Anabat SD1 and supporting equipment), which record bat calls and allow them to be displayed graphically based on call duration and frequency. Recorded calls are identified to species level using the methods of O'Farrell

et al. (1999), which are based on frequency characteristics, call shape, and comparison with a comprehensive library of vocal signatures. Although quite useful and important for collecting bat data, there are some limitations, including but not limited to: zone/range of detection verses the height of the rotor-swept area (approximately 164-197 ft.) of airspace not sampled), ability to detect Townsend's big-eared bats and other difficult to detect species, and the restriction of only being able to provide an index of activity.

A total of 14 species were detected in 2008-2009 surveys, and 15 species were detected in 2009-2010 surveys (Table 3.4-3). Five year-round residents were recorded during the study including California myotis (*Myotis califonicus*), western small-footed myotis (*Myotis ciliolabrum*), Yuma myotis (*Myotis yumanensis*), caynon bat (*Parastrellus Hesperus*), and Brazilian free-tailed bat (*Tadarida brasiliensis*). The big brown bat (*Eptisicus fuscus*) and the pallid bat (*Antrozous pallidus*) were observed to be breeding species in the area, but were absent during the winter.

**Table 3.4-3. Bat Species Recorded During Acoustic Surveys**

| Scientific Name | Common Name | Status |
|---|---|---|
| **Phyllostomidae** | | |
| *Macrotus californicus* | California leaf-nosed bat | Nevada Protected Sensitive, BLM sensitive species |
| **Vespertilionidae** | | |
| *Myotis californicus* | California myotis | State sensitive species |
| *Myotis ciliolabrum* | Western small-footed myotis | Federal Species of Concern BLM sensistive species |
| *Myotis thysanodes* | Fringed myotis | Federal Species of Concern, State Protected |
| *Myotis yumanensis* | Yuma myotis | Federal Species of Concern BLM sensitive species |
| *Lasiurus blossevillii* | Western red bat | State-sensitive species, BLM sensitive species |
| *Lasiurus cinereau* | Hoary bat | BLM sensitive species |
| *Lasionycteris noctivagans* | Silver-haired bat | BLM sensitive species |
| *Parastrellus hesperus* | Canyon bat | BLM sensitive species |
| *Eptesicus fuscus* | Big brown bat | BLM sensitive species |
| *Corynorhinus townsendii townsendii* | Pacific western big-eared bat | Federal Species of Concern, State protected sensitive |
| *Antrozous pallidus* | Pallid bat | State Protected, BLM sensitive species |
| **Molossidae** | | |
| *Tadarida brasiliensis* | Brazilian free-tailed bat | State-protected species |
| *Nyctinomops femorosaccus* | Pocketed free-tailed bat | None |
| *Nyctinomops macrotis* | Big free-tailed bat | Federal Species of concern |
| *Eumops perotis californicus* | Greater western mastiff bat | Federal species of concern, State protected-sensitive |

Each bat species varied in its contribution of use among the monitoring stations and between survey seasons. Most bat activity was recorded at the low monitoring sites, approximately 60% to 80% in 2008-2009 and 76% to 81% in 2009-2010. Four species accounted for most of the bat activity (≥ 6%) recorded at acoustic survey stations, including Brazilian free-tailed bat, canyon bat, California myotis, and Yuma myotis. Additionally, the big brown bat exceeded this threshold at one monitoring station. Other species accounted for less than 6% of all bat activity.

In 2008-2009, the Brazilian free-tailed bat, a State of Nevada protected species, was the primary species at most low monitoring stations, accounting for 26% to 63% of all bat activity; however, during the 2009-2010 monitoring surveys, this species only accounted for only 9% to 29% of activity. In both years of

acoustic surveys, Brazilian free-tailed bat accounted for most of the activity at the high monitoring stations. Although Brazilian free-tailed bat activity varied between survey years and monitoring stations, it was recorded at all heights and all but one monitoring station in the project area. Recent surveys in Nevada confirm that spatial and temporal use of an area by this species is variable (O'Farrell et al. 2003, Hall et al. 2005, O'Farrell 2006a-d, Williams et al. 2006, O'Farrell 2009).

The canyon bat, a BLM sensitive species, is common and widely distributed throughout southern and western Nevada (Bradley et al. 2006). This species primarily roosts in rock outcrops and cliff faces, but they disperse widely to forage. Throughout the present study, canyon bats were recorded at all stations and heights, with the majority of activity occurring at the low stations. This species is known to be a year-round resident in southern Nevada, active throughout the year (O'Farrell et al. 1967, O'Farrell and Bradley 1970, O'Farrell and Bradley 1977). This pattern was evident during the acoustic monitoring study.

California myotis is common throughout southern and western Nevada (Simpson 1993, Bradley et al. 2006). It is considered to be a lower elevation species that roosts in crevices, mainly in rock faces, mines, and buildings. From April 2008 through April 2009, it was recorded at almost all stations and heights (except one low station), with the vast majority of activity restricted to the low stations. During the 2009-2010-survey period, the California myotis was absent from all the high stations but prevalent at all low stations, including the mine sampling stations. This species are known to be a year-round resident in southern Nevada, active throughout the year (O'Farrell et al. 1967, O'Farrell and Bradley 1970, O'Farrell and Bradley 1977). This pattern was confirmed during these surveys.

Yuma myotis, a Federal Species of Special Concern, is abundant in proximity to large reservoirs, lakes, rivers, or substantial streams primarily in southern and west-central Nevada (Bradley et al., 2006). It is known to use abandoned mines, rock crevices, and buildings as day roosts. From April 2008 through April 2009, the Yuma myotis was recorded at almost all stations (excepting one) and heights, with the majority of activity restricted to the low stations. During the 2009-2010 study period this species was found at all stations and heights, including the mine sampling stations. The data confirm this species as a year-round resident.

The big brown bat, a Nevada BLM sensitive species, is found throughout Nevada. This species is primarily associated with woodland or urban areas and tend to be sparser in low desert habitats (Kurta and Baker 1990, Bradley et al. 2006). During the 2008-2009-survey period, it was recorded at all stations and heights, but activity was more prevalent at the low stations. During the 2009-2010-survey period, it was also recorded at almost all stations (excepting one) and heights, including all mine stations. This species was recorded from April into October, which suggests that it is likely breeding in the area.

For more detailed information on methods and results of the bat acoustic monitoring surveys, refer to *Final Progress Report April 2008 to April 2009 Baseline Acoustic Monitoring of Bat Populations within the Duke Energy Searchlight Wind Energy Project Site, Clark County, Nevada* (O'Farrell Biological Consulting 2009), and *Final Report May-2009 to April 2010 Baseline Acoustic Monitoring of Bat Populations within the Duke Energy Searchlight Wind Energy Project Site, Clark County, Nevada* (O'Farrell Biological Consulting 2010). A copy of these reports can be obtained from the BLM Searchlight Wind Energy Project website (http://www.blm.gov/nv/st/en/fo/lvfo/blm_programs/energy/searchlight_wind_energy.html) or by emailing a request to the Las Vegas BLM Field Office at BLM_NV_SNDO_SearchlightWindEnergyEIS@blm.gov.

### Migratory Birds

Nevada has over 467 documented bird species (Nevada WAP 2006) and is situated within the Pacific Flyway, one of the main bird migratory routes in the U.S. (USFWS 2008). The Pacific Flyway extends through the western portion of the U.S. and the western portion of the Proposed Project area. Millions of

birds and waterfowl use the Pacific Flyway to migrate each spring and fall. Most birds moving along the Pacific Flyway travel from Alaska through the western states and eventually reach Mexico and Central America. For organizational purposes, birds are addressed in two sections: non-raptors and raptors.

### *Non-Raptors*

Fixed-point surveys were conducted over two years to document bird diversity and use (i.e., activity) during the primary migration periods in the fall (August through November) and spring (March through June). Surveys were conducted in fall of 2007, spring of 2008, fall of 2008 through winter of 2009, and spring of 2009, for a total of four seasonal surveys (Tetra Tech 2010). Selection of survey points was closely coordinated with NDOW and BLM biologists to ensure that a wide variety of habitats were surveyed. In addition to recording bird species, biologist recorded estimate flight heights so that bird species flying within the rotor-sweep area (RSA) could be identified.

A total of 57 non-raptor species were observed within the Proposed Project area. Table 3.4-4 lists the non-raptor bird species observed within the project area and any additional special status (e.g., BLM-sensitive or Nevada State-sensitive species etc.). No federally endangered, threatened, or candidate species were detected during avian surveys. All species, with the exception of House Sparrow, European Starling, California quail, Gambel's Quail, and Rock Pigeon, are protected under the MBTA. Birds that are State of Nevada protected are at least all species of wild birds protected by the Migratory Bird Treaty Act, as amended, 16 USC §§ 703 et seq., and listed in 50 C.F.R. § 10.13, unless such wild birds are migratory game birds as described in subsection 2 of NAC 503.045. Birds species regulated under this NAC are discussed under the Upland Game species section following this discussion on birds. Further state or federal protection or classification of birds is denoted in the table by superscript.

**Table 3.4-4. Non-Raptor Birds Recorded in the Proposed Project Area**

| Common Name (*Scientific Name*) | |
|---|---|
| American crow (*Corvus brachyrhynchos)* | House finch (*Carpodacus mexicanus*) |
| American pipit (*Anthus rubescens)* | House wren (*Troglodytes aedon*) |
| Ash-throated flycatcher (*Myriarchus cinerascens)* | Ladder-backed woodpecker (*Picoides scalaris*) |
| Bank Swallow (*Riparia riparia)* | Lark sparrow (*Chondestes grammacus*) |
| Barn Swallow (*Hirundo rustica)* | Le Conte's thrasher[a] (*Toxostoma lecontei*) |
| Bendire's thrasher (*Toxostoma bendirei)*[a] | Lesser nighthawk (*Chordeiles acutipennis*) |
| Bewick's wren (*Thryomanes bewickii)* | Loggerhead Shrike[a,b] *(Lanius ludovicianus*) |
| Black-chinned hummingbird (*Selasphorus platycercus)* | Mourning dove (*Zenaida macroura*) |
| Black-headed grosbeak (*Pheucticus melanocephalus)* | Northern flicker (*Colaptes auratus*) |
| Black-tailed gnatcatcher (*Polioptila melanura*) | Northern mockingbird (*Mimus polyglottos*) |
| Black-throated sparrow (*Amphispiza bilineata*) | Northern rough-winged swallow (*Stelgidopteryx serripennis*) |
| Blue-gray gnatcatcher (*Polioptila caerulea*) | Oranged-crowned warbler (*Vermivora celata*) |
| Brewer's sparrow (*Spizella breweri*)[a, b] | Phainopepla [a,c] *(Phainopepla nitens*) |
| Brown-headed cowbird (*Molothrus ater*) | Rock pigeon (*Columba livia*) |
| Bullock's oriole (*Icterus bullockii*) | Rock wren (*Salpinctes obsoletus*) |
| Cactus wren (*Campylorhynchus brunneicapillus*) | Ruby-crowned kinglet (*Regulus calendula*) |
| California quail (*Callipepla californica*)[d] | Sage thrasher (*Oreoscoptes montanus*)[a, b] |
| Chipping sparrow (*Spizella passerine*) | Say's phoebe (*Sayornis saya*) |
| Common grackle (*Quiscalus quiscula*) | Scott's oriole (*Icterus parisorum*) |
| Common raven (*Corvus corax*) | Tree swallow (*Tachycineta bicolor* |

| Common Name (*Scientific Name*) | |
|---|---|
| Crissal thrashers[a] (*Toxostoma crissale*) | Verdin[c] (*Auriparus flaviceps*) |
| Curve-billed thrasher (*Toxostoma curvirostre*) | Violet-green swallow (*Tachycineta thalassina*) |
| Dark-eyed junco (*Junco hyemalis*) | Western kingbird (*Tyrannus verticalis*) |
| European starling (*Sturnus vulgaris)* | Western tanager (*Piranga ludoviciana*) |
| Gambel's quail (*Callipepla californica*)[d] | White-crowned sparrow (*Zonotrichia leucophrys*) |
| Gray flycatcher (*Empidonax wrightii*) | Wilson's warbler (*Wilsonia pusilla*) |
| Greater roadrunner (*Geococcyx californianus*) | Yellow warbler (*Dendroica petechial*) |
| Horned lark (*Eremophila alpestris*) | Yellow-rumped warbler (*Dendroica coronate*) |

[a] Nevada BLM Sensitive Species, [b] State of Nevada Protected Sensitive, [c] State of Nevada Protected,[d] Nevada State Protected under NAC 503.045, Game Species

Overall mean bird use in the project area was 5.97 birds/20 minutes (min) and ranged from 0 to 44 birds/20 min. Songbirds had the highest mean use out of all the species groups (4.44 birds/20 min). Species with the greatest mean use of the area included the black-throated sparrow (*Amphispiza bilineata*), house finch (*Carpodacus mexicanus*), ash-throated flycatcher (*Myriarchus cinerascens*), and horned lark (*Eremophila alpestris*).

**Non-Raptor Flight Height within the RSA.** For flying non-raptor species, only 9.9% of birds observed flew within the anticipated RSA (Tetra Tech 2008). Common ravens were observed the most frequently (0.14 birds flying within the RSA/20 minute). Songbirds that were observed (between 0.01 and 0.09 bird flying within the RSA/20 minutes) were the northern rough-winged swallow, loggerhead shrike, and verdin.

For more detailed information on bird survey methods and results within the Proposed Project area, refer to the 2007-2009 Avian Surveys Report (Tetra Tech 2010). A copy of this report can be obtained from the BLM Searchlight Wind Energy Project website (http://www.blm.gov/nv/st/en/fo/lvfo/blm_programs/energy/searchlight_wind_energy.html) or by emailing a request to the Las Vegas BLM Field Office at BLM_NV_SNDO_SearchlightWindEnergyEIS@blm.gov.

### *Raptors*

Raptor observations were also recorded during point count surveys for four seasons (Table 3.4-5). The turkey vulture had the highest mean use among raptors (0.12 birds/20 min) and was the most commonly observed raptor species. Red-tailed hawks had the second highest mean use among raptor species (0.11 birds/20 min) and were the most common nesting species within the Proposed Project area.

**Table 3.4-5. Raptors Observed in the Proposed Project Area**

| Common Name | Scientific Name |
|---|---|
| American kestrel | *Falco sparverius* |
| Burrowing owl[a] | *Athene cunicularia* |
| Cooper's hawk | *Acciptiter cooperii* |
| Golden eagle[a] | *Aquilia chrysaetos* |
| Red-tailed hawk | *Buteo jamaicensis* |
| Sharp-shinned hawk | *Accipiter striatus* |
| Turkey vulture | *Cathartes aura* |
| [a] Nevada BLM Sensitive Species | |

In 2009, Tetra Tech and a NDOW biologist conducted a helicopter survey for raptor nests within the project boundary and along a 2-mile buffer (Tetra Tech 2010). In 2011, an additional helicopter survey for raptor nests was conducted from the 2-mile buffer to a 10-mile buffer around the project area. Habitat surveyed included cliffs, rocky outcrops, and transmission line towers. Unsuitable habitat such as creosote scrub was not surveyed for raptor nests.

The red-tailed hawk was the most common nesting raptor observed within 10 miles of the project area. Twenty of the 23 active red-tailed hawk nests were located on transmission line towers. All golden eagle nests were located on cliffs at least 4 miles from the project area; two nests were located approximately 10 miles from the project site boundary.

**Raptor Activities within the Turbine Rotor Sweep Area.** During spring surveys, 72.2% of raptors flew within the RSA, 14.4% flew below, and 13.4% flew above (Tetra Tech 2008). Turkey vultures accounted for the most raptors flying in the RSA (0.13% birds flying within the RSA/20 minute). Other common raptor species observed in the RSA were the red-tailed hawk and Cooper's hawk (between 0.09% and 0.01% birds flying within the RSA/20 minute) (Tetra Tech 2008).

For more detailed information on bird survey methods and results within the Proposed Project area, refer to the 2007-2009 Avian Surveys Report (Tetra Tech 2010) and the 2011 Searchlight Raptor Nest Survey Report (Tetra Tech 2011a). A copy of this report can be obtained from the BLM Searchlight Wind Energy Project website (http://www.blm.gov/nv/st/en/fo/lvfo/blm_programs/energy/searchlight_wind_energy.html) or by emailing a request to the Las Vegas BLM Field Office at BLM_NV_SNDO_SearchlightWindEnergyEIS@blm.gov.

### Upland Game

Upland game species observed in the proposed project area include Gambel's quail, California quail, and cottontail rabbit. NDOW manages these species as upland game with designated hunting seasons (NDOW 2011a). NDOW maintains three wildlife water sources (i.e. guzzlers) in the area that support game and other species.

***Gambel's Quail***

Gambel's quail are native to southern Nevada desert and typically found on alluvial fans at elevations from 2,000 to 4,500 feet. According to NDOW, the Proposed Project area contains approximately 12,217 acres of crucial Gambel's quail habitat (NDOW 2007a). During bird surveys, many quail were noted in the project area. See Section 3.4.4.4 for bird survey methodologies. Gambel's quail had a relatively high mean use (0.54 birds/20 min) observed during avian surveys.

***California Quail***

According to NDOW's map of California Quail Distribution in Nevada and other sources, the range of the California quail does not overlap the proposed project area as this species prefers habitat such as chaparral, sagebrush, oak woodlands, and foothill forests (NDOW No Date, Cornell Lab of Ornithology 2011). However, 20 individuals of this bird species were observed during bird surveys illustrating a low mean use (0.03 birds/20 min).

***Desert Cottontail Rabbit***

Desert cottontail rabbits (*Sylvilagus audubonii*) occur in a wide variety of habitats including dry desert shrub lands, riparian areas, and pinyon-juniper forests throughout western and central Nevada (NDOW 2010). This species was observed commonly in the Proposed Project area during terrestrial surveys.

### Big Game

Many big game species are common throughout the Mojave Desert, including Mountain lions (*Puma concolor*), mule deer (*Odocoileus hemionus*), and bighorn sheep (Ovis canadensis).

***Mountain Lion***

Mountain lions might be found throughout the Proposed Project area, notably on the rocky ridgelines and in the valleys. Typical mountain lion home ranges in the Mojave Desert are likely very large. A home range for an adult male lion can be over 100 square miles. Females travel a smaller range of 20 to 60 square miles (Digital Desert 2009). Mountain lion activity in the project area is most likely transitory given the proximity to Searchlight; however, at any given time, the area could support more than one lion. Mountain lions are found in nearly all habitats except the driest, most inhospitable regions of the Mojave and Colorado Deserts. Mountain lion use of the project area is unknown.

***Mule Deer***

There is remote likelihood of mule deer (*Odocoileus hemionus*) regularly using the Proposed Project area. Although the Proposed Project area is located within NDOW Hunt Management Units 263, 264, and 265 (NDOW 2009c), the nearest crucial summer habitat for mule deer is approximately 14 miles northwest and southeast of Searchlight with winter range located approximately 11 miles northwest and approximately 13 miles southeast of Searchlight (BLM 1998). No mule deer or sign were documented in the project area during terrestrial field surveys.

***Bighorn Sheep***

Desert bighorn, a BLM-Nevada sensitive species, utilizes rugged, open, mountainous terrain where adequate forage, water, and escape terrain are available. Steep slopes and cliffs are used to escape from predators (NDOW 2009b). The subspecies of desert bighorn sheep that occurs in the Southwest desert regions of the United States is Nelson's bighorn sheep.

**Unit 264, Newberry Mountains: Southern Clark County.** Portions of NDOW Management Unit 264 are in the Proposed Project area. In October 2008, an aerial survey in the Newberry Mountains of this unit was conducted for bighorn sheep. The sample consisted of 23 rams, 17 ewes, and 11 lambs totaling 51 individuals. The population in the Newberry Mountains was estimated at 50 to 60 individuals, and approximates the NDOW 2007 estimate. Population data over the long term suggest the small herd is stable (NDOW 2009a). Recently in an aerial survey conducted in October 2010, the highest number of bighorn sheep was recorded (99 sheep) consisting of 34 rams, 54 ewes, and 11 lambs. In light of this information, the revised bighorn population inhabiting the Newberry Mountains is approximately 90. The larger than expected aerial survey sample in 2010 may have been due, in part, to bighorn ingress from the adjacent Dead Mountains in California and/or the Eldorado Mountains.

**Unit 265, South Eldorado Mountains: Southern Clark County.** Portions of NDOW Management Unit 265 are in the Proposed Project area. In October 2003, two rams, six ewes, and four lambs were observed during a 4.5-hour survey. In October 2010, 19 rams, 9 ewes, and 1 lamb were observed during a 2.4-hour survey (NDOW 2011b). Since 1969, survey sample sizes have varied widely, ranging from 0 to 50 animals. In some years, aerial survey data portrayed a disproportionate number of rams in the unit. In many of the 20 aerial surveys conducted since 1969, the number of rams observed either equaled or far exceeded the number of ewes. The NDOW 2009 population estimate for the herd inhabiting the entire Eldorado Mountains (Units 265 and 266) is 180 sheep, and approximates the estimate reported in 2008 (NDOW 2009a).

**Proposed Project Area.** The bighorn sheep data described above was used to determine that bighorn sheep utilize the area. To determine the extent of suitable habitat in the project area, GAP land cover data and topographic relief were examined. North American Warm Desert Bedrock and Outcrop land cover areas with slopes greater than 60% grade were identified as suitable habitat for bighorn sheep (Figure 3.4-2). As illustrated in Figure 3.4-2, six large areas of habitat for desert bighorn sheep totaling 6,041 acres were delineated within and adjacent to the project boundary. Approximately 416 acres of suitable habitat were within the proposed project boundary.

The project area spans the movement corridor for bighorn sheep (Units 264 and 265) linking the Newberry Mountains and Eldorado Mountains (NDOW 2009c). Approximately 503 acres of bighorn

sheep winter range occurs within the project area. One sighting of a desert bighorn sheep in the project area was noted in the NDOW's database. In separate observations, bighorn sheep (a ram and a ewe) were reported in the spring of 2009 during aerial raptor nest surveys in the project area (Taylor 2009a). In the spring of 2011 during terrestrial wildlife surveys, large rocky hills and mountains were surveyed for bighorn sheep and signs of these sheep (Tetra Tech 2011b). Biologists reported four desert bighorn sheep in two separate groups outside of the survey corridor and one pile of unidentified ungulate scat (presumably desert bighorn sheep) within the survey corridor.

For more detailed information on bighorn sheep survey methods and results within the Proposed Project area, refer to the Terrestrial Wildlife Survey Report (Tetra Tech 2011b). A copy of this report can be obtained from the BLM Searchlight Wind Energy Project website (http://www.blm.gov/nv/st/en/fo/lvfo/blm_programs/energy/searchlight_wind_energy.html) or by emailing a request to the Las Vegas BLM Field Office at BLM_NV_SNDO_SearchlightWindEnergyEIS@blm.gov.

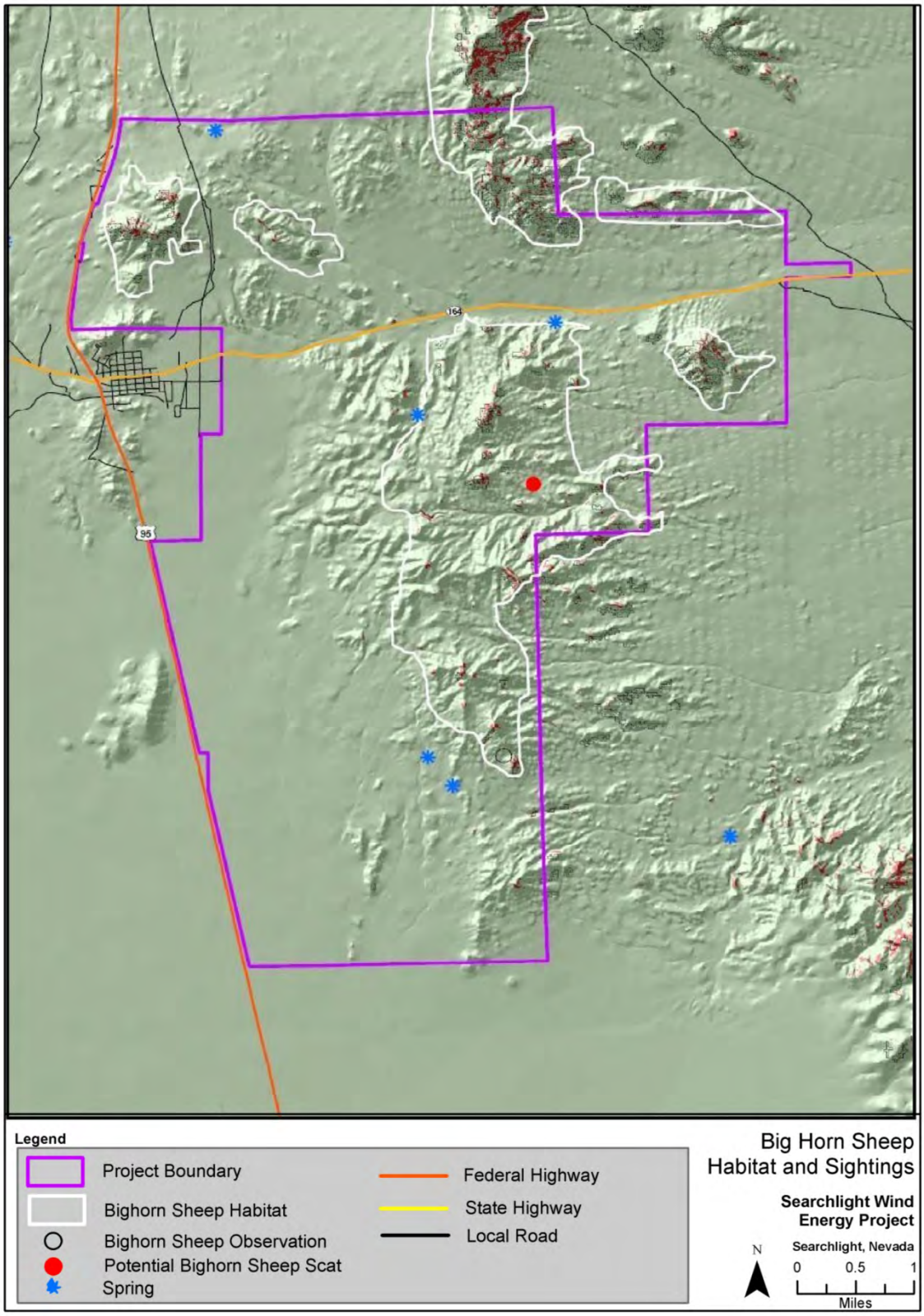


**Figure 3.4-2. Bighorn Sheep Habitat within the Project Area**

# 3.5 Cultural Resources

This section discusses existing cultural resources conditions, objectives, laws and applicable regulations within and adjacent to the Proposed Project area. Cultural resources are prehistoric and historic archaeological sites, districts, structures, or locations considered important to a culture, a subculture or a community for scientific, traditional, religious, or other reasons. In the Project area, prehistoric archaeological resources may include rock shelters, lithic scatters, habitation sites, rock rings or alignments, tool stone procurement sites, thermal features/roasting pits, and rock art locations. Historic sites may include buildings, structures, mines, mine shafts or adits (horizontal passages into mines for access or drainage), transportation routes, and refuse deposits.

## 3.5.1 Region of Influence

The ROI evaluated for cultural resources encompasses those locations within the linear project area that might be disturbed by construction, O&M, and decommissioning of the Proposed Project. The Area of Potential Effect (APE) for this linear project is defined as a 200-ft. buffer on both sides of the access roads, above and below ground transmission lines, and within and around all project facilities, which totals approximately 2,762 acres.

## 3.5.2 Laws, Regulations, and Policies

The National Historic Preservation Act of 1966 (NHPA), as amended [16 USC 470 et seq.], requires federal agencies to determine the effects of their actions on cultural resources and to take certain steps to ensure these resources are located, identified, evaluated, and protected. Section 106 of the Act requires federal agencies to identify historic or archaeological properties near proposed project sites, including properties listed or eligible for listing in the National Register of Historic Places (NRHP). If the proposed Action has an adverse effect on listed or eligible properties, the agency must consult with the State Historic Preservation Office (SHPO) and the Advisory Council on Historic Preservation to develop alternatives or mitigation measures.

Other legislation pertinent to cultural resources includes the Archaeological Resources Protection Act of 1979 (ARPA), as amended [16 USC 470aa-mm], the American Antiquities Act of 1906 [16 USC 431-433], the Executive Order on Protection and Enhancement of the Cultural Environment [EO 11593], and the Native American Graves Protection and Repatriation Act of 1990 (25 USC 300).

## 3.5.3 Existing Environment

The information in this and following sections is based on BLM Cultural Resource Report No. 5-2653, an archaeological inventory conducted by Stegner and Bevill (URS 2012). They provide a cultural context and discuss their findings within the approximately 2,762-acre APE (URS 2012).

### 3.5.3.1 Prehistoric Period

The archaeological record of southern Nevada documents human use of the region beginning about 12,000 years ago. A cultural framework proposed by Roberts and colleagues (2007:29) divides the cultural sequence of southern Nevada into four major periods: the Paleo-Archaic (9500 to 5500 B.C.), the Archaic (5500 B.C. to A.D. 500) the Ceramic (A.D. 500 to 1850) and the Historical (A.D. 1500 to 1900).

### 3.5.3.2 Historic Period (A.D. 1500 to 1900)

#### *Ethnographic*

When Euro-Americans and other groups first entered southern Nevada, people of two different language groups occupied it. The Project area lies within the traditional hunting and gathering use areas of the

Numic-speaking Southern Paiute and Chemehuevi and Yuman-speaking Colorado River groups, specifically the Mojave and Hualapai Indians.

Spirit Mountain, known as *Avikwame* by the Mojave people and *Wikame* by the Hualapai, is the spiritual birthplace of Yuman groups. The sacred mountain is the highest peak in the Newberry Mountains and is located approximately 12 miles southeast of the Searchlight Wind Energy Project. Spirit Mountain is a National Historic Place and is listed as a Traditional Cultural Property (26CK5388) for its significance to the Mojave, Hualapai, Yavapai, Havasupai, Quechan, Pai pai and Maricopa. Although Spirit Mountain will not be physically affected by the proposed project, the BLM consulted with the affiliated Tribes to determine potential visual impacts to the landscape and/or cultural concerns associated with the proposed project.

### *Exploration/Transportation*

In the early Historic Period, explorers, traders, and trappers moved through the area, primarily along the Colorado River. Some focused on developing new trails to California, while others searched for beaver pelts and mineral riches. The Colorado River, located 14 miles east of the town of Searchlight, served as a significant travel corridor for early European-American exploration and missionary and economic expeditions as early as 1540. The next successful crossing of southern Nevada was made by mountain man Jedediah Smith and his party in 1826. Smith followed a route from the Great Salt Lake area south to the Virgin and Colorado rivers, across the Mojave Desert to Spanish southern California. The route connected the earlier Spanish Dominques-Escalante route, which originated in the Spanish settlements of New Mexico with the Garces route from the Spanish settlements of southern California, and stimulated trade between these regions (Wright 1982). In 1829-30, New Mexico merchant Antonio Armijo traveled into the Las Vegas Valley, establishing the northern branch of the Old Spanish Trail. Later, in the 1840s, Lieutenant (Lt.) John C. Frémont traveled through the region on three journeys, including an expedition through Las Vegas Springs via the northern route of the Old Spanish Trail in 1844 (Myhrer et al. 1990; Roske 1986). Later, travel through Las Vegas Valley continued on the Mormon Road, a variant of the Old Spanish Trail, which linked Mormon headquarters in Salt Lake City with southern California (Paher 1971).

In 1830, William Wolfskill and George C.Yount and their beaver trapping party of about twenty men followed established routes from Taos, New Mexico to along the Virgin and Colorado Rivers to reach Mojave villages. From the river, they followed an Indian trail west into California and crossed the Mojave River to Cajon Pass into San Bernardino and Los Angeles (Hafen 1954:146-147). This route is known as the Mojave Road Variant of the Old Spanish Trail, (a National Historic Trail as designated by Congress) heads south from Las Vegas Valley through the Eldorado Valley, Searchlight, and Paiute Valley where it connects with the "Old Mojave Trail" in California.

In 1875, Lieutenant Bergland's military route (depicted on an 1889 Lt. George Wheeler's exploration map) passed through the project area, possibly along the current route of Highway 163, from Cottonwood Island to Paiute Valley. This route of Highway 163 was also used for the Quartette Mining Company's 16-mile long narrow gauge railroad built in 1901-1902 to carry ore from the mine to a 20-stamp mill at the edge of the Colorado River. In 1906, a new processing mill was built in Searchlight and the rails were sold to J.F. Kent and moved to build the Yellow Pine Railroad line from Jean to Goodsprings in 1910. No segments of these transportation routes were observed within the area of potential effect for the proposed project.

### *Mining*

During the latter half of the 19th century, vigorous mining efforts occurred across southern Nevada long before the discovery of low-grade ore at Searchlight. By the 1870s, a number of mining districts had been established. Mining of gold, silver, lead, and other metals occurred in El Dorado Canyon, 20 miles to the north, while turquoise mines were established at Crescent, 10 miles west of Searchlight (Reid 1998:6-7). An example of this early mining is the Homestake Mine in the Newberry Mountains southeast of Searchlight, which is listed on the NRHP for activities between 1850 and 1924. In the 1930s, the mine operated an amalgamation and cyanide plant on Cottonwood Island for processing gold and silver ore. Mining operations ceased in 1953 following the completion of Davis Dam that created Lake Mojave (NPS 2010). In 1897, gold was discovered at the Duplex Mine in the town of Searchlight. Between 1907 and 1910, the mines in the Searchlight Mining District produced some $7,000,000 in gold and other precious minerals.

During its heyday, Searchlight maintained a population of approximately 1500. Mine production and the town's population began to decline after 1917, but the community survived as a stop along an early route of the Arrowhead Highway (roughly following Highway 95 and 163 west). This first all-weather highway linked Los Angeles to Salt Lake City via Las Vegas. In 1927, the town's population dropped to 50 when the newly created Highway 91, now part of Interstate 15, bypassed the town of Searchlight. Construction of Hoover Dam led to a minor resurgence in the town's population in the 1930s and 1940s. Evidence of mining is present throughout the area and small-scale mining continues in the region. Searchlight's last major gold mine, however, ceased operation around 1953. A more comprehensive overview of the Searchlight Mining District is detailed in Stegner and Bevill (2012).

In addition to the mining, military efforts to assist in World War II also occurred in the project area. The Desert Training Center (DTC) and later the California-Arizona Maneuver Area (C-AMA) encompassed 20,000 square miles of land in southeastern California, southern Nevada, and Arizona. Here more than a million U.S. Army troops were trained in the tactics and techniques of desert warfare from April 1942 to April 1944 under General George Patton. After it was expanded to 31,500 square miles, the DTC became the largest army post and training maneuver area in U.S. military history. In 1943, the DTC was expanded and split into three areas and Searchlight fell into Area A, part of the original 19,000 acre area. General Patton and his troops departed from Area A in 1942 to join the military campaign in North Africa (URS 2012). On April 1, 1944, the C-AMA was declared surplus and the troops were evacuated and the equipment and materials were removed.

## 3.5.4 Previous Archaeological Investigations

The records search results indicated that 55 previous investigations have been conducted within a 2-mile radius surrounding the project area. Of these, 14 projects (25%) included portions of the APE. The 14 surveys are primarily linear inventories undertaken for public motorcycle and off-road vehicle racecourses, transportation rights-of-ways, and utility transmission corridors. Smaller block surveys were recently completed for meteorological tower placement and the LMNRA fee station development.

Of particular note for the project area is White's (2008) recent study of 380 hazardous mine features in the Alunite, Charleston, Crescent, Eldorado, Goodsprings, and Searchlight Mining Districts in Clark County, Nevada. The study provides a valuable historic context and a framework for the NRHP evaluation process of mining sites within these districts, including 43 sites and features in the Searchlight Mining District. Also relevant to the project area is the study by Yoder and Brosman (2007) that focused on the re-visitation and re-recording of 11 prehistoric sites around the Piute Valley, near Searchlight.

The records search indicated that 35 previously recorded cultural resources were located within a 2-mile

radius surrounding the project area, 7 of which are within or near the APE. Collectively, these 35 resources include 31 historic mining-related features and 4 prehistoric sites. Of these, 5 sites have been recommended as eligible for listing in the NRHP, 24 sites are considered ineligible, and the remaining 6 sites are unevaluated.

Seven previously recorded archaeological sites fall within the project APE. These consist of five historic and two prehistoric properties. A review of historic maps indicates that four segments of historic transportation routes are within the project application area. These paths include the Mojave Route of the Old Spanish National Historic Trail, Lieutenant Bergland's 1875 military trail, Quartette Mining Company narrow-gauge railroad, and the Arrowhead Trail.

The Mojave Road Variant of the Old Spanish Trail traverses the western edge of the proposed project boundary near the town of Searchlight. This Congressional route is reported to parallel U.S. Highway 95 on its eastern side, along the east side of the town of Searchlight, where it followed a north-south alignment. No surface evidence of the trail has been found within the Project's Area of Potential Effect that was inventoried.

### 3.5.5 Archaeological Survey Results

Stegner and Bevill conducted a standard BLM Class III cultural resources survey within the linear 2,670-acre APE. The linear project is defined as a 200-ft. buffer on both sides of the access roads, above and below ground transmission lines, and within and around all project facilities, which amounts to approximately 2,762 acres. Professional archaeologists surveyed the project area walking parallel transects spaced at 30 m (100-foot) intervals. The actual final Project ROW and disturbance area, if granted by BLM, would be a smaller amount of land within the inventoried areas. (See Figure 3.5-1)

Sixty-five sites, including seven previously recorded sites, were recorded in the project area. Cultural resources consist of six prehistoric sites, 52 historic, and seven multi-components sites. The prehistoric sites are small lithic or ceramic scatters and a rock shelter. The historic sites include early to mid-20$^{th}$ century mining complexes, small prospecting areas and associated refuse scatters. Two of the historic sites were associated with the Desert Training Center during World War II. The seven multicomponent sites include mining sites with prehistoric artifacts such as bifaces or handstones, and prehistoric sites with historic debris such as tin cans. One site has multiple mining cairn markers and indigenous rock alignments.

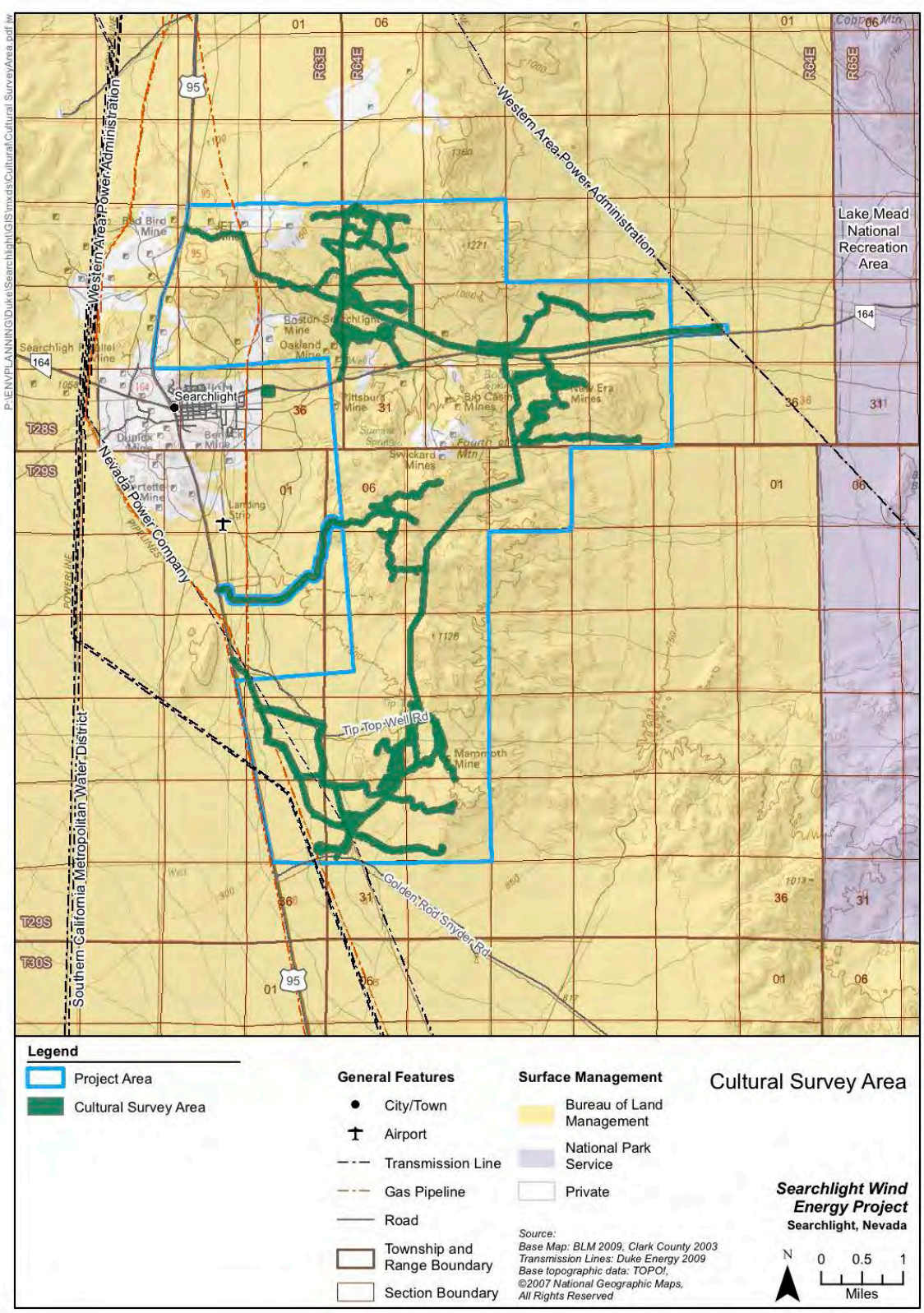


**Figure 3.5-1. Cultural Resources Survey Area**

### *Sites Determined Eligible for the National Register of Historic Places*

The NRHP is the Nation's official list of cultural resources deemed worthy of preservation. It is a list of districts, sites, buildings, structures, and objects significant to American history, architecture, archaeology, engineering, and culture. National Register properties have significance to the prehistory or history of a community, state, tribe, or the Nation.

The National Register Criteria for Evaluation are standards for evaluating the significance of a site to determine if it qualifies for the NRHP. In addition to meeting one or more eligibility criteria, a site must possess integrity of location, design, setting, materials, workmanship, feeling, and association and are:

- Associated with events that have made a significant contribution to the broad patterns of history (Criterion A);
- Associated with the lives of persons significant in the past (Criterion B);
- Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; possess high artistic values; or represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C); and
- Yielded or may be likely to yield information important in prehistory or history (Criterion D).

Four sites have been determined eligible for the NRHP. These include the historic mines of JET (26CK7718) eligible under criterion d, New Era (26CK7654) eligible under criteria b and d, and Oakland (26CK9294) eligible under c and d, and a small prehistoric rock shelter (26CK3635) eligible under criterion d. None of the other prehistoric or historic sites met the criteria for listing on the National Register of Historic Places.

# 3.6 Air Quality and Climate

The affected environment for air quality and climate depends on emission source characteristics, pollutant types, emission rates, and meteorological and topographical conditions. This analysis considered air quality and climate impacts that would occur during construction and operations of the Proposed Project.

## 3.6.1 Region of Influence

As air quality impacts would be primarily temporary, the ROI is limited to the local airshed surrounding the Proposed Project.

## 3.6.2 Existing Environment

### 3.6.2.1 Climate

The Proposed Project area is located approximately 60 miles south of Las Vegas at the southern tip of Clark County, in the eastern Mojave Desert. The closest meteorological monitoring station to the nearby town of Searchlight is located approximately 48 miles to the northwest, at the Henderson Executive Airport in Henderson, Nevada.

The summer season in Searchlight displays classic Southwest desert characteristics: daily high temperatures typically exceed 100 degrees Fahrenheit (°F), with lows in the 70°F range. The summer heat is tempered somewhat by the extremely low relative humidity; however, humidity can increase markedly for several weeks each summer in association with a moist "monsoonal flow" from the south, typically during July and August. These moist winds support the development of desert thunderstorms associated with significant flash flooding and/or strong downburst winds. Strong wind episodes in the summertime are usually connected with thunderstorms, and are thus isolated and localized (DAQEM 2009b).

Winters, overall, are mild and pleasant. Afternoon temperatures average near 60°F, and skies are mostly clear. Pacific storms occasionally produce rainfall in Searchlight, but in general, the Sierra Nevada Mountains of eastern California act as effective barriers to moisture. Snow accumulation is rare in Searchlight. Flurries are observed once or twice during most winters, but snowfall of an inch or more occurs only once every four to five years. However, freezing temperatures occur regularly each year: the valley has a 30-year average of 24 days with low temperatures at or below 32°F. Strong winds are the most persistent weather hazard in the area. Winds over 50 miles per hour (mph) are infrequent but can occur with vigorous storms. Winter and spring wind events often generate widespread areas of blowing dust and sand.

### 3.6.2.2 Air Quality

Air quality in a given location is described by the concentrations of various pollutants in the atmosphere, expressed in units of parts per million (ppm) or micrograms per cubic meter (μg/m³). Air quality is determined by the type and amount of pollutants emitted into the atmosphere; the size, surface cover, and topography of the air basin; and meteorological conditions related to the prevailing winds, which are normally from the southwest or north for the Proposed Project area. The significance of a pollutant concentration is determined by comparison with federal and/or state air quality standards. These standards represent the maximum allowable concentrations of various pollutants necessary to protect public health and the environment with a reasonable margin of safety.

The Clean Air Act (CAA), passed by the United States Congress in 1970, and amended in 1990, authorized the EPA to establish National Ambient Air Quality Standards (NAAQS) for pollutants that threaten human health and the environment (40 CFR, Part 50). The CAA established two types of NAAQS: (1) primary standards to protect public health, including the health of “sensitive populations” such as individuals with respiratory conditions, children, and the elderly; and (2) secondary standards that

set limits to protect the environment, including protection against "decreased visibility, damage to animals, crops, vegetation, and buildings" (EPA 2009b).

The following six pollutants, referred to as "criteria pollutants," currently have NAAQS (EPA 2009b):

- Ozone
- Carbon monoxide (CO)
- Nitrogen oxides ($NO_X$)
- Sulfur dioxide ($SO_2$)
- Particulate matter with an aerodynamic diameter equal to or less than 10 microns ($PM_{10}$)
- Particulate matter with an aerodynamic diameter equal to or less than 2.5 microns ($PM_{2.5}$)
- Lead

The EPA Office of Air Quality Planning and Standards has set NAAQS for the six criteria pollutants as described in Table 3.6-1.

**Table 3.6-1. National Ambient Air Quality Standards**

| Pollutant | Primary Standards | | Secondary Standards | |
|---|---|---|---|---|
| | Concentration | Averaging Time | Concentration | Averaging Time |
| Carbon monoxide | 9 ppm (10 mg/m$^3$)<br>35 ppm (40 mg/m$^3$) | 8-hour (1)<br>1-hour (1) | | None |
| Lead | 0.15 µg/m$^3$ (2) | Rolling 3-month average | Same as primary | |
| Nitrogen dioxide | 0.053 ppm | Annual (arithmetic mean) | Same as primary | |
| | 1 ppm | 1-hour | None | |
| Particulate matter ($PM_{10}$) | 150 µg/m$^3$ | 24-hour (3) | Same as primary | |
| Particulate matter ($PM_{2.5}$) | 15.0 µg/m$^3$<br><br>35 µg/m$^3$ | Annual (4)<br>(arithmetic mean)<br>24-hour (5) | Same as primary<br><br>Same as primary | |
| Ozone | 0.075 ppm<br>(2008 standard)<br>0.12 ppm | 8-hour (6)<br><br>1-hour (8) | Same as primary<br><br>Same as primary | |
| Sulfur Dioxide | 0.03 ppm<br>0.14 ppm<br>0.075 ppm | Annual (arithmetic mean)<br>24-hour (1)<br>1-hour (9) | 0.5 ppm | 3-hour (1) |

Source: EPA 2011
mg/m$^3$ = milligrams per cubic meter, µg/m$^3$ = micrograms per cubic meter, ppm = parts per million by volume
Assumptions/Notes:
(1) Not to be exceeded more than once per year.
(2) Final rule signed October 15, 2008.
(3) Not to be exceeded more than once per year on average over three years.
(4) To attain this standard, the three-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m$^3$.
(5) To attain this standard, the three-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m$^3$ (effective December 17, 2006).
(6) To attain this standard, the three-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm (effective May 27, 2008).
(7) (a) To attain this standard, the three-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.
(7) (b) The 1997 standard—and the implementation rules for that standard—will remain in place for implementation purposes as EPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.
(8) (a) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than 1.
(8) (b) As of June 15, 2005, EPA has revoked the 1-hour ozone standard in all areas except the fourteen 8-hour ozone nonattainment Early Action Compact (EAC) Areas. For one of the 14 EAC areas (Denver, Colorado), the 1-hour standard was revoked on November 20, 2008. For the other 13 EAC areas, the 1-hour standard was revoked on April 15, 2009.
(9) Final rule signed June 2, 2010. To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 parts per billion.

The EPA assigns classifications to geographic areas with respect to air quality conditions. When an area is considered for classification, there are three possible outcomes of the designation process for each of the criteria pollutants:

- Attainment – Any area that meets the national primary or secondary ambient air quality standard for the pollutant.
- Non-attainment – Any area that does not meet (or that contributes to ambient air quality in an area that does not meet) the national or secondary standard for the pollutant.
- Unclassified – Any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.

All areas throughout the United States are assigned to one of three different classes of air quality protection. These are called prevention of significant deterioration (PSD) Classes I, II, and III. Essentially, they help to insure that the air quality in clean air areas remains clean and does not deteriorate to NAAQS levels.

- Class I: very little additional pollution allowed (e.g., areas include wilderness areas (larger than 5,000 acres) and national parks (larger than 6,000 acres).
- Class II: moderate pollution is allowed.
- Class III: pollution approaching but not bypassing NASSQS is allowed (e.g., attainment areas to allow maximum industrial growth while maintaining compliance with NAAQS).

In addition to NAAQS, the maximum allowable increases over baseline conditions in a clean air area for a particular pollutant to prevent significant deterioration of air quality are promulgated as PSD increments at 40 CFR, Part 52.21(c). The Proposed Project can be accommodated within the increments set for PSD Class II areas.

The State of Nevada has granted authority to enforce clean air regulations in Clark County to the CCDAQEM (DAQEM 2009a), as overseen by the EPA. DAQEM currently collects data from eleven air-monitoring stations located throughout Clark County. Nine are located in the greater Las Vegas metropolitan area; two are located near the towns of Jean and Boulder City (DAQEM, 2009b), which 54 miles and 36 miles, respectively, from the project area.

The geographic areas (or airsheds) for NAAQS compliance are defined by hydrographic basins. The Proposed Project is located in portions of the Eldorado Valley, the Colorado River Valley, and the Piute Valley, which have been designated as Hydrographic Basins 167, 213, and 214, respectively. The Colorado River, Piute Valley, and parts of the Eldorado airsheds are designated non-attainment for the 8-hour ozone standard and unclassified for the other criteria pollutants according to EPA's Region 9 Air Quality Maps. The USEPA has designated these three airsheds as management areas for CO, $PM_{10}$, nitrogen oxide ($NO_X$), and volatile organic compounds (VOC) (precursor to ozone). This designation is a measure to address an area that was once designated as non-attainment of the NAAQS limits, and has achieved emission reductions meeting the NAAQS. The Las Vegas Valley, located northwest of the project area, is the only non-attainment area in Clark County for $PM_{10}$ and CO. On March 29, 2011, the USEPA published a direct final rule in the Federal Register determining that the Clark County, Nevada non-attainment area has attained the 1997 8-hour ozone National Ambient Air Quality Standards (NAAQS). This direct final action is effective May 31, 2011. On July 21, 2010, EPA determined that the Las Vegas Valley had attained the PM-10 NAAQS as of its applicable attainment date of December 31, 2006 and continues to attain the standard. This determination was based on three years of quality-assured, certified air quality monitoring data. On September 16, 2010, the U.S. Environmental Protection Agency finalized the rule to redesignate Las Vegas Valley to attainment for the National Ambient Air Quality Standard (NAAQS) for CO and approved the maintenance plan showing maintenance of the CO standard though 2020.

The main sources of air pollutants within the vicinity of the project area are vehicles traveling along US-95 and SR 164, off-OHV use in the area, and winds that entrain dust.

Under the Clark County Air Quality Regulations (CCAQR), all soil-disturbing activities of 0.25 acres or greater (aggregate) require a Dust Control Permit (CCAQR 94). The permit application requires, among other things, submission of a Dust Mitigation Plan, listing all soil disturbing activities for construction (DAQEM, 2009b). The permit application requires, among other things, a Dust Mitigation Plan, listing all soil disturbing activities for construction projects of 50 acres of actively disturbed soil if they are: (a) under common control and are either contiguous or separated by a public or private roadway and cumulatively have fifty (50) acres or more of actively disturbed soil; or (b) under common control and not contiguous, but are contained within a common master-planned community and cumulatively have fifty (50) acres or more of disturbed soil. (DAQEM 2011).

Class I areas are to receive special protection from degradation of air quality, and the most stringent PSD increments apply in these areas. No areas designated as Class I airsheds are present in the project area; however, Class I airsheds do occur in the vicinity. Class 1 federal lands include areas such as national parks, national wilderness areas, and national monuments. These areas are granted special air quality protections under Section 162(a) of the federal Clean Air Act (EPA 2011). Prior to 1977, all wilderness areas were managed as Class I Areas. After 1977, the following applies: (BLM Manual 8560.36),

*B. Air Quality*

*1. Classification. Under the Clean Air Act (as amended), BLM-administered lands were given Class II air quality classification, which allows moderate deterioration associate with moderate, well-controlled industrial and population growth. The BLM manages designated wilderness areas as Class II unless they are reclassified by the State as a result of the procedures prescribed in the Clean Air Act.*

*2. States Reclassify. According to the Clean Air Act, air quality reclassification is the prerogative of the States. The States must follow a process mandated by the Clean Air Act Amendments of 1977, involving a study of health, environmental, economic, social, and energy effects, a public hearing, and a report to the Environmental Protection Agency.*

*3. Compliance. Administrative actions within wilderness areas must comply with the air quality classification for that specific area.*

Six designated wilderness areas are located relatively close to the project area: Ireteba Peaks Wilderness (approximately 6 miles northeast), Nellis Wash Wilderness (approximately 5 miles east), Spirit Mountain Wilderness (approximately 8 miles southeast), and Bridge Canyon Wilderness (approximately 12 miles southeast). The Wee Thump Joshua Tree Wilderness (approximately 8 miles west) and the South McCullough Wilderness (approximately 12 miles northwest) are located on the western boundaries of the Piute-Eldorado Valley.

### Climate Change

Climate change refers to any notable change in measures of climate (temperature, precipitation, or wind) that lasts for an extended period (i.e., decades or longer). Climate change might be affected by a number of factors, including natural cycles (e.g., changes in the sun‘s intensity or Earth’s orbit around the sun), natural processes within the climate system (e.g., changes in ocean circulation), and human activities that change the atmosphere‘s composition (e.g., burning fossil fuels) or land surface (e.g., deforestation, reforestation, urbanization, and desertification). Potential emissions of primary manmade GHGs ($CO_2$, methane, $NO_x$, and specific hydrofluorocarbons) can be estimated from a project design, and calculated as total carbon dioxide equivalent ($CO_2e$) emissions based on the global warming potentials (GWP) for each individual GHG. The current GWPs are as follows:

- $CO_2$: 1
- methane: 25
- $NO_x$: 298
- hydrochlorofluorocarbon-23 (HCFC-23): 14,800
- hydrochlorfluorocarbon-134a (HFC-134a): 1,430
- SF6: 22,800

Water vapor also has a GWP, but because the amount of water vapor in the atmosphere is caused primarily by the ambient temperature (a natural phenomenon), it is not included in the calculation of $CO_2$e emissions.

Currently there are no emission limits for suspected GHG emissions, and no technically defensible methodology for predicting potential climate changes from GHG emissions. However, there are, and will continue to be, several efforts to address GHG emissions from federal activities, including BLM authorized uses.

# 3.7 Transportation

This section identifies existing transportation and motorized vehicle access conditions in the Proposed Project area that would be affected by construction, O&M, and decommissioning of the Proposed Project.

## 3.7.1 Region of Influence

The ROI evaluated for transportation resources encompasses those locations within or near the project area where roadways may be affected by construction, O&M, and decommissioning of the Proposed Project.

## 3.7.2 Methodology

The Annual Average Daily Traffic (AADT) was used to characterize existing traffic volumes. The Nevada Department of Transportation (NDOT) calculates the AADT by dividing the total volume of traffic at a particular point (i.e., both traveling directions of a highway segment) by the number of days in the year. Additionally, the level of service (LOS) was used to define the existing environment. The LOS expresses the operational conditions within a traffic stream, taking into consideration speed, travel time, traffic interruptions, freedom to maneuver, and comfort and convenience (Transportation Research Board 1995). The LOS for the highways are then converted to a letter classification identifying best-to-worst operating conditions, expressed as LOS A through F (defined in Table 3.7-1). Both the ADDT and LOS are used to assess potential effects on transportation and access within the project area and vicinity.

**Table 3.7-1. Level of Service Classifications and Definitions**

| Classifications | Level of Service Classification Definitions |
|---|---|
| A | Free flow with low volumes and high speeds. |
| B | Reasonably free flow, but speeds beginning to be restricted by traffic conditions. |
| C | In stable flow zone, but most drivers are restricted in the freedom to select their own speeds. |
| D | Approaching unstable flow; drivers have little freedom to select their own speeds. |
| E | Unstable flow; may be short stoppages. |
| F | Unacceptable congestion; stop-and-go; forced flow. |

Source: Transportation Research Board 1995.

## 3.7.3 Existing Environment

### 3.7.3.1 Major Traffic Routes and Existing Traffic Volumes

The Proposed Project site is located in a largely undeveloped area and major transportation routes are limited. The primary access road leading to the Proposed Project area from the north and south is US-95 from Boulder City south through Searchlight, and south beyond the Nevada state line to US Interstate 40 (I-40) in California. Access to the project area from the east and west is via Cottonwood Cove Road, also known as Cottonwood Cove Access Road, which extends from Lake Mohave on the east through Searchlight and west beyond the Nevada state line to Interstate 15 (I-15) in California. US-95 is a major regional corridor (from Oregon to California) and a key element of Nevada's principal highway freight network delivering commercial, public, and private drivers and their cargo north to Las Vegas and beyond, and south to California and Arizona. Cottonwood Cove Road (SR 164) is classified by the NDOT as a rural major collector roadway. The closest NDOT traffic count stations illustrate the AADT along US-95 and SR 164 (Table 3.7-2).

**Table 3.7-2. AADT at NDOT Traffic Count Stations near the Proposed Project Area**

| Station Number | Location | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|
| 0033130 | US-95, 0.7 mile north of SR 164 | 9,500 | 9,500 | 8,600 | 8,700 | 8,700 |
| 0030236 | Cottonwood Cove Road, 1 mile east of US-95 and 0.2 mile east of the road to Searchlight Cemetery | 740 | 820 | 550 | 740 | 500 |

Source: Nevada Department of Transportation 2010
Note: The declines in traffic at all counters in 2008 is believed to result from the spike in fuel prices in spring of 2008 and continuing into fall of 2008, combined with the effects of the recession. Existing LOS within the project vicinity is C or better at all times (Transportation Research Board 2000). When the Hoover Dam crossing was closed to truck traffic in 2001, truck traffic between Las Vegas and I-40 was diverted through Searchlight and Laughlin, Nevada. With the opening of the Hoover Dam bypass in October 2010, traffic volumes on US-95 area are expected to drop and there should be an improvement to LOS within the project vicinity that is not represented in the current traffic volume data.

#### 3.7.3.2 Off-Highway Vehicle Use

Several unimproved dirt, improved unpaved, and paved access routes within the Proposed Project area provide access for recreation activities. Vehicle volume is low due to the rural nature of the area. The primary users of the unimproved routes are hunters, OHV users, recreationists, utility maintenance and land managers.

There are several utility lines in the vicinity typically associated with an improved unpaved access road. These roads provide access for periodic routine inspections, maintenance, and repairs. These roads are typically in good to very good condition and provide primary access for recreational travel as well as utility service.

OHVs are used throughout the project area for recreation (e.g., motorcycle racing, rock climbing, hunting, camping). OHV use is one of the fastest growing recreational activities on public lands. OHV use is prominent near the urban-wildland interface adjacent to populated areas, and within Clark County, considerable OHV use occurs near Searchlight. The BLM objectives for OHV management are to protect the resources of public lands, promote the safety of all users of those lands, and minimize conflicts among the various uses of those lands (BLM 1998).

Land can be designated as open to OHV use, closed to OHV use, open to OHV use but limited to existing roads and trails, or open to OHV use but limited to designated roads and trails. All BLM land in the project area is currently designated as open to OHV use but limited to designated roads and trails. Although OHV use in the area is limited, increased OHV use in the vicinity of Searchlight has resulted in a growing network of unauthorized trails. Unauthorized use of motorized vehicles has damaged resources within the project area by crushing vegetation, disturbing wildlife, increasing noise and airborne particulates, and increasing erosion potential.

# 3.8 Land Use

This section identifies existing land use goals, objectives, and policies within and adjacent to the Proposed Project area and discusses applicable regulations. The analysis is focused on existing federal, state, and Clark County land use zoning, ROWs, grants, claims, permits, and general land use guidance. This section includes a general discussion on land use in Clark County to establish a regional setting for the Proposed Project.

## 3.8.1 Region of Influence

The ROI evaluated for land use encompasses the Proposed Project area and vicinity that might be affected by construction, O&M, and decommissioning of the Proposed Project.

## 3.8.2 Existing Environment

The Proposed Project area encompasses BLM-administered lands in Clark County, Nevada, approximately 60 miles southeast of Las Vegas, and 0.5 miles northeast to 3 miles southeast of the town of Searchlight, Nevada. Existing land uses in the project area are characterized by, dispersed recreation, traditional and renewable utilities, and mineral exploration and development. Utility and transportation corridors and facilities predominate along the western and eastern edges of the project area. The closest developed area is Searchlight, which is composed of private residences and commercial enterprises such as gas stations and general stores, casinos, and community facilities. The Nevada community of Cal-Nev-Ari is approximately 6.5 miles south of the project area. Boulder City, Nevada, is approximately 30 miles northeast of the project area, and Laughlin, Nevada, is approximately 40 miles south of the project area.

The land use type throughout the project site includes undeveloped desert alluvial valleys on the east side of the Piute Valley in the low hills bordering the western flank of an unnamed mountain range that includes Fourth of July Mountain. This area is within the Basin and Range geomorphic province, an area of broad, flat valleys bordered by block-faulted bedrock mountains. Elevations in the Searchlight area range from approximately 1,700 feet to more than 3,450 feet for the unnamed highlands in part of the project area. The majority of the lands surrounding the project area are federally administered.

### 3.8.2.1 Land Ownership

The Proposed Project area encompasses approximately 30 total square miles of private, NPS, and BLM-administered lands east of Searchlight, and is surrounded by BLM specially designated lands; however, the proposed project components would be located only on BLM-managed land (18, 949 acres). The project area includes several small parcels (totaling approximately 644 acres) of privately owned lands. Table 3.8-1 lists the land ownership status within the project area.

**Table 3.8-1. Land Ownership Status within the Proposed Project Area**

| Land Status Category within Clark County | Acres | Percent |
|---|---|---|
| BLM | 18,949 | 96 |
| Forest Service, National Park Service, Bureau of Indian Affairs, Department of Defense | 10 | .0006 |
| Private | 644 | 4 |
| State Of Nevada | 0 | 0 |

Source: BLM, LR2000 data

### 3.8.2.2 Governing Land Management Plans

The Proposed Project area is located within the BLM Southern Nevada District Planning Area and is managed by the BLM LVFO under the jurisdiction of the 1998 Las Vegas RMP and ROD (BLM 1998).

The LVFO management area encompasses approximately 3,332,000 acres of public lands in Clark, Nye, and Lincoln Counties.

Updates or amendments to the Las Vegas RMP and ROD include national programmatic EISs regarding development of wind energy and energy corridors. The *Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States* (BLM 2005b) sets parameters for determining where wind energy projects can occur and allows adoption of programmatic policies and BMPs regarding wind energy development. The Final Programmatic EIS and the ROD (entitled *Designation of Energy Corridors on Federal Lands in the 11 Western States*) define energy development corridors to expedite applications to construct or modify oil, gas, and hydrogen pipelines, and electricity transmission and distribution facilities. The Las Vegas RMP was effectively amended in December 2005 as part of the BLM Wind Energy Development Program.

The Las Vegas RMP consists of a combination of management directions, allocations, and guidelines that direct where actions may occur, the resource conditions to be maintained, and use limitations required to meet management objectives. The Las Vegas RMP specifies that multiple-use management includes conservation of cultural resources; riparian areas; desert tortoise, special status species, and fish and wildlife habitat; and resource development where consistent with desert tortoise recovery.

The BLM LVFO manages over 94.5% of the lands within the project area. The remaining private lands are zoned by Clark County as Open Lands and are subject to policies set forth in the Clark County Unified Development Code (UDC). The Open Lands zone has highly limited public services and facilities. Grazing, open space, and recreational uses may occur in areas zoned as Open Lands (CCCPD 2005). The purpose of this zone is to regulate lands in private ownership by limiting dwelling units to only single-family/farm uses at densities no greater than one dwelling unit per 10 acres, the lowest density residential land use defined in the South County Land Use Plan (Clark County Comprehensive Planning Division [CCCPD] 2005).

#### 3.8.2.3 Utility Corridors and Rights-of-Way

ROWs for utilities and roads cross the project area and are concentrated along the eastern edge of the project area, north and south of Searchlight (see Figure 3.8-1). Existing ROWs (that are either wholly or partially within the project area) include roadways, telephone lines, electrical transmission lines, pipelines, and other uses. Table 3.8-2 provides data on all ROWs, both existing and pending within the project area.

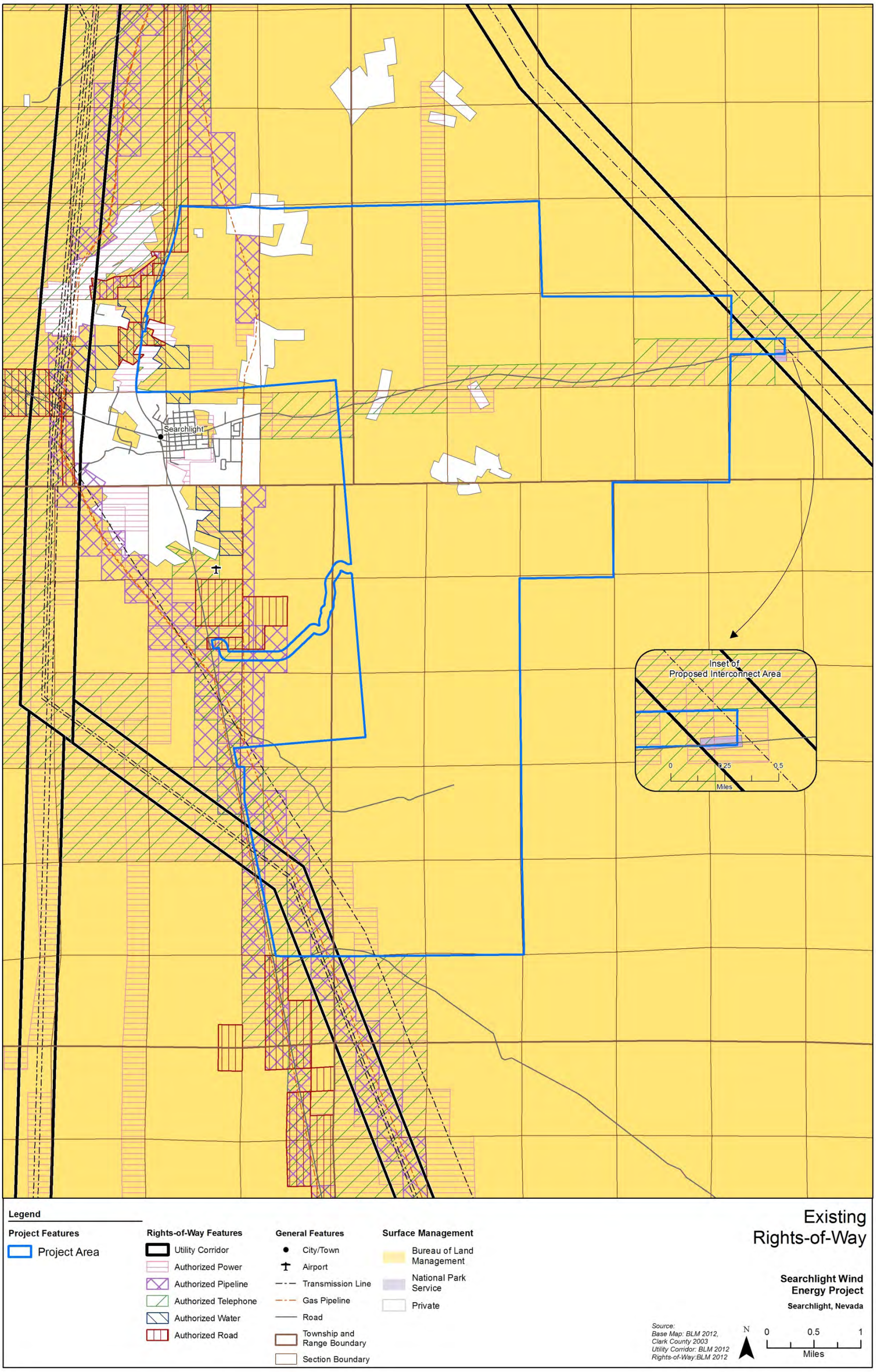


**Figure 3.8-1. Existing ROWs in the Project Area.**

**Table 3.8-2. ROWs within or adjacent to the Proposed Project Area**

| Serial Nr Full | Cust Nm | Address | City | St. | Zip | Case Disp | Commodity | Case Type | Acres |
|---|---|---|---|---|---|---|---|---|---|
| NVN 087330 | AGER CARL | 2441 W HORIZON RIDGE PKWY 120 | HENDERSON | NV | 89052 | AUTHORIZED | TO BE DEFINED | SURFACE MGT- PLAN | 1 |
| NVN 052050 | AT&T CRE LEASE ADMIN | ONE AT&T WY RM 1B201 | BEDMINSTER | NJ | 07921 | AUTHORIZED | FIBER OPTIC FACILITIES | ROW-TEL & TELEG,FLPMA | 60.531 |
| NVN 076881 | BLM | 4701 N TORREY PINES DR | LAS VEGAS | NV | 89130 2301 | AUTHORIZED | SUBJECT TO PRIOR RIGHTS | RESOURCE MGT PLANNING | 325,271.5 |
| NVN 083979 | BLM | 4701 N TORREY PINES DR | LAS VEGAS | NV | 89130 | AUTHORIZED | SUBJECT TO PRIOR RIGHTS | WDL-BLM-SPECIAL DESIGNAT | 944,343 |
| NVN 061968FD | BLM | 4701 N TORREY PINES DR | LAS VEGAS | NV | 89130 2301 | PENDING | NONE | EX-BLM SEC 206, FLPMA | 2,000 |
| NVN 079316 | BLM | 4701 N TORREY PINES DR | LAS VEGAS | NV | 89130 2301 | PENDING | SAND AND GRAVEL,S&G LCS | COMMUNITY PIT -ALL | 6,762.899 |
| NVN 083547 | BLM | 4701 N TORREY PINES DR | LAS VEGAS | NV | 89130 2301 | PENDING | OCCUPANCY, RESIDENTIAL | UNAUTHORIZE D OCCUPANCY | 3 |
| NVN 084115 | BLM | 4701 N TORREY PINES DR | LAS VEGAS | NV | 89130 | PENDING | OTHER ENERGY FACILITIES | UNAUTHORIZE D OCCUPANCY | 0.1 |
| NVN 029605 | BOR | BOX 9980 | PHOENIX | AZ | 85068 | AUTHORIZED | OTHER ENERGY FACILITIES | ROW-PWR LINE FED FAC | 1,100.52 |
| NVN 033410 | BREEDLOVE MURPHY | 824 EUGENE CERNAN ST | LAS VEGAS | NV | 89145 6129 | AUTHORIZED | OTHER ENERGY FACILITIES | ROW-POWER TRAN-FLPMA | 0.92 |
| NVN 008079 | CENTRAL TELE DBA CENTURYLINK | 6700 VIA AUSTI PKWY | LAS VEGAS | NV | 89119 3545 | AUTHORIZED | NON-ENERGY FACILITIES | ROW-TELEPHONE-TELEGRAPH 4 | 8.302 |
| NVN 051417 | CENTRAL TELE DBA CENTURYLINK | 6700 VIA AUSTI PKWY | LAS VEGAS | NV | 89119 3545 | AUTHORIZED | OTHER ENERGY FACILITIES | ROW-POWER TRAN-FLPMA | 0.311 |
| NVN 052985 | CENTRAL TELE DBA CENTURYLINK | 6700 VIA AUSTI PKWY | LAS VEGAS | NV | 89119 3545 | AUTHORIZED | FIBER OPTIC FACILITIES | ROW-TEL & TELEG,FLPMA | 78.194 |
| NVN 088114 | CHARLES COLLIER | 2182 N PECOS RD TRLR 38 | LAS VEGAS | NV | 89115 0612 | PENDING | TO BE DEFINED | SURFACE MGT- PLAN | 1 |
| NVN 058109 | CHRISTENSEN MILTON | BOX 548 | PROVO | UT | 84603 | EXPIRED | NON-ENERGY FACILITIES | ROW-ROADS | 0.551 |
| NVN 090180 | CHRISTENSEN MILTON | BOX 548 | PROVO | UT | 84603 | PENDING | NON-ENERGY FACILITIES | ROW-ROADS | 0.551 |
| NVN 021747 | CLARK CNTY | PO BOX 554000 | LAS VEGAS | NV | 89155 | AUTHORIZED | PUBLIC PURPOSES | R&PP CLASS | 56 |

**Table 3.8-2. ROWs within or adjacent to the Proposed Project Area**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| NVN 02174701 | CLARK CNTY | PO BOX 554000 | LAS VEGAS | NV | 89155 | EXPIRED | PUBLIC PURPOSES | R AND PP LEASE | 56 |
| NVN 051027 | CLARK CNTY | PO BOX 554000 | LAS VEGAS | NV | 89155 | PENDING | OTHER ENERGY FACILITIES | ROW-TRANS SOLID | 160 |
| NVN 054503 | CLARK CNTY | PO BOX 554000 | LAS VEGAS | NV | 89155 | PENDING | LITTER, TRASH, REFUSE | UNAUTHORIZED DEVELOPMENT | 160 |
| NVN 083130 | COGENTRIX SOLAR SERVICES LLC | 701 N GREEN VALLEY PKY STE 200 | HENDERSON | NV | 89074 | PENDING | SOLAR ENERGY FACILITIES | ROW-SOLAR DEV FAC | 4,480 |
| NVN 046709 | COYOTE MINES INC | 1201 SYCAMORE DR SE | ISSAQUAH | WA | 98027 | AUTHORIZED | NON-ENERGY FACILITIES | ROW-ROADS | 3.953 |
| NVN 048555 | COYOTE MINES INC | 1201 SYCAMORE DR SE | ISSAQUAH | WA | 98027 | AUTHORIZED | NON-ENERGY FACILITIES | ROW-O&G PIPELINES | 3.953 |
| NVN 050229 | COYOTE MINES INC | 1201 SYCAMORE DR SE | ISSAQUAH | WA | 98027 | AUTHORIZED | NONE | MIN PAT APLN-MILLSIT BLM | 14.35 |
| NVN 058566 | ELECTRIC LIGHTWAVE LLC | 1201 NE LLOYD BLVD STE 500 | PORTLAND | OR | 97232 | EXPIRED | FIBER OPTIC FACILITIES | ROW-TEL & TELEG,FLPMA | 62.567 |
| NVN 071928 | HARLAN NEAL | BOX 215 | SEARCHLIGHT | NV | 89046 | EXPIRED | GOLD LC | SURFACE MGT- NOTICE | 0 |
| NVN 061851 | IXC CARRIER GROUP INC | 1122 S CAPITAL OF TEXAS HWY | AUSTIN | TX | 78746 6426 | AUTHORIZED | FIBER OPTIC FACILITIES | ROW-POWER TRAN-FLPMA | 40.45 |
| NVN 062110 | IXC COMM INC | 1122 S CAPITOL OF TEXAS HWY | AUSTIN | TX | 78746 | AUTHORIZED | FIBER OPTIC FACILITIES | ROW-TEL & TELEG,FLPMA | 1,100.29 |
| NVN 003827 | LA DEPT OF WATER & POWER | 111 N HOPE ST RM 1031 | LOS ANGELES | CA | 90012 2607 | AUTHORIZED | OTHER ENERGY FACILITIES | ROW-POWER TRAN LINE | 961.43 |
| NVN 084617 | LAS VEGAS VALLEY WATER DIST | PO BOX 99956 | LAS VEGAS | NV | 89193 9956 | AUTHORIZED | NON-ENERGY FACILITIES | ROW-WATER FACILITY | 37.31 |
| NVN 08461701 | LAS VEGAS VALLEY WATER DIST | PO BOX 99956 | LAS VEGAS | NV | 89193 9956 | AUTHORIZED | NON-ENERGY FACILITIES | ROW-WATER FACILITY | 8.18 |
| NVN 088158 | NEVADA POWER CO (NV ENERGY) | PO BOX 98910 | LAS VEGAS | NV | 89151 0001 | AUTHORIZED | OTHER ENERGY FACILITIES | ROW-POWER TRAN-FLPMA | 7.733 |
| NVN 078928 | NPS LAKE MEAD NAT REC AREA | 601 NEVADA HWY | BOULDER CITY | NV | 89005 | AUTHORIZED | SUBJECT TO PRIOR RIGHTS | WDL-NPS NATL REC AREAS | 10 |
| NVN 086337 | NPS LAKE MEAD NAT REC AREA | 601 NEVADA HWY | BOULDER CITY | NV | 89005 | AUTHORIZED | NON-ENERGY FACILITIES | ROW-OTHER FEDERAL FAC | 10 |

**Table 3.8-2. ROWs within or adjacent to the Proposed Project Area**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| NVCC 0020730 | NV DEPT OF TRANS | 1263 S STEWART ST | CARSON CITY | NV | 89712 | AUTHORIZED | NON-ENERGY FACILITIES | MATERIAL SITES(SEC 17) | 40 |
| NVCC 0020733 | NV DEPT OF TRANS | 1263 S STEWART ST | CARSON CITY | NV | 89712 | AUTHORIZED | NON-ENERGY FACILITIES | FED AID HIGHWAY(SEC 17) | 726.18 |
| NVCC 0020818 | NV DEPT OF TRANS | 1263 S STEWART ST | CARSON CITY | NV | 89712 | AUTHORIZED | NON-ENERGY FACILITIES | MATERIAL SITES(SEC 107) | 140 |
| NVCC 0020736 | NV POWER CO | PO BOX 98910 | LAS VEGAS | NV | 89151 | AUTHORIZED | OTHER ENERGY FACILITIES | ROW-POWER TRAN-FLPMA | 884.036 |
| NVN 003274 | NV POWER CO | PO BOX 98910 | LAS VEGAS | NV | 89151 | AUTHORIZED | OTHER ENERGY FACILITIES | ROW-POWER TRAN-FLPMA | 0.408 |
| NVN 003827 | NV POWER CO | PO BOX 98910 | LAS VEGAS | NV | 89151 | AUTHORIZED | OTHER ENERGY FACILITIES | ROW-POWER TRAN LINE | 961.43 |
| NVN 051417 | NV POWER CO | PO BOX 98910 | LAS VEGAS | NV | 89151 | AUTHORIZED | OTHER ENERGY FACILITIES | ROW-POWER TRAN-FLPMA | 0.311 |
| NVN 077274 | NV POWER CO | PO BOX 98910 | LAS VEGAS | NV | 89151 | AUTHORIZED | OTHER ENERGY FACILITIES | ROW-POWER TRAN-FLPMA | 2.26 |
| NVN 088104 | NV POWER CO | PO BOX 98910 | LAS VEGAS | NV | 89151 | AUTHORIZED | OTHER ENERGY FACILITIES | ROW-POWER TRAN-FLPMA | 0.2 |
| NVN 08810401 | NV POWER CO | PO BOX 98910 | LAS VEGAS | NV | 89151 | AUTHORIZED | OTHER ENERGY FACILITIES | ROW-POWER TRAN-FLPMA | 0.4 |
| NVN 0045212 | NV POWER CO | PO BOX 98910 | LAS VEGAS | NV | 89151 | AUTHORIZED | OTHER ENERGY FACILITIES | ROW-POWER TRAN-FLPMA | 62.054 |
| NVN 071928 | PARKER JUNE | BOX 215 | SEARCHLIGHT | NV | 89046 | EXPIRED | GOLD LC | SURFACE MGT- NOTICE | 0 |
| NVN 071921 | PEPPERTREE CONST & MNG CORP | PO BOX 848 | ACTON | CA | 93510 | EXPIRED | GOLD LC | SURFACE MGT- NOTICE | 2 |
| NVN 087918 | PEPPERTREE CONST & MNG CORP | PO BOX 848 | ACTON | CA | 93510 | PENDING | GOLD,LODE LC | SURFACE MGT- PLAN | 0.77 |
| NVN 071990 | PHOENIX METALS USA II USA INC | BOX 936 | SEARCHLIGHT | NV | 89046 | EXPIRED | GOLD LC | SURFACE MGT- NOTICE | 0 |
| NVN 088186 | ROYAL M & M - MATHESON | 2580 ANTHEM VILLAGE DR | HENDERSON | NV | 89052 5503 | PENDING | GOLD LC | SURFACE MGT- PLAN | 1 |
| NVN 003827 | SALT RIVER PROJECT | BOX 1980 | LAS VEGAS | NV | 85001 | AUTHORIZED | OTHER ENERGY FACILITIES | ROW-POWER TRAN LINE | 961.43 |
| NVN 081843 | SEARCHLIGHT AIRPARK DEV LLC | 2278 TEDESCA DR | HENDERSON | NV | 89052 | AUTHORIZED | NON-ENERGY FACILITIES | AIRPORT LEASES | 21.4 |

**Table 3.8-2. ROWs within or adjacent to the Proposed Project Area**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| NVN 087330 | SEARCHLIGHT MINERALS CORP | 2441 W HORIZON RIDGE PKWY 120 | HENDERSON | NV | 89052 | AUTHORIZED | TO BE DEFINED | SURFACE MGT- PLAN | 1 |
| NVN 082648 | SEARCHLIGHT WIND ENERGY PROJEC | 71 ALLEN ST STE 101 | RUTLAND | VT | 05701 4570 | EXPIRED | WIND ENERGY FACILITIES | ROW-WIND PROJ TEST | 24,382.56 |
| NVN 084626 | SEARCHLIGHT WIND ENERGY PROJEC | 71 ALLEN ST STE 101 | RUTLAND | VT | 05701 4570 | PENDING | WIND ENERGY FACILITIES | ROW-WIND DEV FAC | 24,382.56 |
| NVN 089747 | SEARCHLIGHT WIND ENERGY PROJEC | 71 ALLEN ST STE 101 | RUTLAND | VT | 05701 4570 | PENDING | WIND ENERGY FACILITIES | ROW-WIND PROJ TEST | 24,382 |
| NVCC 0018307 | SO CA METRO WATER DIST | BOX 54153 | LOS ANGELES | CA | 90054 | AUTHORIZED | OTHER ENERGY FACILITIES | ROW- BOULDER CAN PROJ | 3,598.69 |
| NVN 003827 | SOUTHERN CALIFORNIA EDISON | 2131 WALNUT GROVE AVE GO3 FL 2 | ROSEMEAD | CA | 91770 3769 | AUTHORIZED | OTHER ENERGY FACILITIES | ROW-POWER TRAN LINE | 961.43 |
| NVN 007841 | SOUTHWEST GAS CORP | PO BOX 98510 | LAS VEGAS | NV | 89193 8510 | AUTHORIZED | OIL & GAS FACILITIES | ROW-O&G PIPELINES | 359.29 |
| NVN 025616 | SOUTHWEST GAS CORP | PO BOX 98510 | LAS VEGAS | NV | 89193 8510 | AUTHORIZED | OIL & GAS FACILITIES | ROW-O&G PIPELINES | 6.606 |
| NVN 0015814 | SOUTHWEST GAS CORP | PO BOX 98510 | LAS VEGAS | NV | 89193 8510 | AUTHORIZED | OIL & GAS FACILITIES | ROW-O&G PIPELINES | 192.54 |
| NVN 0043645 | SOUTHWEST GAS CORP | PO BOX 98510 | LAS VEGAS | NV | 89193 8510 | AUTHORIZED | OIL & GAS FACILITIES | ROW-O&G PIPELINES | 210.77 |
| NVN 0060005 | SOUTHWEST GAS CORP | PO BOX 98510 | LAS VEGAS | NV | 89193 8510 | AUTHORIZED | OIL & GAS FACILITIES | ROW-O&G PIPELINES | 83.128 |
| NVCC 0024550 | WAPA | BOX 6457 | PHOENIX | AZ | 85005 | AUTHORIZED | OTHER ENERGY FACILITIES | ROW-POWER TRAN-FLPMA | 1,054.637 |
| NVN 0046127 | WAPA | BOX 6457 | PHOENIX | AZ | 85005 | AUTHORIZED | OTHER ENERGY FACILITIES | ROW-POWER TRAN-FLPMA | 511.043 |
| NVN 090114 | WESTERN AREA POWER ADMIN (DSW) | PO BOX 6457 | PHOENIX | AZ | 85005 6457 | PENDING | NON-ENERGY FACILITIES | PERMITS SEC 302 FLPMA | 7 |
| NVN 086777 | WESTERN AREA POWER ADMINISTRAT | PO BOX 6457 | PHOENIX | AZ | 85005 6457 | PENDING | OTHER ENERGY FACILITIES | ROW-POWER TRAN-FLPMA | 5.7 |
| NVN 089703 | WESTERN AREA POWER ADMINISTRAT | PO BOX 6457 | PHOENIX | AZ | 85005 6457 | PENDING | OTHER ENERGY FACILITIES | ROW-PWR LINE FED FAC | 654.55 |
| NVN 071921 | WINELAND ROBERT B | PO BOX 848 | ACTON | CA | 93510 0848 | EXPIRED | GOLD LC | SURFACE MGT- NOTICE | 2 |

**Table 3.8-2. ROWs within or adjacent to the Proposed Project Area**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| NVN 087918 | WINELAND ROBERT B | PO BOX 848 | ACTON | CA | 93510 0848 | PENDING | GOLD,LODE LC | SURFACE MGT- PLAN | 0.77 |
| | | | | | | | | | 1,371,404.748 |

The most prominent features within the ROWs are the largely north-south trending electrical transmission lines of the Nevada Power Company, Western, and Southern California Metropolitan Water District. Four existing transmission lines currently cross portions of the project area. The Western Davis-Mead 230-kV transmission line crosses the extreme eastern portion of the project area at the location of Western's proposed switching station, approximately 7.5 miles east of Searchlight. Two additional Western-owned transmission lines and a Nevada Energy transmission line cross the southwestern portion of the project area. There are currently 371 acres of designated utility corridors within the project area (see Figure 3.8-1).

The other prominent utility ROWs are for telephone lines that cross the project area both east-west and north-south parallel to Cottonwood Cove Road and US-95 ROWs. The total acreage of existing authorized ROWs within the project area is 8,910 acres. Many of the authorized ROWs overlap one another or are directly adjacent to one another. Table 3.8-3 includes the acreages for each of the different utility ROWs.

**Table 3.8-3. Authorized ROW Acreage Calculations within the Proposed Project Area**

| Authorized Right-of-Ways | Total Acres |
|---|---|
| Utility Corridor | 371.1 |
| Authorized Power | 4,343.2 |
| Authorized Pipeline | 1,259.8 |
| Authorized Telephone | 3,024.7 |
| Authorized Water | 77.7 |

Source: BLM, LR2000 data

The Las Vegas RMP does not identify specific projects, such as ROW applications for wind energy. There are no renewable energy developments within the project area for geothermal, wind, hydroelectric, or solar power. To date, the only identified federally authorized use granted for this type of development is ROW NVN-082648, issued to Searchlight, LLC, for construction of the three MET towers now situated at specific locations within the project area. These MET towers collect data that supplement computer simulations and measure wind speed and direction within the project area. Western's proposed switching station is located mainly within an existing Western ROW.

The BLM manages ROWs through a system of designated corridors and designated ROW exclusion and avoidance areas. To facilitate the development of priority renewable energy projects on federally administered lands (in accordance with the BLM Wind Energy Development Program), the LVFO has encouraged the placement of new facilities within established corridors, including within SMAs such as ACECs. Utility corridors within ACECs are limited to 3,000 feet or less in width. Exceptions have been based on the type of and need for a proposed project, and the absence of conflict with other resource values and uses. The project area does not include lands managed as exclusion or avoidance areas.

Material site ROWs are allowed only within 0.5 mile of the centerline of Federal Aid Highways and specified county roads, including US-95 and Cottonwood Cove Road (SR 164) (BLM 1998).

#### 3.8.2.4 Special Designations

Special designations can either be congressionally designated or administratively designated. Congressionally designated areas include National Wilderness Areas, National Wild and/or Scenic Rivers, National Conservation Areas, National Scenic Trails, and National Historic Trails. Administrative designations include Wilderness Study Areas, ACECs, DWMAs, Outstanding Natural Areas, Research Natural Areas, and Special Recreation Management Areas (SRMAs).

The Piute-Eldorado Valley ACEC surrounds the project area; a small portion of the Proposed Project extends into the ACEC along the eastern border of the project area (Figure 3.8-2). Western's proposed switching station and associated transmission line would be located within the ACEC, but within ½ mile

of a federally designated highway that allows development of facilities per the BLM RMP (1998). The ACEC is managed by the BLM to protect critical habitat of the desert tortoise (Figure 3.8-2). For a discussion of potential impacts on desert tortoise see Section 4.4, Biological Resources Impacts.

Six designated wilderness areas are located relatively close to the project area: Ireteba Peaks Wilderness (approximately 6 miles northeast), Nellis Wash Wilderness (approximately 5 miles east), Spirit Mountain Wilderness (approximately 8 miles southeast), and Bridge Canyon Wilderness (approximately 12 miles southeast). The Wee Thump Joshua Tree Wilderness (approximately 8 miles west) and the South McCullough Wilderness (approximately 12 miles northwest) are located on the western boundaries of the Piute-Eldorado Valley.

SMAs occur on adjacent NPS-administered lands—the Lake Mead NRA, namely, the Nellis Wash Wilderness, Ireteba Peaks Wilderness, and Spirit Mountain Wilderness. Instruction Memorandum 2011-061, Solar and Wind Energy Applications – Pre-Application and Screening (IM 2011-061 Solar and Wind Energy Applications) provides direction on wind energy development project preapplication and screening criteria for public lands of national interest and other specially designated areas that protect wildlife, visual, cultural, historic or paleontological resource values. Although the NPS does not have a project-related decision or approval to make, as a cooperating agency in this NEPA effort, the NPS has participated in discussions, site visits, and preliminary resource investigations. Through these efforts, the NPS has assisted the BLM in identification of potential environmental and siting constraints that would result in the fewest possible resource conflicts and the greatest likelihood of success in the permitting process.

#### 3.8.2.8 Exchange Areas

Under the federal Recreation and Public Purposes Act, the BLM issues leases and patents of public land to governmental and nonprofit entities for public purposes such as parks, building sites, schools, and landfills. No exchange areas were identified in the Proposed Project area.

#### 3.8.2.9 Disposal Lands

The Las Vegas RMP provides for disposal of public land within Clark County, with priority to the Santini-Burton Act area. The total number of acres identified for disposal, which are divided into close but separate isolated parcels and located adjacent to the northern and southern boundaries of Searchlight is 1,944 acres (Figure 3.8-3). No turbines would be located on the disposal lands, although one access road would traverse a small portion the southernmost land disposal area from Highway 95 northeast to the project boundary.

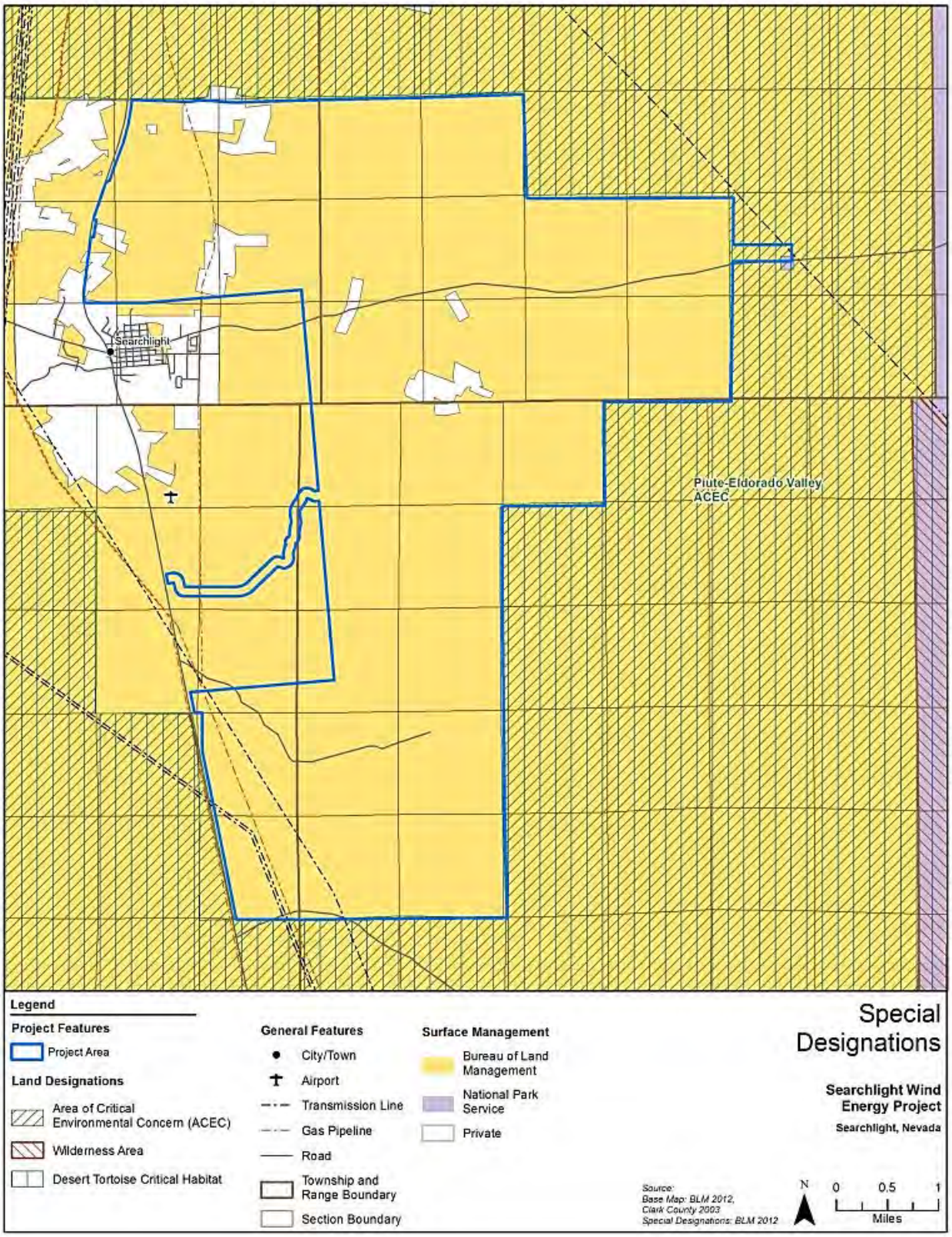


**Figure 3.8-2. Special Designations Areas within the Proposed Project Vicinity**

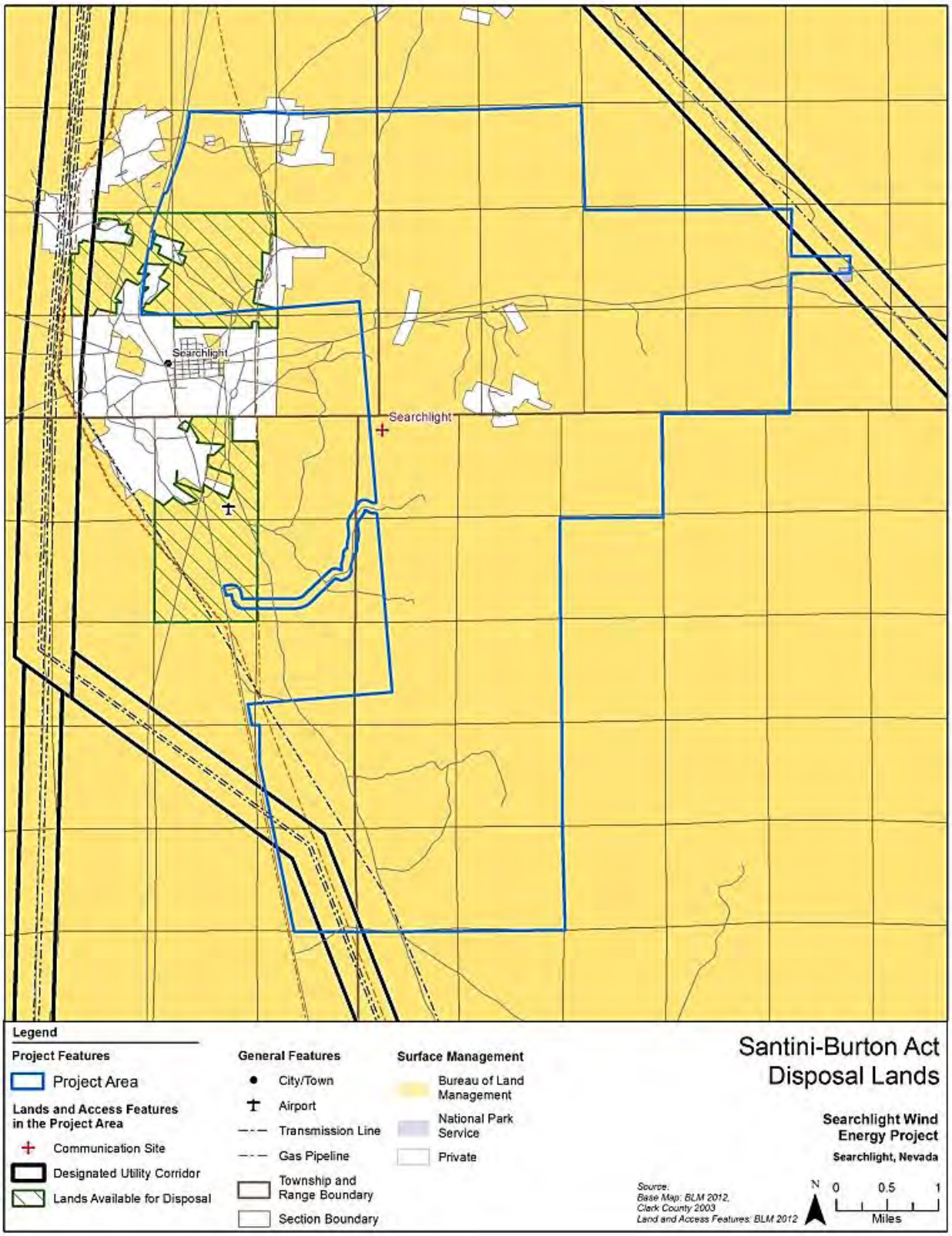


**Figure 3.8-3. Disposal Lands within the Proposed Project Vicinity**

### Airports

The airport closest to the Proposed Project area is the Searchlight Airport, which is located on BLM-administered lands approximately 2 miles south of Searchlight. Originally built by the U.S. Air Force in the early 1950s as an emergency alternate paved airstrip for Nellis Air Force Base, the airport was operated by Clark County Department of Aviation until 2006. This 179-acre, public-use airport has one approximately 5,040-foot-long asphalt runway. It offers no services and is uncontrolled, unmanned, and unlighted. Aircraft operations at the airport consist of approximately 25 flight operations per month, with 100 percent general aviation usage (AirNav 2011). The Searchlight Airport is designated by the FAA as a 1L3 facility and is outside the FAA category B (Speed 91 knots or greater but less than 121 knots) traffic pattern airspace.

Because of the close proximity of the Proposed Project area to the Searchlight Airport, Part 77 of the Federal Aviation Regulations provides that any party proposing to construct an object or structure (e.g., WTGs and MET towers) near a public-use airport must notify the FAA before construction begins. In turn, the FAA is obligated to examine whether the structure would interfere with air navigation facilities and equipment or the navigable airspace. The Applicant is thus required to file a Hazard/No Hazard Determination for each structure closer than 20,000 feet to the airport boundary and for each structure that is 200 feet tall or taller.

A DOD Preliminary Screening was conducted for the Searchlight Airport. This screening tool provides developers with information regarding potential impacts to long-range and weather radars, military training routes, and special airspace prior to OE/AAA filing. This review indicates that there are no likely impacts to military airspace from the proposed action.

# 3.9 Visual Resources

This section identifies existing visual resources within and adjacent to the Proposed Project site that could be affected by construction, O&M, and decommissioning of the Proposed Project and discusses applicable regulations. The baseline visual setting was developed based on the BLM guidelines for visual resource management (VRM), with input from agencies and members of the public during the scoping process. The methodology used for this visual analysis is based on the BLM's *Visual Resource Inventory Handbook* and *Visual Resource Contrast Rating* handbooks (BLM manuals H-8410 and H-8431-1, 1980).

## 3.9.1 Region of Influence

The ROI was defined as the area wherein potential visual effect from construction, O&M, and decommissioning of the Proposed Project may be observed. A viewshed analysis was prepared for the Proposed Project. The analysis consists of a digital elevation model (DEM) that accounts for topography, WTGs height (427 feet), and viewer height (approximately 6 feet). The output of this analysis illustrates areas within 50 miles from which viewers might have clear line-of-sight to project features (Figure 3.9-1). The radius of 50 miles was chosen to ensure that potentially sensitive viewpoints were included in the viewshed analysis.

## 3.9.2 Methodology

NEPA requires that all actions sponsored, funded, permitted, or approved by federal agencies undergo planning to ensure that environmental considerations such as impacts related to aesthetics and visual quality are given due weight in project decision making (42 USC Section 4231). NEPA Section 101(b)(2) states that it is the "continuous responsibility" of the federal government to "use all practicable means" to "assure for all American's safe, healthful, productive, and aesthetically and culturally pleasing surroundings". Additionally, the FLMPA requires the BLM to protect the scenic quality on public lands (43 USC 1701). To comply with these requirements, the BLM has developed the VRM process. The BLM's VRM system provides the outline for describing visual resources and establishing appropriate management goals. Additionally, the VRM system guides the visual impact assessment of the Proposed Project and determines whether such a project would conflict with established management goals. The VRM describes the visual resource management goals associated with the project area; the VRM classes were established as part of the BLM planning process and take into consideration, among other factors, the visual resources inventory.

The analysis of impacts to visual resources is included in Section 4.9 of this document. This analysis involves measuring the degree of contrast that would be introduced by the project from Key Observation Points (KOPs). These KOPs are introduced and described below in Section 3.9.4.

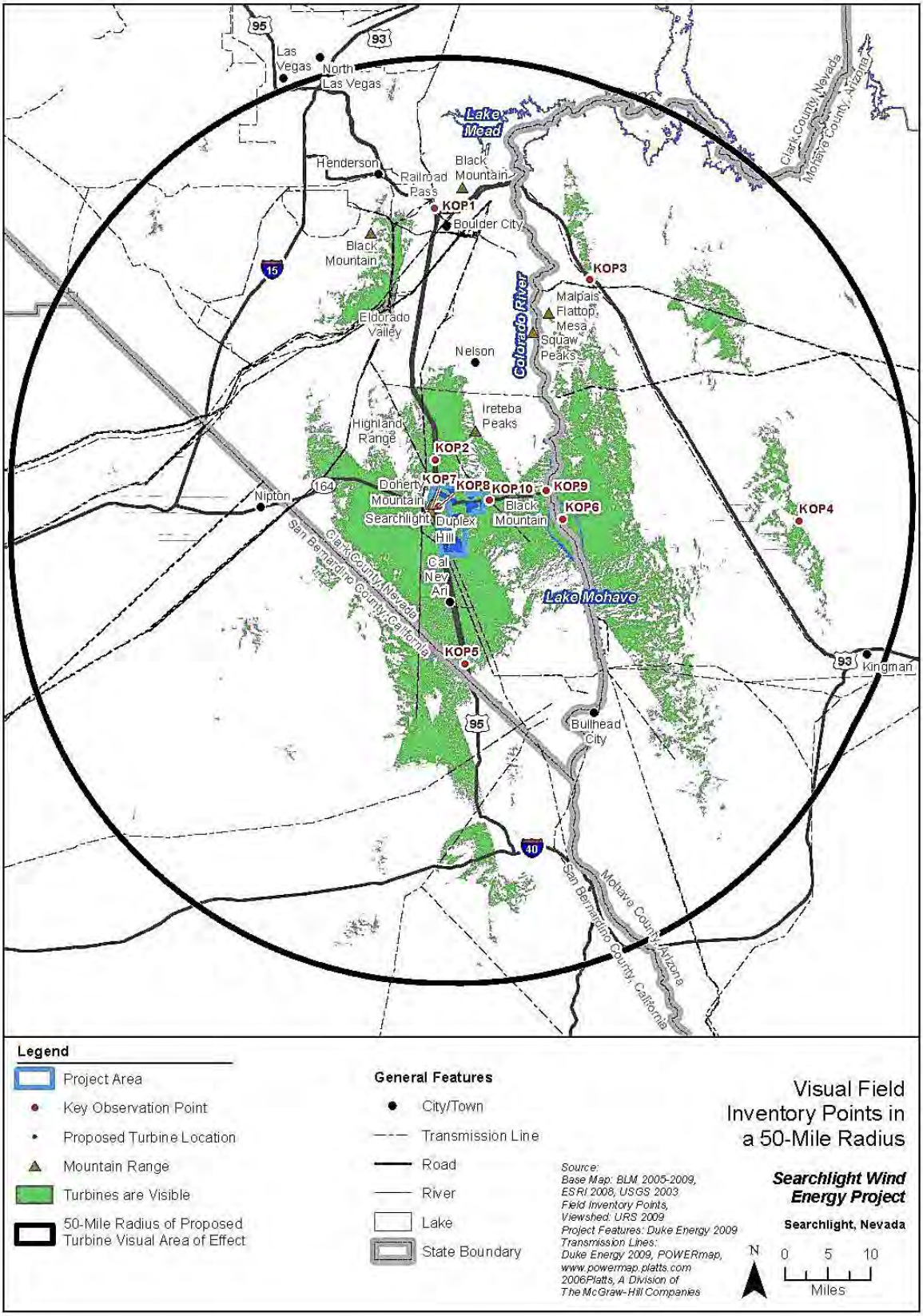


**Figure 3.9-1. Areas from which the Proposed Project would be visible within 50 miles**

## 3.9.3 Visual Resources Management Classes

Because the FLMPA requires the BLM to protect the scenic quality on public lands (43 USC 1701), the BLM has developed a process that identifies the visual resources and set objectives for managing those resources. To accomplish this, the BLM conducts an inventory that evaluates visual resources on all BLM-managed lands, and subsequently lands are assigned a VRM classification. This information is included in the Las Vegas RMP. The VRM classifications are associated with an allowable degree of change that guides the BLM on land management decisions. For example, Class I resources are the most valuable and are afforded the most amount of protection (i.e., the level of change to the characteristic landscape should be very low and must not attract attention), whereas Class IV provides for the most modification to the existing landscape.

The project area is located on BLM-administered land mostly designated as VRM Class III in the Las Vegas RMP (BLM 1998). VRM classes for the project site and adjacent lands are depicted in Figure 3.9-2. Within the project area, a small area in the southeast and northeast are designated as VRM Class II land. The BLM objectives of the Class II and Class III ratings are described below:

- Class II Objective. The objective of this VRM class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
- Class III Objective. The objective of this VRM class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

Some of the land in the Proposed Project vicinity is not managed by the BLM, such as private land in Searchlight or NPS land west of the project area. On Figure 3.9-2 these areas are depicted as white, because this land does not have established VRM Classes. For this evaluation, the goals associated with BLM's VRM classifications were applied to adjacent non-BLM-managed lands to maintain consistency and to standardize the analysis. For example, impacts on private land in Searchlight, which is surrounded by VRM Class III land, are evaluated using the goals associated with VRM Class III.

## 3.9.4 Existing Environment

### 3.9.4.1 Visual Character

Visual or aesthetic resources are the natural and built features of the landscape that contribute to the public's experience and appreciation of the environment. Visual resources or aesthetic impacts are generally defined in terms of a facility's physical characteristics and potential visibility, and the extent to which the facility's presence would change the perceived visual character and quality of the environment in which it would be located. To provide a basis for assessing the Proposed Project's potential effects on the visual resources of the Proposed Project area and the surrounding area, this section documents the existing visual conditions in the area and analyzes the existing landscape for its basic elements of form, line, color, and texture.

**Figure 3.9-2. Visual Resource Management Classes near the Proposed Project Area**

#### 3.9.4.2 Landscape Characteristics

According to the USGS data, the project area is located in the Basin and Range Province, which is common throughout much of the southwestern U.S. including Nevada. Vast flat desert valleys surrounded by high fault-block mountains characterize this province. Many high mountain ranges surrounding the project area include the Black Mountains, Newberry Mountains, New York Mountains, and Eldorado Mountains as well as other smaller ranges. The landscape is panoramic, and expansive vistas of distant mountains are common. From the lower elevations and inferior viewpoints, mountainous features appear massive and steep due to perspective. These features tend to dominate the horizontal and shallow diagonal lines of the horizon, often creating silhouettes.

#### 3.9.4.3 Vegetation

Creosote bush forms the dominant vegetation matrix, particularly at the lower elevations. The Proposed Project area also includes white bursage, cacti, yucca, ephedra, salt brush, and Indian rice grass (Kuchler 1964). These low-statured and regularly spaced shrubs are medium to coarsely textured and display muted hues of olive green and browns across the alluvial plains and rugged terrain of the project area. Trees and shrubs (i.e., Mojave yucca and Joshua trees) intermingle with the sagebrush at higher elevations, thus increasing color and texture contrasts compared to the monotone flats at lower elevations adjacent to Lake Mohave. Expansive vistas are common along the upper elevations, where the proportions of features at lower elevations are diminished due to viewing angle and orientation (Kuchler 1964).

#### 3.9.4.4 Development

The Proposed Project is located directly east of Searchlight, Nevada. Searchlight is a small rural town with a population of approximately 500 residences, consisting of mostly retirees, miners, ranchers, artists, and small business owners (Nevada Commission on Tourism 2011). Amenities in the Searchlight include a community center, senior citizens center, post office, elementary school, the Searchlight Nugget Casino, Terrible's Casino, and some small shops. Searchlight also boasts several historic features including the Mining Park Entrance to Searchlight, Searchlight Historical Museum founded in 1898, and a historic hospital building. Several major roadways intersect Searchlight including U.S. 95, SR 164, and Cottonwood Cove Road. U.S. 95 is the major thoroughfare through between Las Vegas, California, and Arizona. SR 164 connects U.S. 95 with Interstate 15. Cottonwood Cove provides access to Lake Mead NRA.

In addition to Searchlight, other small communities in the Eldorado Valley include Cal-Nev-Ari, approximately 6.5 miles south of the project site and Boulder City, approximately 30 miles to the north.

The remainder of the Project area is largely undeveloped, but has an extensive network of dirt roads utilized by OHVs and outlying residences of the north and west sides of the project area. These roads have exposed soil and left linear scars on the landscape. Additionally, numerous mining areas are located within the project area, some of which have tailings and might draw the attention of a casual observer. The most common structures on the landscape are linear and horizontal. These include paved and dirt roads and the Davis-Mead electrical transmission line.

Additionally, three communication towers sites are located in the project vicinity including U.S. Coast Guard LORAN Station, approximately 10 miles southeast; Christmas Tree Pass Communication Site, which has multiple tower sites approximately 15 miles southeast; and two communication sites in the mountains approximately 10 miles west of the project area; and Nelson Communication approximately 15 miles north or the project area.

#### 3.9.4.5 Lake Mead Recreational Area

Lake Mohave, which is part of the NPS-administered Lake Mead NRA, lies over 6 miles east of the project area. Lake Mohave forms a distinct water feature visible from the eastern extremities of the project area and includes recreational structures (such as picnic sites, marina, boat ramps, and a hotel), which are concentrated in the Cottonwood Cove area of Lake Mead NRA. The community of Searchlight is adjacent to the project area to the west. According to the NPS, Cottonwood Cove receives over 300,000 visitors annual (unpublished data provided by NPS).

#### 3.9.4.6 Scenic Highways

No designated scenic vistas or state-designated scenic highways are within or within view of the Proposed Project area (http://www.nevadadot.com/Traveler_Info/Scenic_Byways/Nevada_Scenic_Byways.aspx).

#### 3.9.4.7 Dark Skies

The BLM does not have a formal dark skies policy; however, the BLM recognizes that dark skies are a valuable resource especially within rural Nevada. Because the project area is largely undeveloped, nighttime is darker than more metropolitan areas. Small light sources are dappled throughout the valley including those from radio towers on surrounding hills; the Cal-Nev-Ari Airport; Cottonwood Cove marinas and boats; and private residences near and within the town of Searchlight.

#### 3.9.4.8 Selection of KOPs

The BLM methodology for assessing impacts on visual resources (BLM Manual 8431) analyzes the level of contrast that would be introduced by the Proposed Project through a comparison of existing and simulated visual conditions from select KOPs. In the areas where the project could be visible, KOPs were selected for the visual analysis. KOPs represent both typical and critical viewpoints taking into account distance, angle of observation, number/types of viewers, length of time the project is in view, spatial relationship, relative project size, season of use, and atmospheric and light conditions. To establish the visual resource baseline for the Proposed Project, the views from all the KOPs are described below in detail. Views from KOPs are described in terms of distance zones identified by the BLM and are based on perception thresholds. Perception of changes in form, line, color, and texture varies with distance. Landscape elements tend to become less obvious and less detailed at greater viewing distances, and the elements of form and line become more dominant than color or texture as distance from the observer increases. Additionally, the views from KOPs are described in terms of scenic quality evaluation from low to high.

In addition to the KOPs selected based on the viewshed analysis, three additional KOPs were selected due to concerns raised during coordination between the BLM and Native American community. These KOPs represent views from the Christmas Tree Pass Communication Site in the Newberry Mountains (to replicate the view of the project area from Spirit Mountain, a sacred peak and registered Traditional Cultural Property [Sprowl 2010]), a view from the historic Searchlight Hospital toward the east, and a view from Cal-Nev-Ari toward the project area.

Additionally, the NPS has concerns about the project features on views from the Cottonwood Cove entrance (fee) station to Lake Mead NRA western boundary. To address these concerns, three more KOPs were added, including two from the Cottonwood Cove entrance station and one from Cottonwood Cove Road milepost (MP) 4 toward the project area.

Table 3.9-1 presents a list of the KOPs, the direction of view to the proposed project area, and the distance to the proposed project area.

**Table 3.9-1. Location of KOPs**

| KOP# | KOP | Direction of View to the Proposed Project Area | Distance to the Project Area |
|---|---|---|---|
| 1 | Railroad Pass Hotel/Casino | Southeast | 36 miles |
| 2 | U.S. 95 approximately 3 miles north of the project area | South | 3 miles |
| 3 | U.S. 93 near Boulder City | Southwest | 28 miles |
| 4 | Windy Point Camping Area | West | 35 miles |
| 5 | View from Palm Gardens at the junction of SR 163 and U.S. 95 | North | 12 miles |
| 6 | Lake Mohave | West | 10 miles |
| 7 | Searchlight Nugget Casino | Southeast | 2 miles |
| 8 | Searchlight residential area | East | 2 miles |
| 9 | The new dock and pier facility on Lake Mohave | West | 10 miles |
| 10 | Cottonwood Cove Road | Southwest | 1 mile |
| 11 | Communications towers close to Spirit Mountain | Northwest | 11 miles |
| 12 | U.S. 95 south of Searchlight | North | 5 miles |
| 13 | Historic Searchlight hospital | East | 2 miles |
| 14 | Cottonwood Cove Road | West | 1 mile |
| 15 | Cottonwood Cove Road | South | 0.1 mile |
| 16 | Cottonwood Cove Road | North | 0.5 mile |
| 17 | Cottonwood Cove Road | East | 0.1 mile |

### KOP 1 – View from Railroad Pass Hotel/Casino Looking Southwest

KOP 1 represents views for motorists at the Railroad Pass Hotel and Casino's parking lot or traveling south on U.S. Interstate 93 (US-93) (Figure 3.9-3). From this vantage point, there are open panoramic and partially framed views from Railroad Pass flanked by the Black Mountains across the broad Eldorado Valley, with mountainous terrain such as McCullough Mountain, Knob Hill, and the Ireteba Peaks in the background. There are numerous manmade features in the view, including the highway, a high-voltage transmission line, industrial facilities in the foreground, and the Nevada Solar One Project in the background, which resembles a body of water from this distance. Vegetation is low growing and appears scattered throughout the undisturbed landscape. Open panoramic and partially framed views of rolling hills, dramatic mountainous terrain, and the broad, almost flat Eldorado Valley, offer low to moderate scenic quality due to the visible level of manmade disturbance within the view, which also disturbs the variation of form, line, color, and texture of the natural landscape elements.

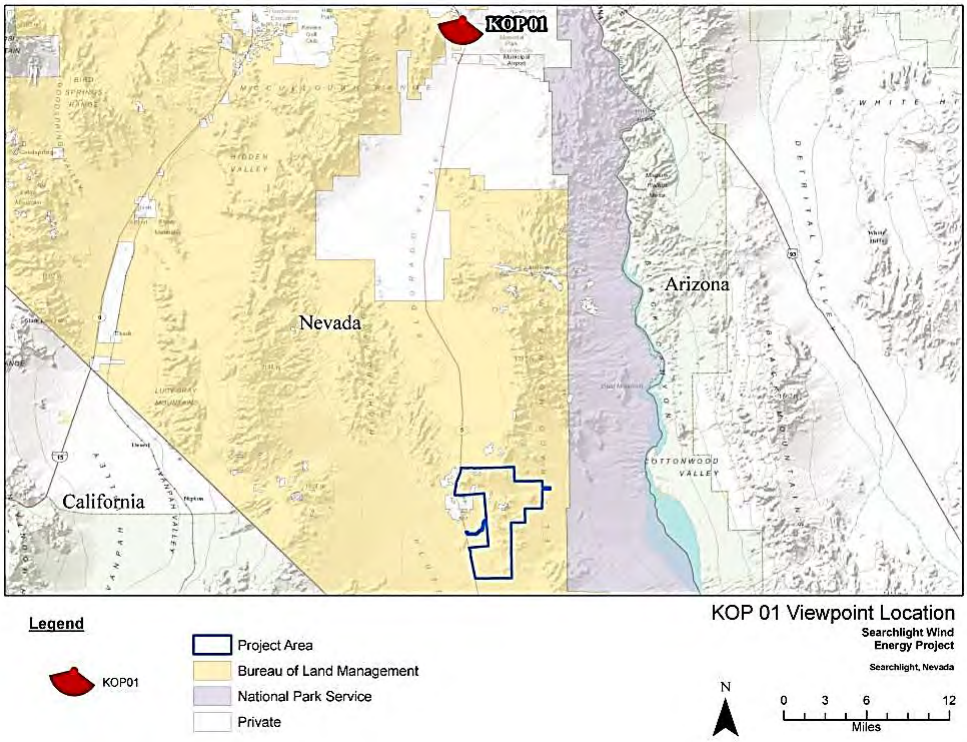

**Figure 3.9-3. KOP 1 – View from Railroad Pass Hotel/Casino Looking Southwest**

### KOP 2 – View from US-95 Looking Southwest

KOP 2 represents views of motorists traveling south on US-95 approximately 3.5 miles north of Searchlight (Figure 3.9-4). The open panoramic views across the Eldorado Valley toward Doherty Mountain, Duplex Hill, and the Highland Range in the middle ground-to-background distance zone exhibit moderate levels of variation in form, line, color, and texture. There are scattered manmade features in the view, not including the highway, such as a high-voltage transmission line and industrial/residential structures in the background, which are not easily identified from this distance. Views of some distinct landscape features interrupted by surrounding manmade alterations are of moderate scenic quality.

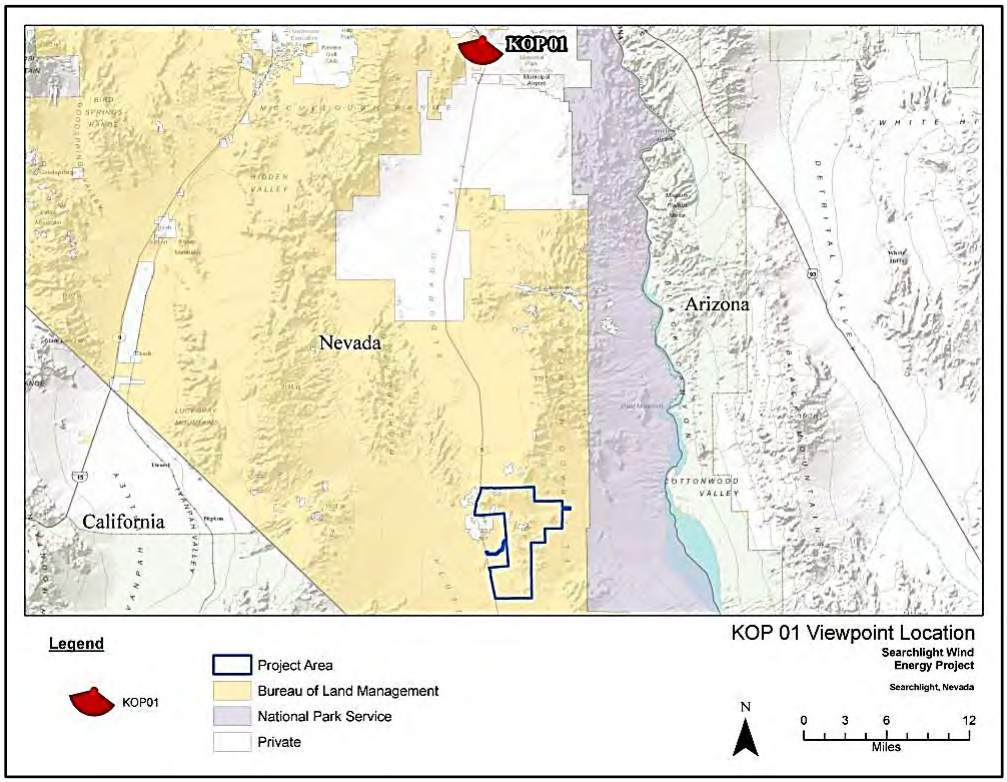

**Figure 3.9-4. KOP 2 – View from US-95 Looking Southwest**

### KOP 3 – US-93 Hillside Curve

KOP 3 represents the views of motorists traveling south on US-93 adjacent to the Colorado River (Figure 3.9-5). From this vantage point, there are open panoramic views from US-93 to the highly visible Malpais Flattop Mesa and the Squaw Peaks, which flank the Colorado River in middle ground and background distance zones. The Colorado River is not visible from this KOP because of the terrain. Mount Duncan is also visible in the distant background. The only manmade features in the view other than the highway itself are numerous high-voltage transmission lines, which connect to Hoover Dam, located approximately 14 miles northwest from this KOP. The steel lattice transmission structures are much less visible than the wood H-frame designs due to back dropping provided by the terrain. Views are considered to be of high scenic quality due to the relative complexity of variation in form, line, color, and texture and relative lack of manmade alterations.

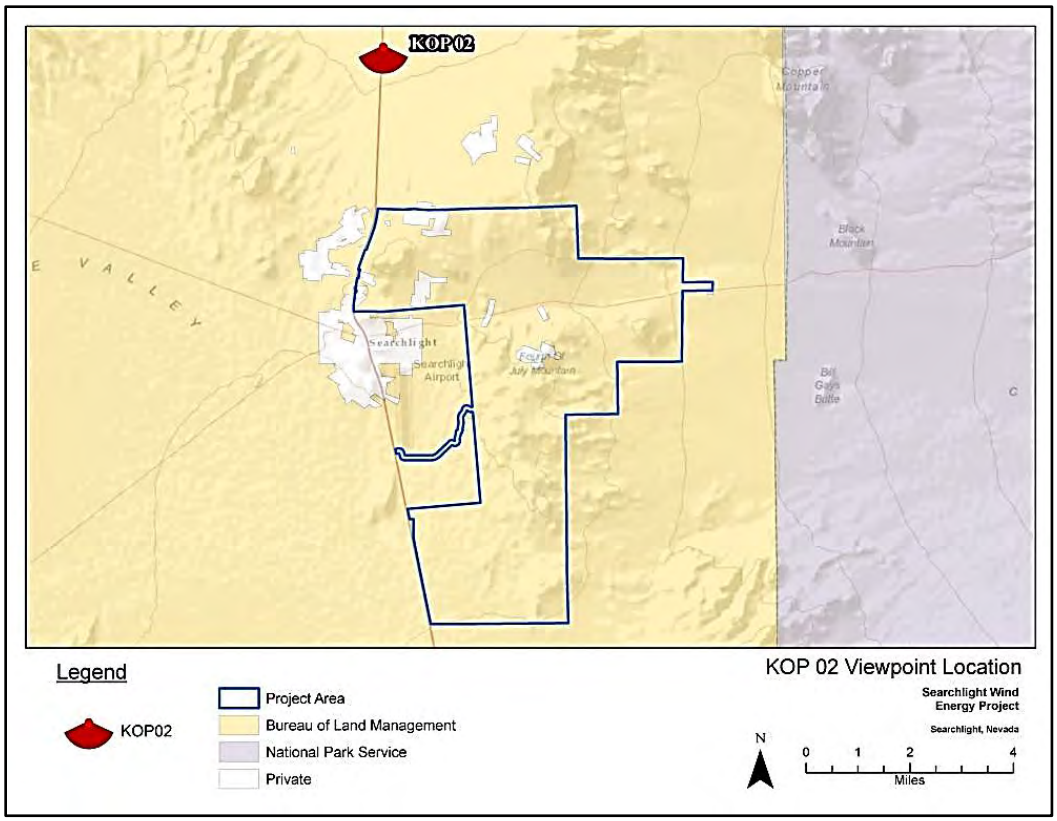

**Figure 3.9-5. KOP 3 – View from US-93 Hillside Curve**

### KOP 4 – Windy Point Campground

KOP 4 represents the views of recreational campers at the BLM's Windy Point campsite in the Cerbat Mountains adjacent to the town of Chloride, Arizona. From this vantage point, there are open panoramic views across the Golden Valley to Sugarloaf Mountain and Twin Mills on the Arizona side of the Colorado River (Figure 3.9-6). Views of mountainous terrain in Nevada, such as Spirit Mountain, Fourth of July Mountain, and the Devil's Thumb, are more distant and too far away to determine an accurate location for each peak. Searchlight is more than 36 miles west of this KOP. The only manmade feature in view, other than US-93, is Chloride, approximately 3 miles in the foreground distance zone. There are numerous residences and structures that dot the valley floor below this KOP. Views are considered to be of moderate to high scenic quality due to the relative complexity of variation in form, line, color, and texture and low to moderate landscape contrast, which make the manmade alterations slightly subordinate visual features.

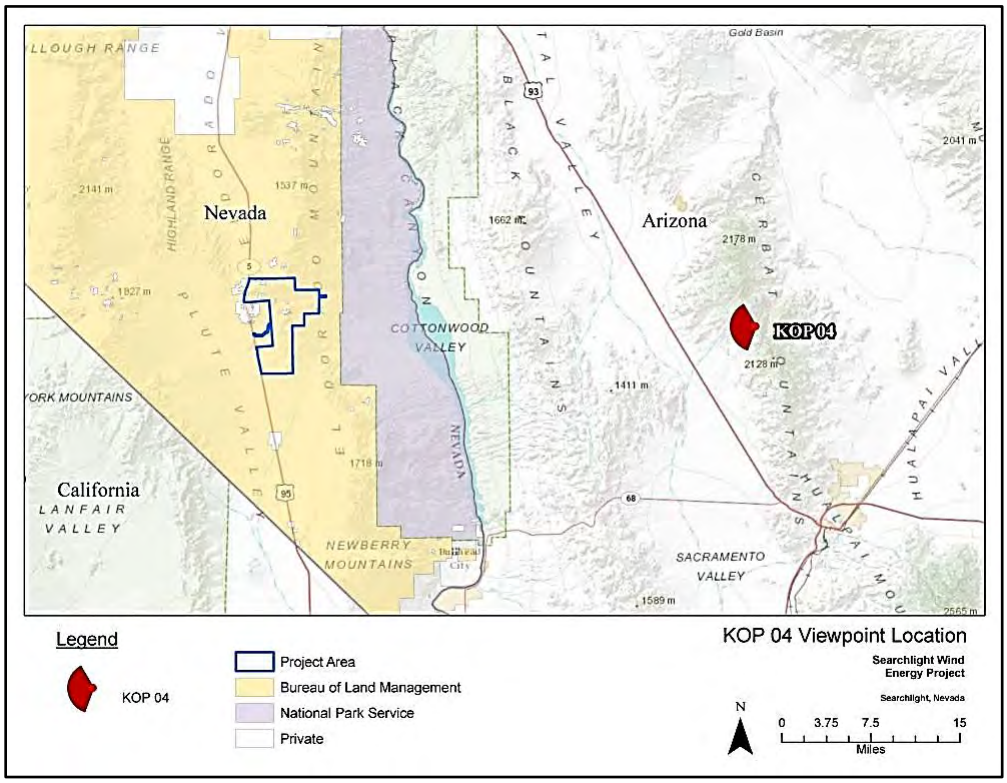

**Figure 3.9-6. KOP 4 – View from Windy Point Campground**

### KOP 5 – Palm Gardens Community (US-95/SR 163 Intersection)

KOP 5 represents the views of residences in the Palm Gardens Community adjacent to the intersection of US-95 and Nevada SR 163 and approximately 1.6 miles north of the Nevada and California state borders and the Chiquita Hills (Figure 3.9-7). From this KOP, there are open panoramic views across the Piute Valley, which is bordered on the west by the Piute Range and on the east by the Newberry Mountains. Searchlight is more than 13 miles northwest of this KOP. The only manmade features in the view, though very subtle, are portions of US-95. Views are considered to be of moderate scenic quality due to the lack of complexity in variations of form, line, color, and texture.

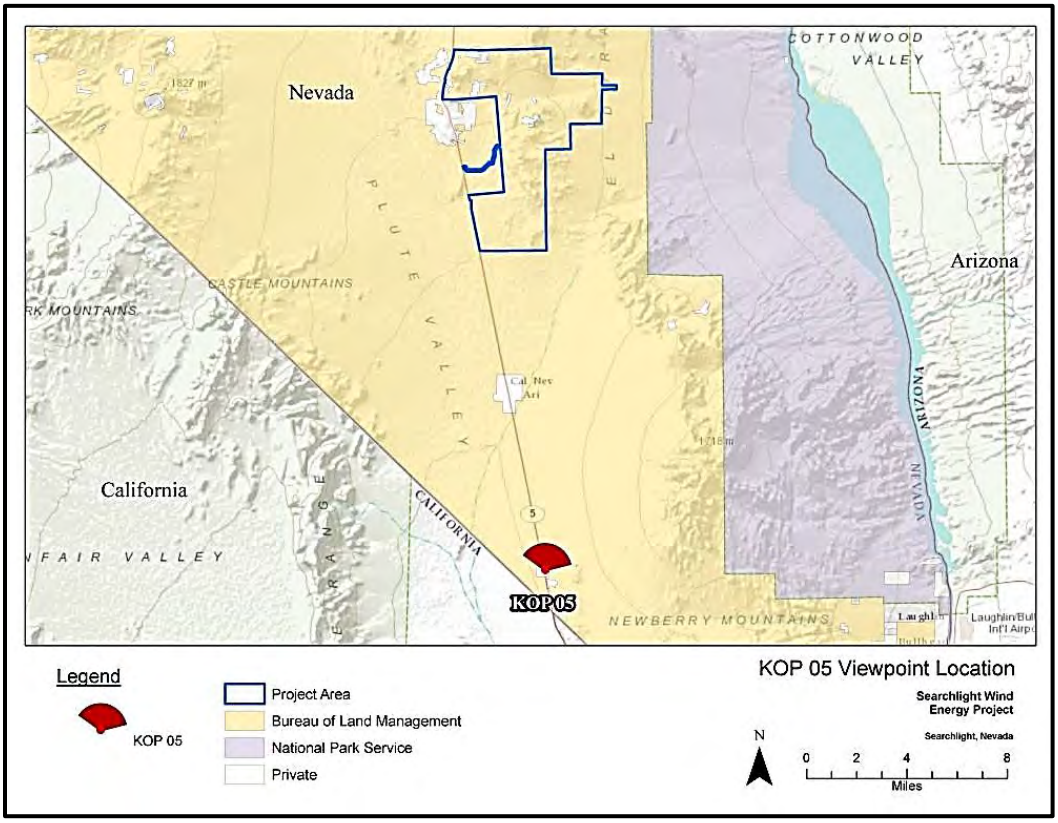

**Figure 3.9-7. KOP 5 – View from Palm Gardens Community (US-95/SR 163 Intersection)**

### KOP 6 – View Across Lake Mohave

KOP 6 represents the views of recreational boaters on Lake Mohave, which is part of the Lake Mead NRA, located approximately 14 miles east of Searchlight (Figure 3.9-8). From this KOP, there are open panoramic views across Lake Mohave to the Cottonwood Valley and farther toward Fourth of July Mountain and the Ireteba Peaks in the background, as well as to Black Mountain and Bill Gays Butte, which are clearly distinguished silhouettes in the middle ground valley. The only visible manmade feature in the view is Cottonwood Cove Road. The station is subtle and not easily distinguished. Open panoramic views of the broad valley rising up from the large waterbody with rolling hills and rugged mountainous terrain and silhouettes offer high scenic quality due to interesting variations of form, line, color, and texture in the region, and a low level of visible manmade disturbance within the view.

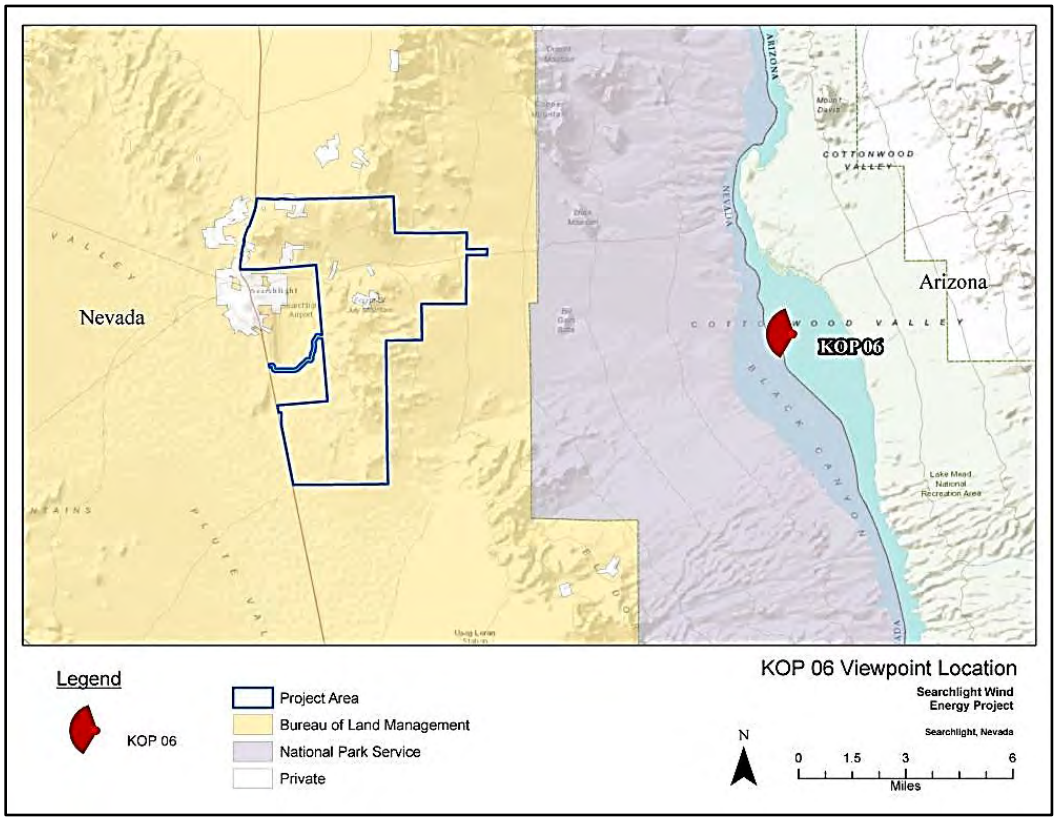

**Figure 3.9-8. KOP 6 – View from Lake Mohave**

### KOP 7 – View from Nugget Casino to the Southeast

KOP 7 represents the views of residents and tourists in the parking lot of the Searchlight Nugget Casino at the intersection of US-95, SR 164, and Cottonwood Cove Road in the heart of Searchlight (Figure 3.9-9). From this KOP, there are partially screened views of the surrounding terrain from structures in Searchlight or the Duplex Hills. The surrounding terrain, which is partially screened by manmade features within the semi-urban interface, can be observed where higher elevation topography is visible in the background. Partially screened views of the rolling hills offer low scenic quality due to the view having little variations of natural form, line, color, and texture and a high level of visible manmade disturbance within the view foreground.

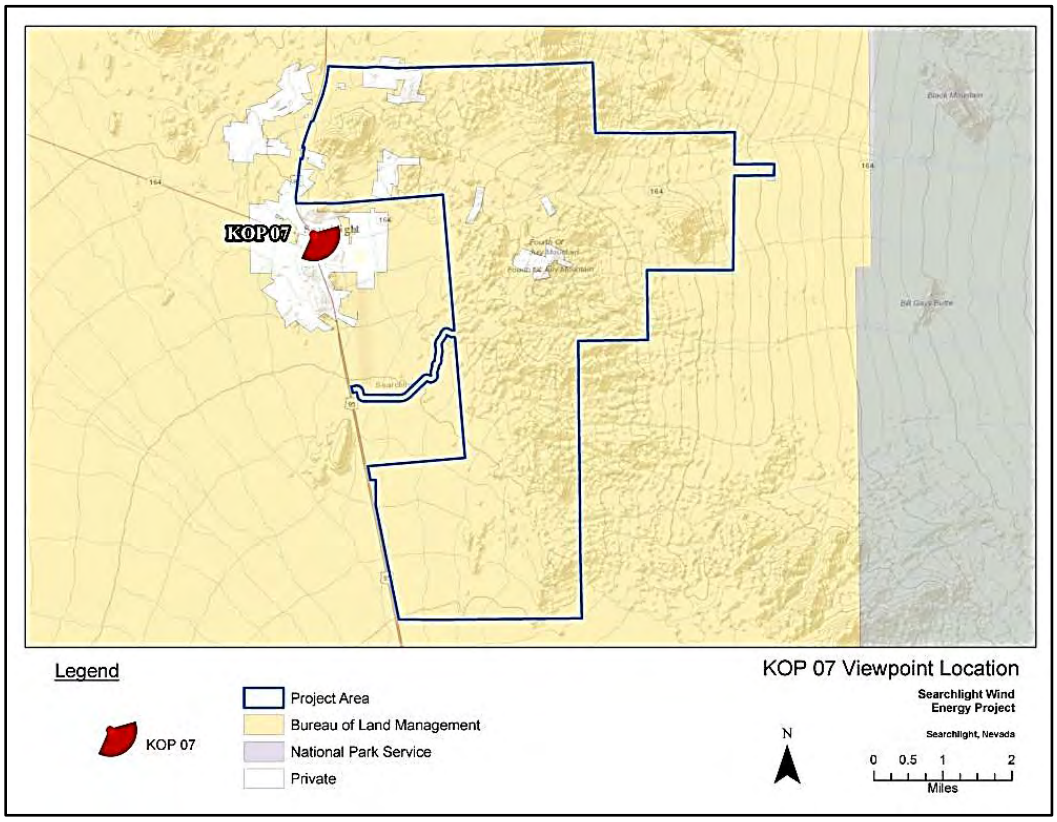

**Figure 3.9-9. KOP 7 – View from Nugget Casino to the Southeast**

### KOP 8 – New Housing Development in Searchlight – Looking South to Southeast

KOP 8 represents the views of residents in a new residential community being developed on the eastern edge of Searchlight (Figure 3.9-10). From this KOP, there is very little screening of the surrounding terrain, with the exception of a privacy wall. This neighborhood is under construction and it can be assumed that when it is complete, more of the natural topography will likely be screened from this view. Open views toward Fourth of July Mountain and the surrounding foothills are partially screened by the visible manmade features, which when developed, may block views of Fourth of July Mountain almost entirely. Partially screened views of the rolling hills offer moderate scenic quality due to the view having variations of natural form, line, color, and texture and a high level of discordant manmade disturbance within the view.

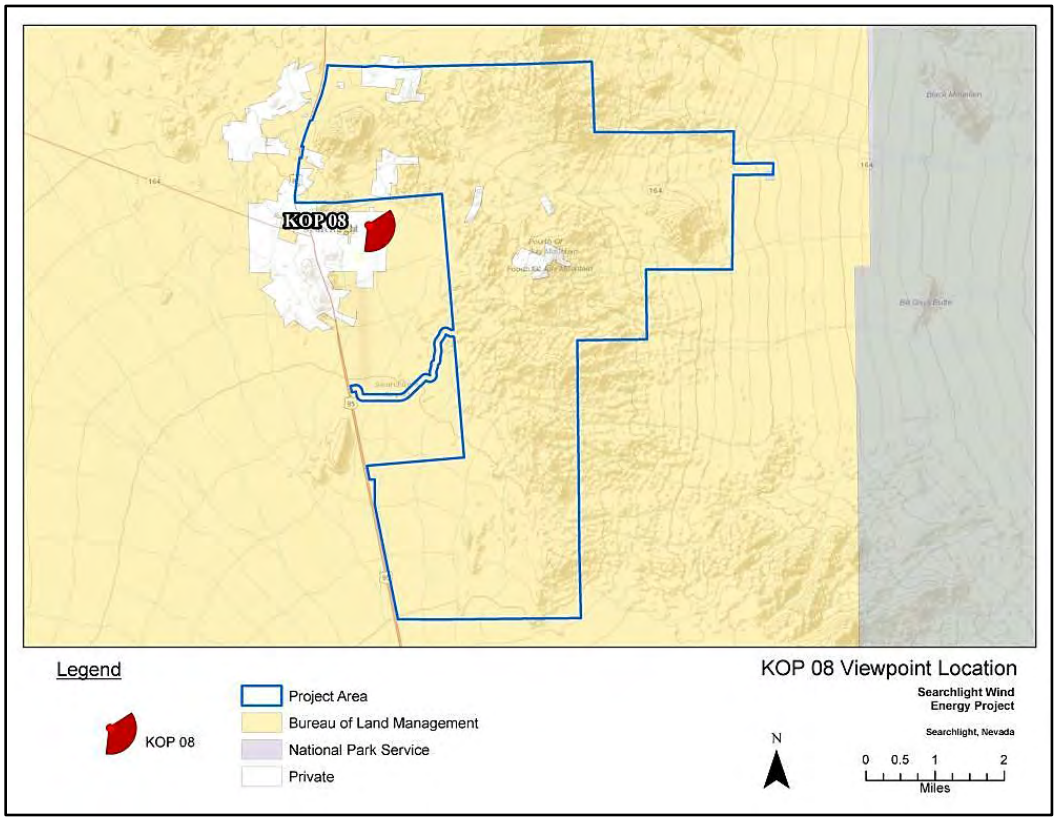

**Figure 3.9-10. KOP 8 – View from New Housing Development in Searchlight – Looking South to Southeast**

### KOP 9 – View from Cottonwood Cove Marina Looking West

KOP 9 represents the views of seasonal residents and recreationalists in the Cottonwood Cove Marina/NRA on Lake Mohave, approximately 10.5 miles east of Searchlight (Figure 3.9-11). From this KOP, there is no screening of the surrounding water or terrain, and open views toward the surrounding foothills and banks rising up from Lake Mohave are developed with visible manmade features (recreation facilities, dock structures, mobile homes, parking). Vegetation is both natural and planted. Open panoramic views of the rolling hills and water offer moderate to high scenic quality due to the view having variations of natural form, line, color, and texture, and a high level of discordant manmade disturbance within the view.

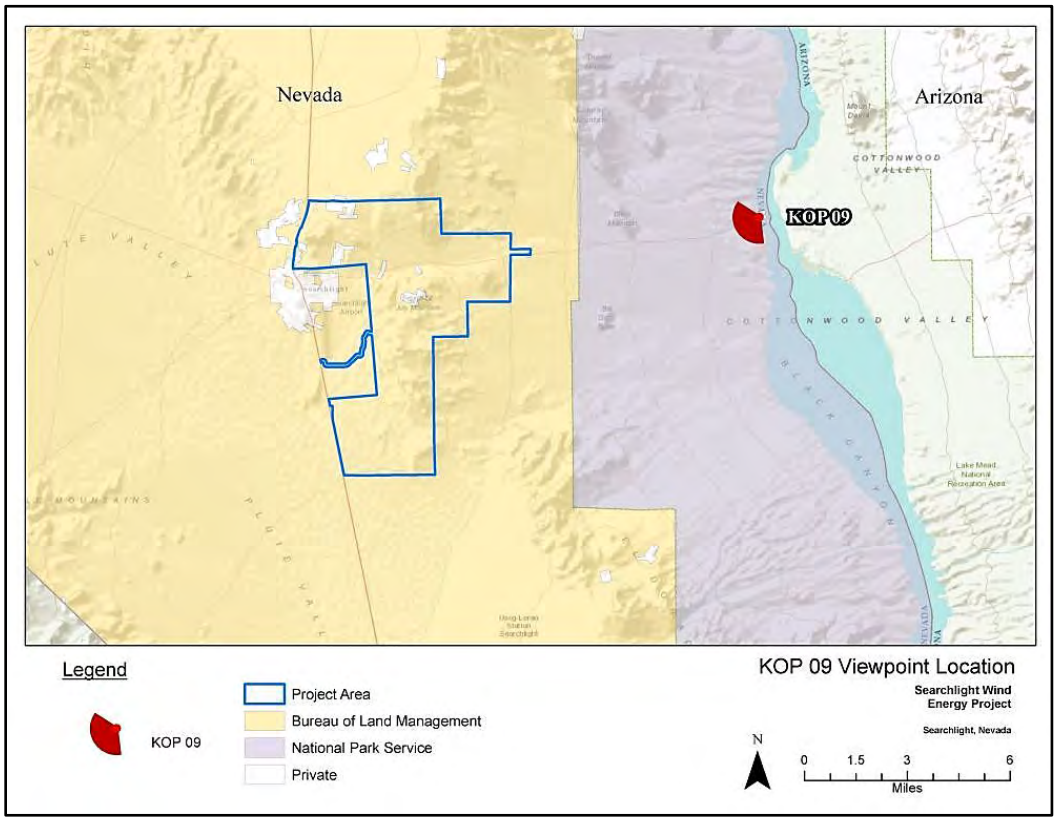

**Figure 3.9-11. KOP 9 – View from Cottonwood Cove Marina Looking West**

### KOP 10 – View of Travelers Exiting the Lake Mead NRA and Lake Mohave on Cottonwood Cove Access Road

KOP 10 represents the views of recreational travelers exiting the Lake Mead NRA and Lake Mohave on Cottonwood Cove Access Road, adjacent to where Western's proposed switching station would be located and where the NPS has developed a new entrance station for the NRA (approximately 6 miles east of Searchlight and 6.5 miles west of Lake Mohave) (Figure 3.9-12). From this KOP, there is no screening of the surrounding terrain, and open views toward the surrounding foothills and mountains (Fourth of July Mountain) are only slightly interrupted by manmade alterations, such as the new entrance station. The entrance station might offer some screening from this KOP; the entrance station is small in scale and subordinate in the overall view. Open panoramic views of the rolling to rugged terrain offer moderate scenic quality due to the view having some variation of natural form, line, color, and texture and a low to moderate level of visible manmade disturbance.

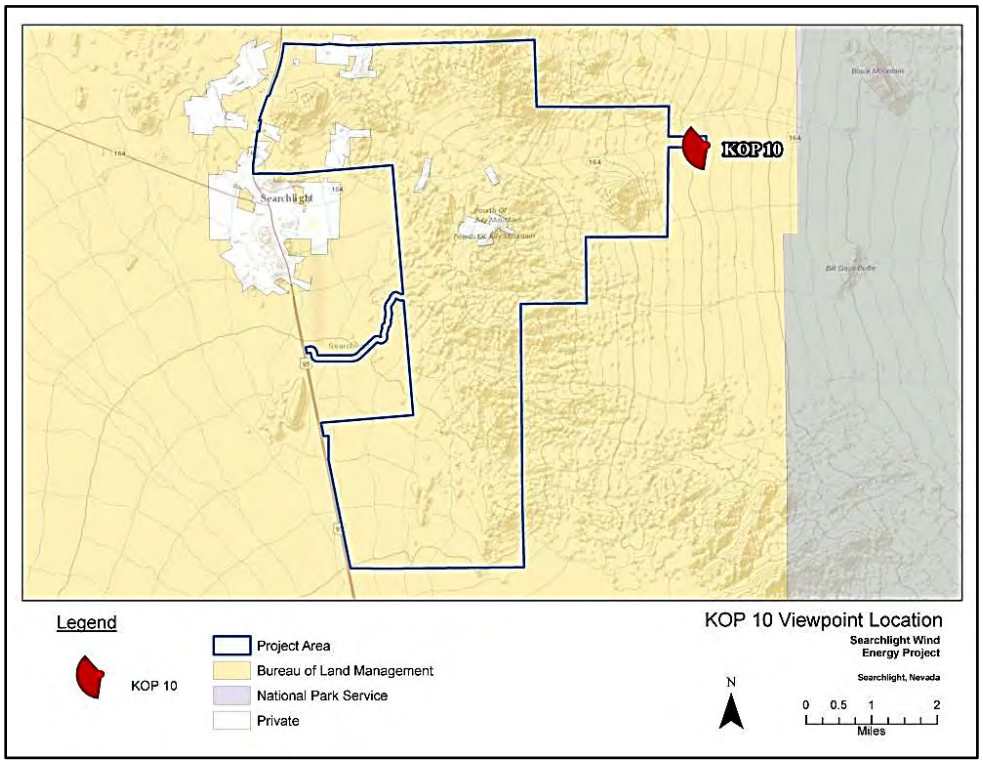

**Figure 3.9-12. KOP 10 – View of Travelers Exiting the Lake Mead NRA and Lake Mohave on Cottonwood Cove Access Road**

### KOP11 – View from Communication Towers near Spirit Mountain

KOP 11 represents the view from communication towers located in Christmas Tree Pass toward the Proposed Project area (Figure 3.9-13). From this KOP, the rugged hills and peaks of the Newberry Mountains obstruct views toward the project area. A small portion of Lake Mohave is visible in the distance. Manmade features visible from this KOP include graded dirt roads, the communication towers, and transmission line towers that are barely visible in the valley bottom. Searchlight and the project area are approximately 17 miles from this KOP when looking across Piute Valley to the north. Views across Piute Valley toward Fourth of July Mountain and the Devil's Thumb are distant and too far away to determine an accurate location for each peak. Partially screened views of the mountainous terrain extending to the valley bottom offer moderate to high scenic quality due to the view having variations of natural form, line, color, and texture and a moderate level of discordant manmade disturbance within the view.

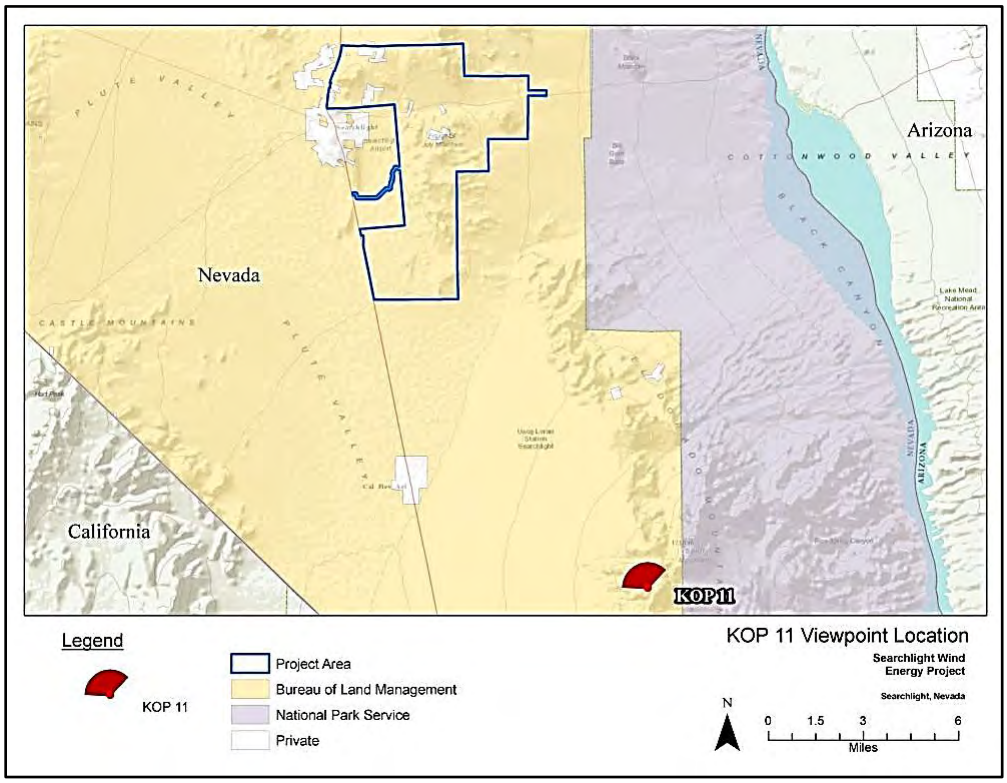

**Figure 3.9-13. KOP 11– View from Communication Towers near Spirit Mountain Looking Northwest**

### KOP 12 – View from Cal-Nev-Ari North toward Searchlight

KOP 12 represents the views of residences in Cal-Nev-Ari adjacent to US-95 and approximately 11 miles south of Searchlight (Figure 3.9-14). From this KOP, there are open panoramic views across the Piute Valley, which is bordered on the west by the Piute Range and on the east by the Newberry Mountains. Manmade features in the view include US-95 and the buildings, fences, and trailer homes that comprise Cal-Nev-Ari. Views are considered to be of moderate scenic quality due to the lack of complexity in variations of form, line, color, and texture and because of a moderate to high level of visible manmade disturbance.

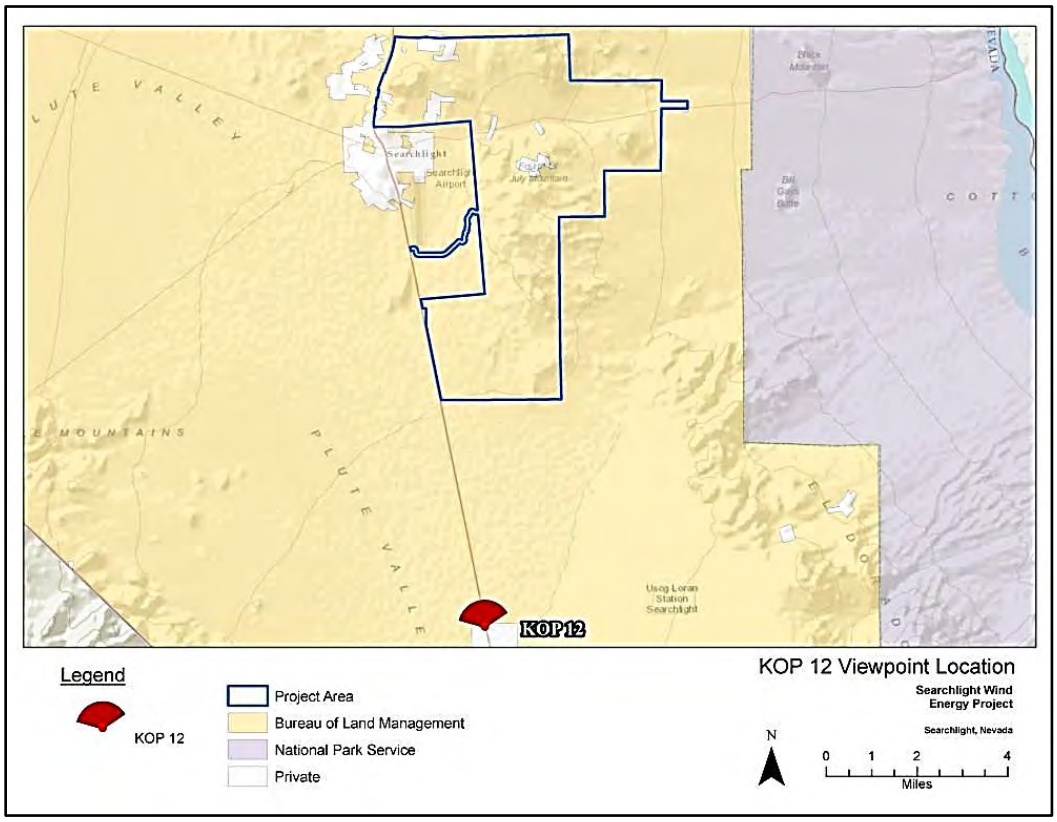

**Figure 3.9-14. KOP 12 – View from Cal-Nev-Ari North toward Searchlight**

### KOP 13 – View from Historic Searchlight Hospital toward the East

KOP 13 represents the view of residents and visitors from the historic Searchlight Hospital toward Lake Mohave and Cottonwood Cove (Figure 3.9-15). Cottonwood Cove is located approximately 14 miles from the KOP to the east. From this KOP, manmade features such as roads, light poles and buildings obscure views toward Lake Mohave. Partially screened views of the rolling hills offer moderate scenic quality due to the view having variations of natural form, line, color, and texture and a high level of discordant manmade disturbance within the view.

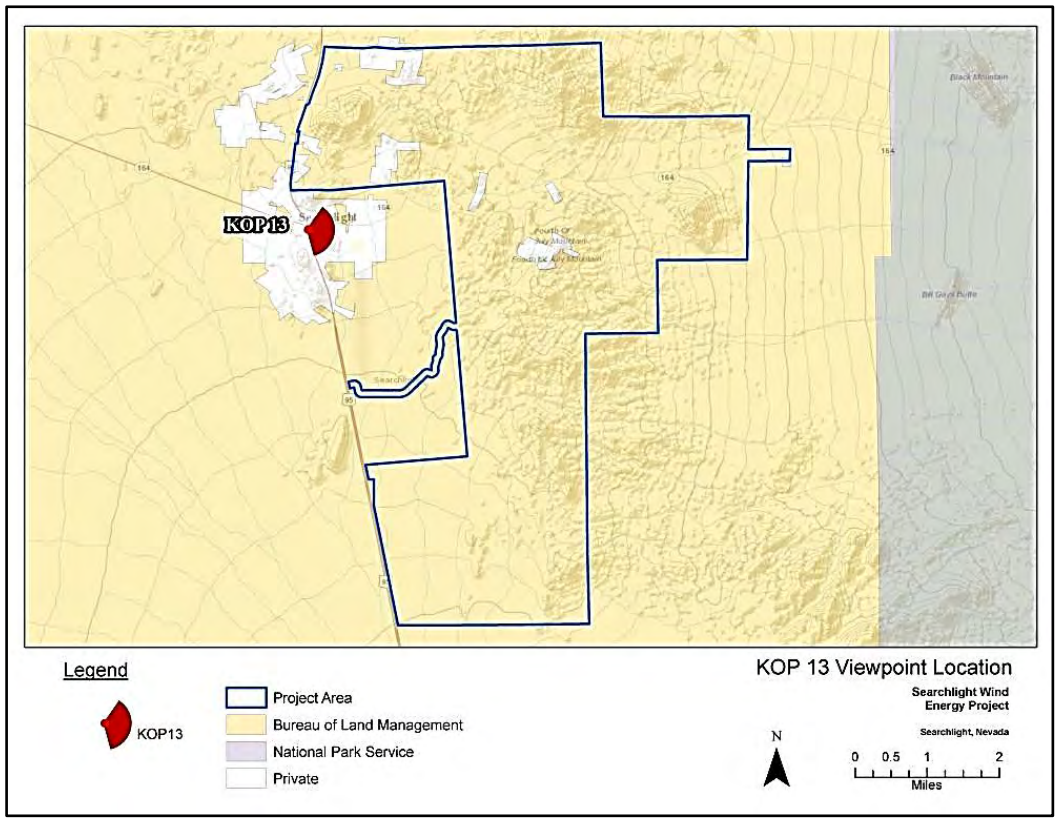

**Figure 3.9-15. KOP 13 – View from Historic Searchlight Hospital toward the East**

### KOP 14 – View from Cottonwood Cove Entrance (Fee) Station Looking West

KOP 14 represents the view of recreationists or travelers heading from Cottonwood Cove to Searchlight west on Cottonwood Cove Road (Figure 3.9-16). From this KOP, views toward the mountain pass are vast and expansive. From this KOP, there is no screening of the surrounding terrain, and open panoramic views of the rolling to rugged terrain offer moderate scenic quality due to the view having some variation of natural form, line, color, and texture and a low level of visible manmade disturbance.

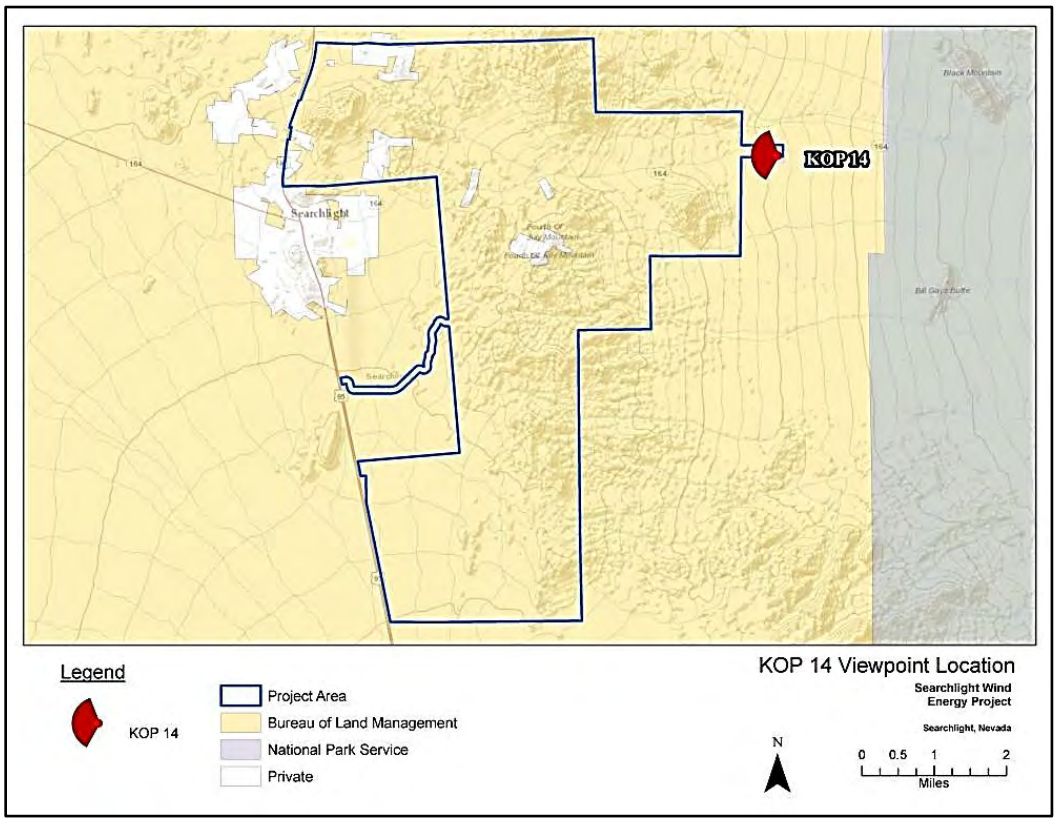

**Figure 3.9-16. KOP-14 – View from Cottonwood Cove Entrance (Fee) Station Looking West**

### KOP 15 – View from Cottonwood Cove Road Looking South, KOP 16 – View from Cottonwood Cove Road Looking North, and KOP 17 – View from Cottonwood Cove Access Road at MP 4 Looking East

KOP 15, KOP 16, and KOP 17 represent the southern, northern, and eastern view (respectively) of recreationists or travelers along Cottonwood Cove Road near the Cottonwood Cove entrance station to Lake Mead NRA (Figure 3.9-17, Figure 3.9-18, and Figure 3.9-19). Since the surrounding landscape is similar for these KOPs, they are summarized together. From these KOPs, views toward the mountain pass are panoramic, with a transmission line being the only manmade disturbance to the south. No screening of the surrounding terrain exists, and views of the rolling-to-rugged terrain offer moderate scenic quality due to the view having some variation of natural form, line, color, and texture and a low level of visible manmade disturbance.

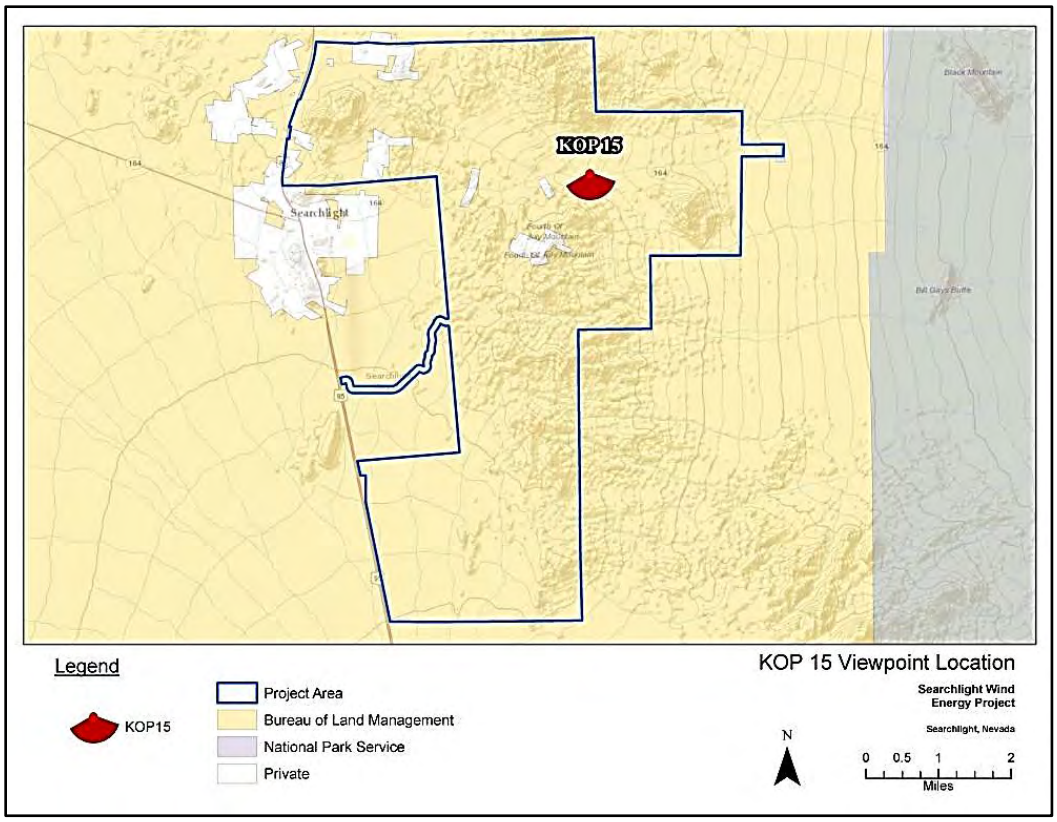

**Figure 3.9-17. KOP 15 – View from Cottonwood Cove Road Looking South**

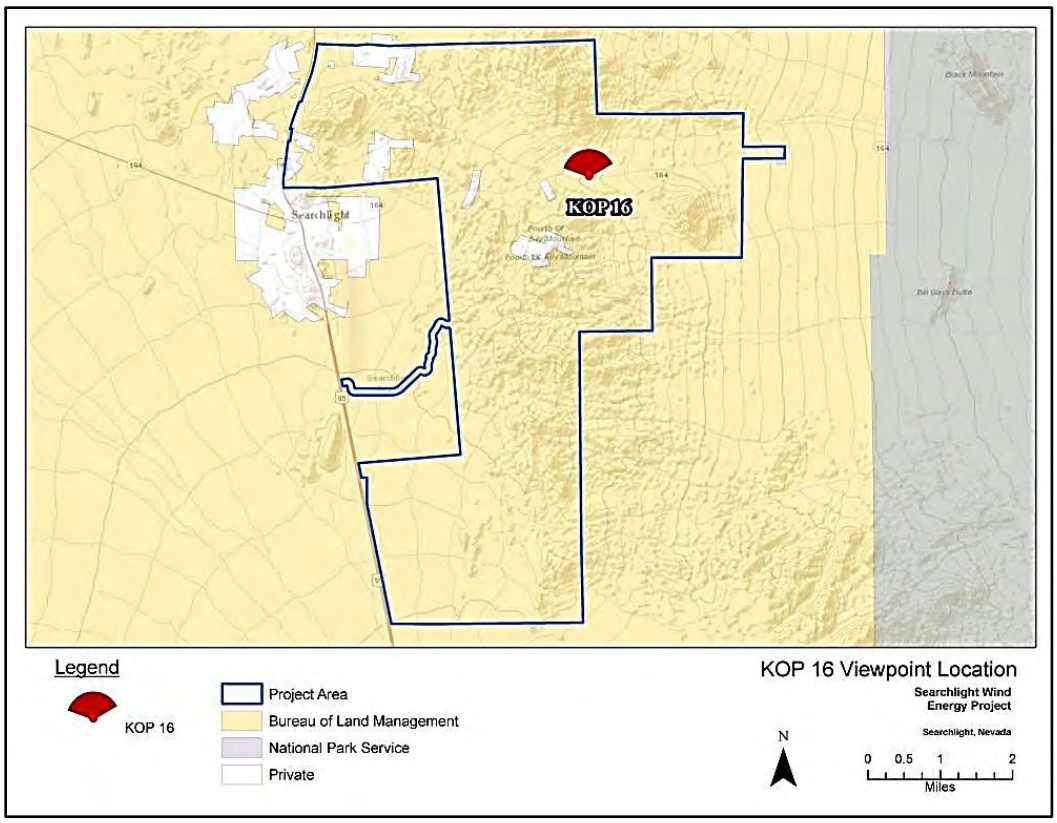

**Figure 3.9-18. KOP 16 – View from Cottonwood Cove Road looking North**

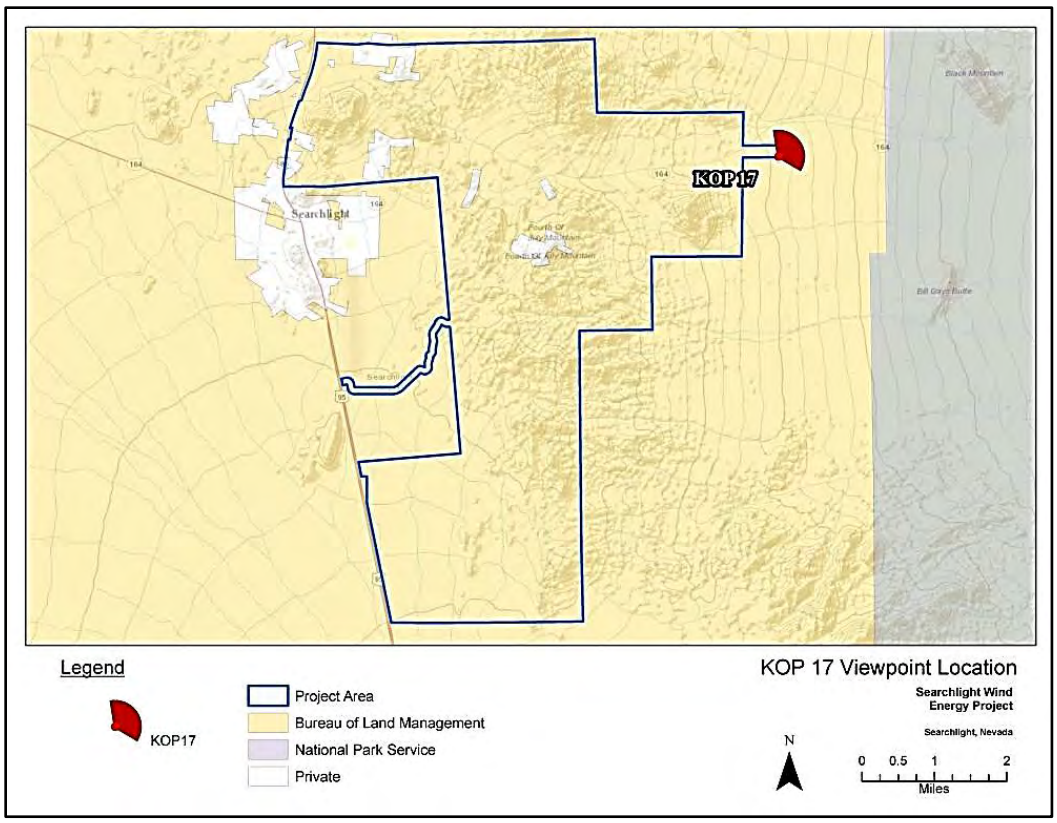

**Figure 3.9-19. KOP 17 – View from Cottonwood Cove Access Road at MP 4 Looking East**

# 3.10 Noise

This section identifies the existing area and provides estimated and measured ambient noise levels within and adjacent to the Proposed Project site, and at the nearby Lake Mead National Recreation Area.

## 3.10.1 Region of Influence

For the purposes of this analysis, the ROI for noise from construction, O&M, and decommissioning also includes sensitive receptors (residences, schools, businesses, or public buildings) within 2 miles of project facilities.

## 3.10.2 Existing Environment

### 3.10.2.1 General Information on Noise

To describe environmental noise at the regional and local levels, and to assess impacts on areas sensitive to community noise, an understanding of noise fundamentals is necessary. Noise is defined as unwanted sound. Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. There are several ways to measure noise, depending on the source, the receiver, and the reason for the noise measurement. The most common metric is the overall A-weighted sound level measurement that has been adopted by regulatory bodies worldwide. The A-weighted network measures sound similar to how a person perceives sound, thus achieving good correlation with acceptable and unacceptable sound levels.

A-weighted sound levels are typically measured or presented as the equivalent sound pressure level ($L_{eq}$), which is the average noise energy level for a defined period of time. The $L_{eq}$ is commonly used to measure steady-state sound or noise that is usually dominant. Statistical methods are used to capture the dynamics of a changing acoustical environment. Lxx typically denotes statistical measurements, where $_{xx}$ represents the percentage of time the sound level is exceeded. The $L_{90}$ represents the noise level exceeded during 90 percent of the measurement period. Similarly, the $L_{10}$ represents the noise level exceeded for 10 percent of the measurement period. The relative A-weighted noise levels of common sounds measured in the environment and industry for various qualitative sound levels are provided in Table 3.10-1.

**Table 3.10-1. Common Noise Levels and Subjecting Human Response**

| Noise Source (at a given distance) | A-Weighted Sound Pressure Level in Decibels | Reference Location | Human Judgment of Noise Loudness (relative to a reference SPL of 70 decibels) |
|---|---|---|---|
| Military jet take-off with after-burner (50 feet), Civil-defense siren (100 feet) | 140, 130 | Aircraft carrier flight deck | |
| Commercial jet take-off (200 feet) | 120 | Thunderclap | Threshold of pain<br>32 times as loud |
| Pile Driver (50 feet) | 110 | Rock music concert | Average human ear discomfort<br>16 times as loud |
| Ambulance siren (100 feet), newspaper press (5 feet), power lawn mower (3 feet) | 100 | Sidewalk, plant, yard | Very loud<br>8 times as loud |
| Motorcycle (25 feet), propeller plane flyover (1,000 feet), diesel truck, 40 miles per hour (50 feet) | 90 | Boiler room, printing press, plant | Operational Safety and Health Administration threshold for 8-hour exposure<br>4 times as loud |
| Garbage disposal (3 feet) | 80 | | 2 times as loud |

| Noise Source (at a given distance) | A-Weighted Sound Pressure Level in Decibels | Reference Location | Human Judgment of Noise Loudness (relative to a reference SPL of 70 decibels) |
|---|---|---|---|
| Passenger car, 65 miles per hour (25 feet), vacuum cleaner (10 feet) | 70 | Data processing center, department store | Reference loudness moderately loud |
| Normal conversation (5 feet), air-conditioning Unit (100 feet) | 60 | Private business office, restaurant | 1/2 as loud |
| Light traffic (100 feet) | 50 | Lower limit of daytime urban ambient sound | 1/4 as loud |
| Bird calls (distant) | 40 | Quiet urban nighttime | 1/8 as loud |
| Soft whisper (5 feet) | 30 | Recording studio, library | Very Quiet 1/16 as Loud |
| | 20 | Whistling, rustling leaves | Just audible 1/32 as loud |
| | 10 | Breathing | Barely audible 1/64 as loud |
| | 0 | | Threshold of hearing 1/128 as loud |

Source: URS internal information and Caltrans TeNS (1998) p. 18, Table N-2136.2
SPL = sound pressure level

Another metric used to determine the impact of environmental noise considers the differences in human responses to daytime and nighttime noise levels. During the evening and at night, exterior background noises are generally lower than during the day. However, most household noise also decreases at night and exterior noise becomes more noticeable. Furthermore, most people sleep at night and are, therefore, more sensitive to intrusive noises. To account for human sensitivity to evening and nighttime noise levels, the $L_{dn}$ and community noise equivalent level (CNEL) metrics were developed by the State of California in the 1970s. The $L_{dn}$ accounts for the greater annoyance of noise during the night (10:00 p.m. to 7:00 a.m.). The CNEL accounts for the greater annoyance of noise during the evening (7:00 p.m. to 10:00 p.m.) and nighttime hours.

The effects of noise on people can be listed in three general categories:

- Subjective effects of annoyance, nuisance, dissatisfaction;
- Interference with activities such as speech, sleep, learning; and
- Physiological effects such as startling and hearing loss.

In most cases, environmental noise might produce effects in the first two categories only. No completely satisfactory way exists to measure the subjective effects of noise, or to measure the corresponding reactions of annoyance and dissatisfaction. This lack of a common standard is primarily due to the wide variation in individual thresholds of annoyance and habituation to noise. Thus, an important way of determining a person's subjective reaction to a new noise is to compare it to the existing or "ambient" environment to which that person has adapted. In general, the more the level or the tonal (frequency) variations of a noise exceed the previously existing ambient noise level or tonal quality, the less acceptable the new noise will be, as judged by the exposed individual.

The general human response to changes in noise levels that are similar in frequency content (for example, comparing increases in continuous [$L_{eq}$] traffic noise levels) is summarized as follows:

- A 3-dB change in sound level is a barely noticeable difference.

- A 5-dB change in sound level is typically noticeable.
- A 10-dB change is perceived by the listener as a doubling in loudness.

### 3.10.2.2 Noise Standards and Guidelines

#### Federal Standards

The NEPA requires an analysis of local ambient noise levels and effects associated with elevated noise levels in a Proposed Project area; however, NEPA does not specify a threshold for "significant adverse effect" for noise. Decibel levels must be evaluated as must the effects of noise levels on a variety of species, and on property values, residences, and recreational use. The NPS has established noise standards pertaining to national parks. The standards are codified in 36 CFR 2.12, 36 CFR 2.18, and 36 CFR 3.15. The standards, although not directly applicable to the proposed action on BLM lands, are discussed below.

36 CFR 2.12 regulates and prohibits certain sounds that may be generated by users of the park system. Sources such as motorized equipment, radios and stereos, musical instruments, etc., may not exceed a sound level of 60 dBA at 50 feet. Even if below that level, the sound must not be unreasonable. Unreasonable criteria include the nature and purpose, time of day or night, purpose for with the area was established, etc.

36 CFR 2.18 provides noise level limits and certain prohibitions pertaining to snowmobiles within the park system. 36 CFR 3.15 similarly provides sound level limits for motor boats.

In addition to the above federal standards, the Lake Mead NRA has proposed that noise levels from adjacent wind farms do not exceed an $L_{eq}$ level of 35 dBA during nighttime hours on park lands.

While not applicable to the proposed action, other federal regulations and guidelines exist that limit overall environmental noise levels. The only energy-facility-specific requirements are those of the FERC for interstate electrical transmission lines, natural gas pipelines, and petroleum pipelines. The FERC limits specifically address compressor facilities associated with pipelines under FERC jurisdiction. Under these regulations, the noise attributable to any new natural gas compressor station; added compression to an existing station; or any modification, upgrade, or update of an existing station must not exceed a daytime-nighttime noise level ($L_{dn}$) of 55 decibels on the A-weighted scale (dBA) at any pre-existing noise-sensitive area (FERC 2002). Federal Highway Administration (FHWA) (CFR Title 23 Part 772) and FAA regulations (CFR Title 18 Part 150) have established federal highway and aircraft guidelines and regulations.

#### State of Nevada

The State of Nevada has a nuisance type noise standard that limits unnecessary or intrusive sounds that disturb the peace and quiet of a neighborhood. There is no state numerical performance standard.

#### Clark County

The Clark County UDC establishes maximum permitted sound levels within residential districts. The Clark County Noise Ordinance (Sec. 30.68.020) establishes permissible sound pressure levels (SPLs) of any continuous, regular, or frequency source of sound produced by any activities by time period and type of zoning district (Table 30.68-1 in the Clark County UDC Section 30.68.020). Likewise, impulsive type noises are subject to the maximum permitted sound level standards by time and type of zoning district (Table 30.68-2 in the Clark County UDC Section 30.68.020). Relative to the Proposed Project, sound level limits do not apply to construction and/or demolition activities when conducted during daytime hours.

The Clark County ordinance was developed on an octave band basis, meaning each octave band was given a separate sound level limit as opposed to an overall limit. The most restrictive limitations are for residential districts during nighttime hours. For informational purposes, if the individual octave bands are combined into a single dBA number, this would result in a limit at a residential property line of 43 dBA.

### Town of Searchlight

The Town of Searchlight does not have a noise ordinance.

### Summary of Noise Guidelines and Regulations

**Table 3.10-2. Guidelines and Regulations for Exterior Noise (dBA)**

| Agency | Type of Activity/Measure | Permissible Noise Levels | | | |
|---|---|---|---|---|---|
| | | Land Use | Hours | $L_{eq}$ | $L_{dn}$ |
| Federal Energy Regulatory Commission | NS | NS | NS | [49] | 55 |
| Federal Highway Administration | NS | NS | NS | 67 | [67] |
| Federal Aviation Administration | NS | NS | NS | [59] | 65 |
| U.S. Department of Transportation - Federal Rail and Transit Authorities[a,b] | NS | NS | NS | Sliding scale | Sliding scale |
| U.S. Environmental Protection Agency | NS | NS | NS | [49] | 55 |
| U.S. Department of Housing and Urban Development | NS | NS | NS | [59] | 65 |
| Nevada Public Utilities Commission | NS | NS | NS | NS | NS |
| National Park Service Suggested Level | Wind Energy | National Park | Nighttime | 35 | NS |
| National Park Service CFR 2.12 | Motorized Equipment | National Park | NS | 60 dBA at 50 feet | NS |
| National Park Service CFR 2.18 | Snowmobile Operation | National Park | NS | 78 dBA at 50 feet | NS |
| National Park Service CFR 2.12 | Boat Operation | National Park | NS | 75 dBA underway, 88 dBA stationary | NS |
| Clark County | Construction | Any | 7 a.m.-7 p.m. (Mon-Sat) | NA | NA |
| | O&M/Maximum Sound (dBA) | Residential, Business & Industrial | Depends on octave band frequency | NA | Depends on octave band frequency |
| | O&M/Impulsive Noise | Residential | Daytime | 56 | NA |
| | | Residential | Nighttime | 46 | NA |
| | | Business/ Industrial | Daytime | 65 | NA |
| | | Business/ Industrial | Nighttime | 61 | NA |
| Town of Searchlight | NS | NS | NS | NS | NS |

Sources:
a FRA 2005 [Updated to latest revision 2005]
b Federal Transit Administration (FTA) 2006
c U.S. EPA 1974
d CFR Title 24 Part 51B (U.S. Department of Housing and Urban Development 1991)
Note: Brackets around numbers (e.g. [59]) indicate calculated equivalent standard. Because FHWA regulates peak noise level, the DNL is assumed equivalent to the peak noise hour.
dBA = A-weighted decibels, Ldn = daytime-nighttime noise level, Leq = equivalent sound pressure level , NS = Not specified, NA= Not applicable

#### 3.10.2.3 Surrounding Land Uses and Potential Noise-Sensitive Receivers

The land uses surrounding the Proposed Project area are largely rural in nature, with some residential areas associated with the town of Searchlight and unincorporated Clark County. The nearest residences to any proposed WTGs are located off of Cottonwood Cove Road, Oregon Trail Road, and Grandpa's Road, east and north of Searchlight, respectively. All of the identified residences are over 1000 feet from any proposed WTG.

Apparent residences, schools, and other potential noise-sensitive receivers identified within 2 miles of the nearest project area WTGs are shown on Figure 3.10-1. The number of potential noise-sensitive receivers with similar distance ranges to the nearest WTG are listed in Table 3.10-3.

**Table 3.10-3. Approximate Locations of Identified Apparent Noise-Sensitive Receivers**

| Distance to Nearest WTG Ranges | Number of Potential Noise Sensitive Receivers |
|---|---|
| 0 to 0.25 mile | 2 |
| 0.25 to 0.5 mile | 12 |
| 0.5 to 0.75 mile | 4 |
| 0.75 to 1.0 mile | 3 |
| 1.25 to 1.5 miles | 1 |
| 1.5 to 1.75 miles | 1 |
| 1.75 to 2.0 miles | 2 |

Source: URS (2009).
WTG = wind turbine generator

Lake Mead National Recreation Area is located east of the Proposed Project area. The Recreation Area boundary is approximately 11,000 feet from the nearest proposed WTG. Lake Mohave and the associated lakeside camping areas are located approximately 7.5 miles from the nearest WTG. The NPS also manages the Nellis Wilderness Wash, which is approximately 2 miles from the nearest WTG.

The Proposed Project area is remote from large metropolitan centers and, is likely to be represented by relatively low ambient noise levels that are consistent with the geographical character, presence of two major roadways, and population density of the vicinity. Contributors to the ambient noise environment are likely to include the following:

- Passenger vehicle, bus, and truck traffic on Cottonwood Cove Road (aka. SR 164 west of Searchlight) and US-95. The NDOT reports that AADT volume on US-95 for 2008 was 8,600 vehicles (NDOT 2009). The same NDOT Annual Traffic Report lists that the following approximate vehicle mix for a principal arterial (such as US-95): 95% passenger cars, 4% trucks, and 1% other (light trucks, busses, and motorcycles) (NDOT 2009).
- Searchlight Airport traffic, which is expected to be limited due to its lack of offered services and its current uncontrolled, unmanned, and unlighted status (AirNav.com 2009).
- Commercial and civilian aircraft overflights, the nearest of which follow Vector V8-514 that traverses Searchlight and the project area vicinity along a north-northeast and south-southwest path. Vectors V210 and V237 are farther away by several miles to the south and east, respectively (www.skyvector.com 2009b), and are less likely to contribute.
- Natural sounds such as wind-generated turbulence, resulting from wind interaction with vegetative ground cover and exposed rocky surfaces, birds and insects.
- Occasional OVH traffic, as permitted on either privately-owned or BLM-managed lands, associated with recreational activities that use unimproved roads, which traverse the project area.

- Commercial (e.g., Searchlight community businesses) and industrial (e.g., potentially active mining and/or mineral processing) activities that involve impulsive, intermittent, or continuous electromechanical equipment operation. Pumps, refrigeration systems, and heating, ventilation and air-conditioning systems are usual noise generators.

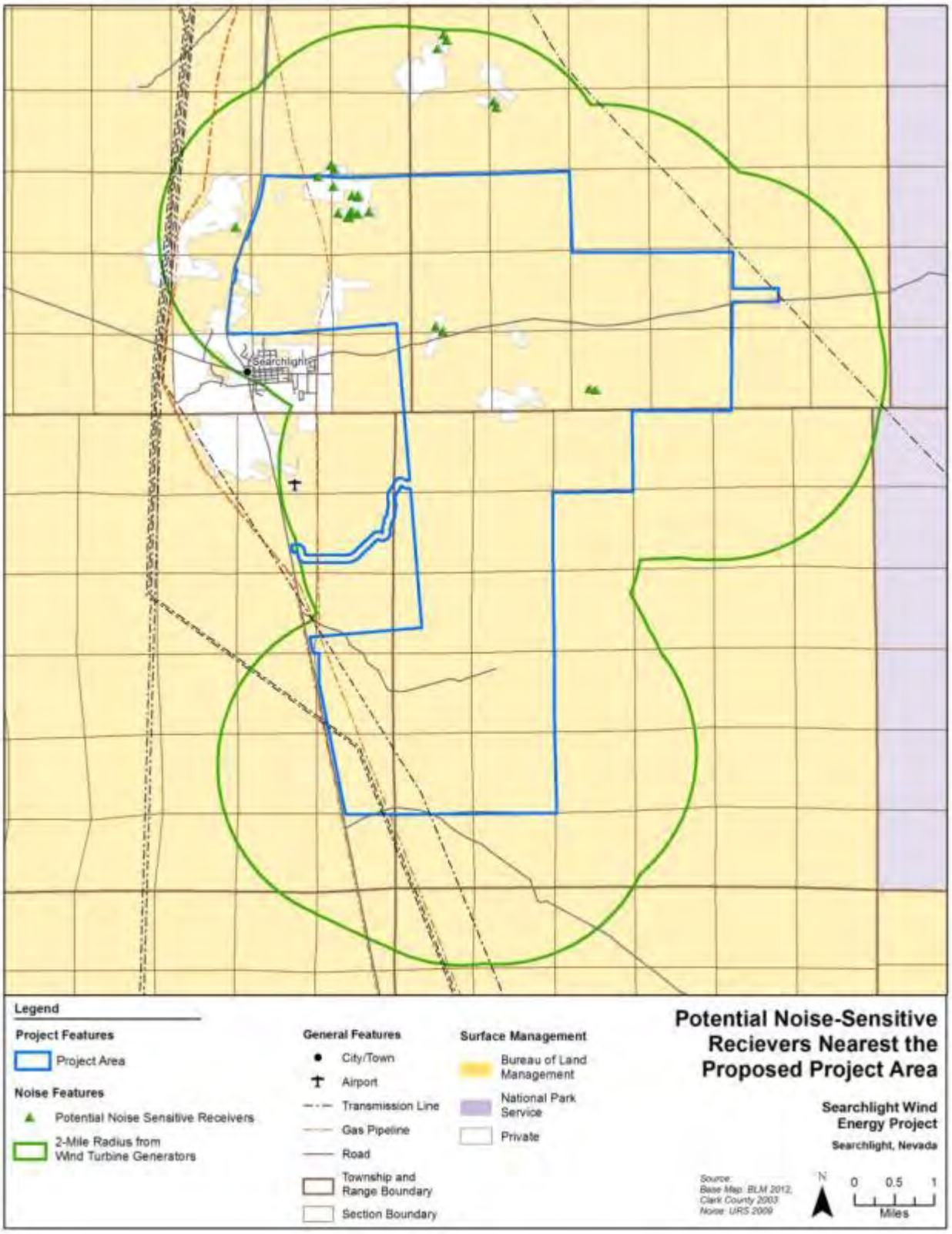


**Figure 3.10-1 Potential Noise-Sensitive Receivers Nearest the Proposed Project Area**

### 3.10.2.4 Ambient Sound in the Project Area Vicinity

#### Searchlight and Nearby Residential Areas

In the absence of measurement data, the existing sound level environment in the vicinity of the Proposed Project area was coarsely estimated with both roadway proximity and population density methods published by the Federal Transit Administration (FTA) in its Transit Noise and Vibration Impact Assessment (FTA 2006).

The project area is within the southern portion of Clark County, Nevada, with rural major collector SR 164, also known as Nipton Road west of Searchlight and Cottonwood Cove Access Road east of Searchlight), and principal arterial US-95 as vicinity roadways. In downtown Searchlight, some apparent residential land uses are within 50 feet of either of these sources of road traffic noise, which would be considered comparable to the "Other Roadways" classification according to the FTA guidance.

According to the U.S. Census Bureau, the population of Searchlight was 576 as of the 2000 Census, and the encompassed land area is 13.1 square miles (U.S. Census Bureau 2009). These parameters can yield an average per-square-mile population density of 44. Downtown Searchlight might be considered to have an increased population density and, hence, be represented by a different category according to FTA ambient noise estimation guidance.

Table 3.10-4 indicates the estimated upper and lower sound level ranges in the vicinity of the project area from using each of the two aforementioned FTA general estimation methods. When a noise-sensitive receiver is much greater than 400 feet away from either Cottonwood Cove Road or US-95, the estimates from the population density method would probably be more accurate representations of ambient sound levels.

**Table 3.10-4. Estimated Existing Ambient Sound Levels (dBA)**

| Estimation Method | Representative Area | $L_{eq}$ Day | $L_{eq}$ Evening | $L_{eq}$ Night | $L_{dn}$ |
|---|---|---|---|---|---|
| **Roadway Proximity Method** | | | | | |
| 10 to 50 feet from other roadways | Adjacent to main arteries | 70 | 65 | 60 | 70 |
| More than 400 feet from other roadways | Downtown Searchlight | 50 | 45 | 40 | 50 |
| **Population Density Method** | | | | | |
| 1 to 100 persons per-square-mile | Remote rural areas such as nearest residences to WTGs | 35 | 30 | 25 | 35 |
| 100 to 300 persons per-square-mile | Searchlight | 40 | 35 | 30 | 40 |

Source: FTA 2006
$L_{eq}$ = equal sound level
$L_{dn}$ = daytime-nighttime noise level

The above data, particularly for the residential areas nearest the WTGs, are believed to be representative even though they are estimates. In particular, the estimated sound levels for the 1 to 100 people per square mile land use represents very low ambient conditions.

#### Lake Mead National Recreation Area

The NPS initiated an ambient noise-monitoring program in 2010 at two locations within the Lake Mead National Recreation Area (NPS, 2010). The meters were installed at two remote locations on the Nevada side of Lake Mohave. The meter locations are approximately 10 miles northeast and 10 miles southeast of the nearest Project boundary line. As would be anticipated in such remote locations, ambient sound levels were found to be very low, generally ranging from about 15 dBA to 25 dBA, with some short-term

levels above 35 dBA. Notably, the NPS did not include sound level data measured when wind speeds near the microphone exceeded 5 meters per section (m/s) (11 mph), in compliance with national standard ANSI 12.18 Section 4.4.1.1. As such, the ambient data presented reflect conservative levels, including times when the WTGs would be in part load operation, thereby generating lower sound levels, or not operating at all.

# 3.11 Recreation

This section identifies existing recreational resources and opportunities in the Proposed Project vicinity, including direct, onsite recreation activities and dispersed recreation activities that might be affected during construction, O&M, or decommissioning of the Proposed Project.

## 3.11.1 Region of Influence

The ROI evaluated for recreation encompasses those locations within or adjacent to the Proposed Project area that are utilized for recreation or as access to recreational opportunities. Both BLM and NDOW data and relevant management plans were used to characterize the recreational uses in the project area and vicinity.

## 3.11.2 Existing Environment

Demand for recreational opportunities in southern Nevada and Clark County has increased due to the expansion of the Las Vegas metropolitan area over the last decade. Regional recreation opportunities and sites are composed primarily of federal and state agency lands that serve the dual function of protecting resources and providing recreation opportunities. Such sites include Lake Mead NRA, Red Rock Canyon National Conservation Area, Spring Mountains NRA, Desert National Wildlife Refuge, Valley of Fire State Park, and Overton Wildlife Management Area. Water-based recreation takes place primarily at Lakes Mead, and Mojave, and on the Colorado River.

The Proposed Project would be constructed primarily (94.5%) on desert lands administered by the BLM LVFO in Clark County, Nevada, within the relatively undeveloped east side of the Puite Valley, and in the low hills bordering the western flank of an unnamed mountain range that includes Fourth of July Mountain. The town of Searchlight, located approximately 0.5 miles to the west of the project boundary, is the nearest community from which to access the project area. Major access routes to the project area include US-95 and Cottonwood Cove Access Road, also known as SR 164 (west of Searchlight). Approximately 14 miles east of Searchlight, within the NPS-managed Lake Mead NRA, are Cottonwood Cove and Lake Mohave. This area offers a wide variety of recreational activities and provides public boat launch facilities, commercial marina services, and other public use and support facilities. The Lake Mead NRA Cottonwood Cove visitor entrance (fee) station is located approximately 6 miles east of Searchlight.

The southern Nevada desert is characterized by a sparse human population and large expanses of open space that provide outstanding opportunities for casual and organized recreational activities. This area attracts recreation visitors seeking a primitive recreation experience of natural beauty, solitude, and freedom from the regulations of structured urban environments. People residing in Searchlight and the surrounding area, as well as visitors from other regions, rely on the land within and adjacent to the project area for recreational opportunities. Casual or dispersed recreation opportunities include photography, backpacking, bird watching, horseback riding, hunting, primitive camping, hiking, rock climbing, and competitive and non-competitive OHV use.

A portion of the Old Spanish National Historic Trail is located in the northwest part of the project area; it offers recreation opportunities such as hiking and wildlife viewing. While, a variant of the Old Spanish Trail is said to traverse the area, there is no physical manifestation of the trail on the ground surface. There are no backcountry byways or developed recreation sites within or adjacent to the project area. Table 3.11-1 provides the best available visitor use data for recreation activities in the BLM LVFO, which includes the project area.

**Table 3.11-1. Estimated Annual Visitor Use in the BLM Las Vegas District**

| Activity | Visits | Visitor Hours |
|---|---|---|
| OHV Travel | 73,300 | 4,088,000 |
| Other Motorized | 665,000 | 2,450,000 |

| Activity | Visits | Visitor Hours |
|---|---|---|
| Non-motorized | 260,000 | 2,080,000 |
| Camping | 13,300 | 478,800 |
| Hunting | 32,800 | 393,600 |
| Site Based | 106,400 | 1,276,800 |
| **Total** | **1,150,800** | **10,276,800** |

Source: BLM Las Vegas District Files, 1994

The BLM's recreation goal is to serve the diverse outdoor recreation demands of visitors and provide recreational opportunities while maintaining the sustainable conditions needed to conserve public lands and visitor recreation choices (BLM 2003). The recreation setting and experience and the BLM guidance for recreation lands management are described below.

#### 3.11.2.1 Recreational Setting and Experience

A recreational setting includes accessible natural and manmade features associated with recreational use. Providing a wide range of recreational settings varying in the type and quality of scenery, topography, development, and access ensures that the broadest segment of the public will find satisfying recreational experiences. The recreational setting in the project area includes ecologically diverse landscapes that include mountains and hills, local bedrock, volcanic outcrops, alluvial fans, and washes.

#### 3.11.2.2 Recreational Opportunity Spectrum

The BLM classifies all land available for recreational purposes according to the Recreation Opportunity Spectrum (ROS). The ROS is a scale of classifications "…used to characterize recreation opportunities in terms of setting, activity, and experience opportunities" (BLM 1998). A recreation opportunity includes qualities provided by nature (vegetation, landscape, topography, water bodies, scenery), qualities associated with recreational use (levels and types of use), and conditions provided by land managers (developments, roads, regulations). By combining variations of these qualities and conditions, management can provide a variety of opportunities for recreationists. The ROS identifies these opportunities on the basis of the area's setting and activities:

- Primitive or semi-primitive non-motorized use is characteristic of areas designated for Wilderness, and Wilderness Study Areas. These areas are typically roadless, of rugged terrain, and lack ready access. Uses include hiking, camping, rock climbing, nature study, and hunting.
- Semi-primitive motorized use is typical in areas adjacent to Wilderness Study Areas and Wilderness. Uses are similar to those of the non-motorized areas but include OHV touring on roads, trails, and dry washes.
- Roaded natural areas comprise the majority of the jurisdiction of the BLM as well as portions of the Spring Mountains NRA, Red Rock Canyon National Conservation Area and Lake Mead NRA. Visitor use can be moderate to high with specific opportunities for picnicking, hiking, OHV touring, free play, organized events, camping, and interpretive activities. Vehicle use is restricted to approved roads within the Lake Mead NRA.
- Rural recreational areas typically have some ambient human presence; there are developed recreation facilities and the natural environment is less important. Visitor use is moderate to high with competitive games and events, spectator sports, OHV touring, free play, and events. Sunrise Mountain/Rainbow Gardens, Nellis Dunes, and organized recreational shoreline areas along Lake Mead are examples of this level of recreation.
- Urban sites are those within the jurisdiction of the local governments and allow for playing fields, tennis courts, swimming pools, stables, golf courses, and arenas.

The ROS designation within the project area is Roaded Natural. The Roaded Natural class offers roughly equal opportunities for organized, group recreational activities, or recreation in a natural setting, generally away from other human activities. Opportunities for both motorized and non-motorized recreation are present, but OHV use in the project area is limited to designated roads, trails, and dry washes. Some routes utilized by recreational users have not been formally designated for such use. Semi-primitive motorized recreation areas are located adjacent to and southwest of the project areas.

# 3.12 Socioeconomics

This section discusses effects on social and economic resources that might occur with implementation of the Proposed Action or alternatives. The indicators used to identify and analyze effects are presented. This discussion format is organized separately for both social and economic conditions.

## 3.12.1 Region of Influence

The ROI for socioeconomic impacts has been defined as Clark County, Nevada. This geographic area contains stakeholders and resources that could be affected by the Proposed Project, and the majority of project impacts would be most apparent there. The portion of the ROI closest to the Proposed Project site is the town of Searchlight. More broadly, the region includes the Piute-Eldorado Valley and the South County Planning area.

## 3.12.2 Existing Social Conditions

The social profile functions as the existing environment baseline against which action alternatives are assessed, and focuses on the demographic and social trends, and groups represented in the ROI and their attitudes. Clark County is profiled because the assets of the action alternatives would be incorporated into the physical energy infrastructure serving Clark County and would potentially provide electrical power to the region. The Proposed Project might also use resources (land, labor, and materials) from Clark County, and would provide revenue to the County through taxes on procured resources and as part of the County's tax base.

The ROI for social and economic conditions is described using several levels of analysis and baseline comparisons. The Proposed Project is adjacent to Searchlight, Nevada. Where possible, characteristics are compared across the following areas:

1. Searchlight Project Impact Area (SIA): This is an aggregation of 18 Census Tracts, defined for the 2000 Census, that cover the area most likely to be directly affected by the Proposed Project, either in terms of providing housing to the workers employed for construction and O&M, or being within visual lines of sight either in residence or while traveling between larger communities, or experiencing the traffic of equipment and materials flowing onto the site. The SIA is shown on Figure 3.12-1 and is composed of 10 Census Tracts comprising the southern tip of Clark County, south of Henderson but including Boulder City, as well as 8 Census Tracts in that portion of Mohave County, Arizona, across the Colorado River from Laughlin, Nevada. This area includes Bullhead City and several smaller places (see item 6 of this list). Also included are those portions of the Fort Mohave Indian Reservation located in Arizona and Nevada, but excluding Reservation areas in California. The SIA covers 2,052 square miles of land.
2. Two-County Region or Searchlight Impact Region (SIR): This is the aggregation of Clark County, Nevada, and Mohave County, Arizona. This larger region is especially relevant for data that are only available at the county level.
3. Clark County, Nevada, and Mohave County, Arizona: Each county is a larger containing area for that portion of the SIA located within it, and is the source of useful comparisons.
4. State of Nevada and State of Arizona: Each state has a unique profile and serves as an introduction to the broader region.
5. United States: Comparisons to baseline U.S. patterns are enabled by including national data.
6. Places: Concentrations of population are referred to as either Incorporated Places or Census Designated Places (CDPs) by the Census Bureau. The boundaries for the latter are informal estimates generated by the Census Bureau, and are generally larger than the town sites in the sparsely populated American West. Data are presented for Bullhead City and Boulder City, as

well as for the Nevada CDPs of Searchlight, Cal-Nev-Ari, and Laughlin. The Arizona CDPs are Mohave Valley, Willow Valley, Arizona Village, and Mesquite Creek. Mohave Ranch Estates, a CDP located within the Mohave Valley CDP, is a small, near-zero population area excluded from this analysis.

7. Census Tracts, Block Groups, and Blocks[1]: Decennial census data are gathered at the level of Blocks, extremely small units of geography originating with city blocks. Block Groups are aggregates of Census Blocks, but their boundaries are drawn in part to respect political subdivisions including the boundaries of counties, cities, and American Indian Reservations. Block Groups, in turn, form Census Tracts, which are even larger units of geography that divide a county into population areas of approximately 3,000 persons.

[1] Decennial census data are gathered by the U.S. government at the level of Blocks, extremely small units of geography defined by impermeable features like rivers, streets, and mountain ridge lines. The term itself is drawn from the rectangular city block, but generalized to the entire U.S. Information gathered from the so-called "short" census form is generalized to census block units, and then aggregated to political units for which reapportionment and redistricting are mandated. Approximately 15% of residents receive a so-called "long" census form containing a wide array of items dealing with income, education, family size, etc. The sampling that determines who gets the long form is calculated at a higher unit of geography than the census block, namely the block group. The rich array of socioeconomic data used here and elsewhere is drawn from the long form.

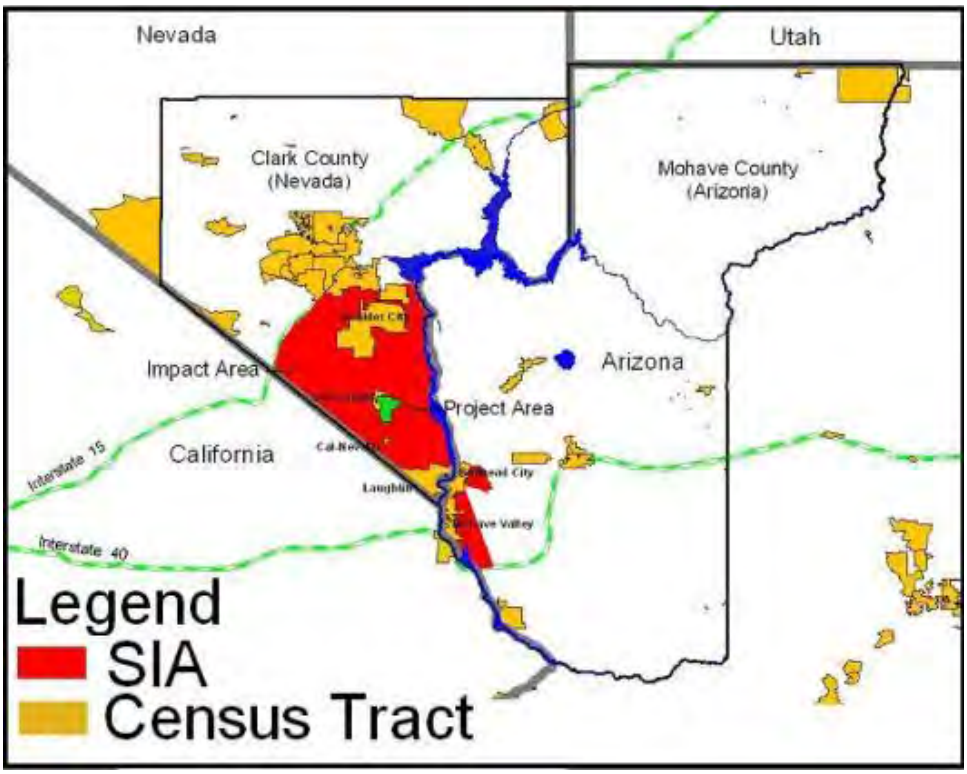


**Figure 3.12-1. Searchlight Project Impact Area for Social and Economic Impact**

### Assessment

Figure 3.12-1 shows the SIA shaded in red, including the portions of Clark and Mohave counties incorporated within the 18 Census Tracts that define the SIA components. The SIA includes Boulder City, which may draw resident workers for construction, as well as Bullhead City, Arizona. It extends to the unincorporated communities of Searchlight, Cal-Nev-Ari, Laughlin, and Mohave Valley, both for the potential of construction workers and because these residents will drive regularly through Searchlight en route to Las Vegas. Those living in the vicinity of Searchlight and Cottonwood Cove would be the most directly impacted.

### 3.12.2.1 Community Setting

The town of Searchlight has fewer than 1,000 permanent residents, but this historic mining town was once larger than Las Vegas. Gold ore was first discovered here in 1897, and the town began its boom five years later. By 1907, Searchlight had reached its peak. In the ensuing years, as gold production costs rose and ore quality dropped, its population dwindled.

A mix of miners, ranchers, artists, small business owners, and retirees reside in this unassuming community, which features such small town amenities as an historic museum, senior citizens' center, post office, elementary school, and two churches. Of greater note to visitors is Searchlight's prime location, which establishes it as the gateway to the popular Lake Mohave in the Lake Mead NRA. Just 14 miles from Searchlight is Cottonwood Cove, which is known as one of the best largemouth bass fisheries in the American West. Camping, hiking, horse and OHV riding, and other lake activities are equally popular in the Searchlight area.

### 3.12.2.2 Demographics and Social Trends

Clark and Mohave counties had populations of 1,951,269 and 200,186, respectively, in 2010, for a combined population of 2,151,455 in the two-county SIR (Table 3.12-1). The population in the total SIA in 2010 was much smaller, at 155,606. The Searchlight CDP had a population of 539 in 2010. Note that this area is somewhat larger than the locally defined area known as the town of Searchlight.

**Table 3.12-1. ROI Areas: Population for 1990, 2010, and 2016**

| ROI Component Areas | Resident Population | | | | Annualized Population Change | | |
|---|---|---|---|---|---|---|---|
| | 1990 Census | 2000 Census | 2010 Census | 2016 Projection | 1990-2000 (Actual) | 2000-2010 (Actual) | 2010-2016 (Est.) |
| Searchlight Impact Area | 49,327 | 78,792 | 155,606 | 163,479 | 6.0% | 9.7% | 0.8% |
| Clark County Nevada Portion: | 19,097 | 27,537 | 84,307 | 90,240 | 4.4% | 20.6% | 1.2% |
| Boulder City | 12,570 | 14,966 | 15,023 | 15,709 | 1.9% | 0.0% | 0.8% |
| Laughlin | 4,800 | 7,076 | 7,323 | 7,194 | 4.7% | 0.3% | -0.3% |
| Searchlight | 547 | 576 | 539 | 567 | 0.5% | -0.6% | 0.9% |
| Cal-Nev-Ari | 60 | 278 | 244 | 259 | 36.3% | -1.2% | -0.1.0% |
| Remainder Clark County Unincorporated Portion | 1,120 | 4,641 | 61,178 | 66,511 | 31.4% | 121.8% | 1.5% |
| Mohave County Arizona Portion: | 30,230 | 51,255 | 71,299 | 73,239 | 7.0% | 3.9% | 0.5% |
| Bullhead City | 22,147 | 33,769 | 39,540 | 39,722 | 5.2% | 3.1.7% | 0.1% |
| Mohave Valley | 6,413 | 13,694 | 2,616 | 2,798 | 11.4% | -8.1% | 1.2% |
| Willow Valley | 355 | 585 | 1,062 | 1,246 | 6.5% | 8.2% | 2.9% |
| Arizona Village | 275 | 351 | 946 | 1,063 | 2.8% | 17.0% | 1.2.1% |
| Mesquite Creek | 69 | 205 | 416 | 411 | 19.7% | 10.3% | -0.2% |
| Remainder Mohave County Unincorporated Portion | 971 | 2,651 | 26,719 | 27,999 | 17.3% | 90.8% | 0.8% |
| Searchlight Impact Region | 834,956 | 1,530,797 | 2,151,455 | 2,301,180 | 8.3% | 4.1% | 1.2% |
| Clark County, Nevada | 741,459 | 1,375,765 | 1,951,269 | 2,095,797 | 8.6% | 4.2% | 1.2% |
| Mohave County, Arizona | 93,497 | 155,032 | 200,186 | 205,383 | 6.6% | 2.9% | 0.4% |
| State of Nevada (millions) | 1.202 | 1.998 | 2.701 | 2.877 | 6.6% | 3.5% | 1.1% |
| State of Arizona (millions) | 3.665 | 5.131 | 6.392 | 6.808 | 4.0% | 3.2.5% | 1.1% |
| United States (millions) | 248.7 | 281.4 | 308.7 | 321.3 | 1.3% | 1.0% | 1.0.7% |

Source: Bureau of the Census, 2016 projections by ESRI

Table 3.12-1 provides population totals for the four years of 1990, 2000, 2010, and 2016, and the annualized percentage population change for the three periods 1990-2000, 2000-2010, and 2010-2016 for several units of geography important to this analysis. Data for 1990, 2000, and 2010 are drawn from the

U.S. decennial censuses for those years. The 2016 projections (sometimes called forecasts) are prepared by ESRI.[2]

As shown in Table 3.12-1, the geographic component areas are listed beginning with the SIA, followed by population data for the several incorporated and unincorporated places, organized first by county and then arranged with each county roughly by population size. A residual or unincorporated remainder category is defined for each county component of the SIA. The remainder category is particularly important in identifying the significant population growth experienced by the unincorporated areas of southern Clark County, Nevada. For comparison purposes, the populations and annualized population change percentages for Arizona, Nevada, and the United States are also provided.

The average U.S. growth rate is approximately 1% per year, with growth slowing over the 1990-2016 period. This growth rate is regarded as healthy but modest. By comparison, the SIR experienced annual growth of 8.3% throughout the 1990s. From 2000 through 2010, growth was half as fast at 4.1% per year. For the 2000-2010 period, growth within the SIA was a very rapid 9.7% annually.

There is much local variation in population increases within these large counties. From 2000 through 2010, unincorporated areas of Clark County grew from 4,641 to 61,178 persons — a dramatic average annual growth rate of 121.8%. This growth occurred primarily in the area south of Henderson and west of Boulder City, in the northern part of the SIA. This growth was influenced by the Las Vegas economy extending across southern Clark County and included families of professional commuters and retirees.

The population centers contained within the SIA, identified by the two cities and seven CDPs, have experienced less explosive and, in some cases, flat growth during the same period. The lowest growth rates occur nearest the project area. Boulder City, Searchlight CDP, and Cal-Nev-Ari CDP experienced flat or negative growth from 2000 to 2010, with only modest growth projected to 2016. By comparison, Bullhead City (and especially the Mohave Valley CDP) has grown at more than 3% annually.

Population growth rates are expected to slow for most areas from 2010 to 2016, as migration patterns slowed during the Great Recession, which officially lasted from December 2007 through June 2009, though lingering effects such as high unemployment continued to plague the United States well beyond that date. The SIA is expected to grow at only a 0.8% annual rate, below the 1.2% rate forecasted for the broader two-county region.

Nevada and Arizona have slightly lower proportions of family households than the U.S. average of 66.4%, while at the same time these states display lower proportions of single person households than the 26.7% characterizing the U.S. (Table 3.12-2). This apparent contradiction is explained by the much higher proportion of nonfamily households with two or more persons, particularly in Nevada as compared to the U.S. overall. Such households contain unmarried partners and are distributed across most adult age

[2] Source: ESRI, www.esri.com

groupings. The SIA has the smallest average household size of any of the comparative areas, at 2.35 persons per household compared to 2.67 for the two-county SIR.

**Table 3.12-2. ROI Areas: Resident Household and Age Data in 2010**

| | Clark County Nevada | Mohave County Arizona | Searchlight Impact Region | Searchlight Impact Area | State of Nevada | State of Arizona | United States |
|---|---|---|---|---|---|---|---|
| Total Households | 715,365 | 82,539 | 797,904 | 65,419 | 1,006,250 | 2,380,990 | 116,716,292 |
| % Family Households | 65.4% | 65.5% | 65.4% | 66.4% | 65.3% | 66.2% | 66.4% |
| % Single-Person Households | 25.3% | 26.7% | 25.5% | 25.9% | 25.7% | 26.1% | 26.7% |
| % 2+ Person Households | 74.7% | 73.3% | 74.5% | 74.1% | 74.3% | 73.9% | 73.3% |
| 2010 Average Household Size | 2.70 | 2.39 | 2.67 | 2.35 | 2.65 | 2.63 | 2.58 |
| 2010 Median Age | 35.5 | 47.6 | 41.6 | 48.3 | 36.3 | 35.9 | 37.2 |
| % Under Age 18 | 34.9% | 24.5% | 33.8% | 23.9% | 33.9% | 33.6% | 33.4% |
| % Age 65 and Over | 23.0% | 39.9% | 24.7% | 39.3% | 24.0% | 26.4% | 24.9% |

Source: U.S. 2010 Census

This pattern is supported when the median age of the SIA is examined. Compared to the U.S. and both Arizona and Nevada, the SIA has a higher median age (48.3), a higher proportion of seniors (39.3%), and a correspondingly lower proportion of children (23.9%). Absent the substantial influence of the Las Vegas area, Mohave County as a whole displays an age structure similar to the SIA. Clearly, retirees currently play a significant role in the population dynamics of the SIA. In contrast, Clark County, Nevada, and Arizona each have median ages younger than the U.S. overall.

Table 3.12-3 describes the population by race and by origin for the several units of geography identified for the project area.

**Table 3.12-3. ROI Areas: 2010 Resident Population by Race and Origin**

| | Clark County Nevada | Mohave County Arizona | Searchlight Impact Region | Searchlight Impact Area | State of Nevada | State of Arizona | United States |
|---|---|---|---|---|---|---|---|
| 2010 Population by single race classification | 1,851,878 | 194,693 | 2,046,571 | 150,193 | 2,574,476 | 6,173,717 | 299,736,465 |
| White Alone | 64.2% | 89.3% | 66.5% | 86.1% | 69.4% | 75.6% | 74.6% |
| Black or African American Alone | 11.0% | 1.0% | 10.1% | 2.4% | 8.5% | 3.4.2% | 13.0% |

| | Clark County Nevada | Mohave County Arizona | Searchlight Impact Region | Searchlight Impact Area | State of Nevada | State of Arizona | United States |
|---|---|---|---|---|---|---|---|
| American Indian and Alaska Native Alone | 0.8% | 2.3% | 1.0.9% | 1.3% | 1.2% | 4.8% | 1.0% |
| Asian Alone | 9.1% | 1.1% | 8.4% | 4.6% | 7.6% | 2.9% | 4.9% |
| Native Hawaiian and Other Pacific Islander Alone | 0.7% | 0.2% | 0.7% | 0.3% | 0.7% | 0.2% | 0.2% |
| Some Other Race Alone | 14.2% | 6.2% | 13.4% | 5.4% | 12.6% | 12.3% | 6.4% |
| Two or More Races | 5.4% | 2.8% | 5.1% | 3.6% | 4.9% | 3.5% | 3.0% |
| Hispanic or Latino | 30.7% | 15.2% | 29.2% | 15.0% | 27.8% | 30.7% | 16.8% |

Source: U.S. 2010 Census

Arizona is quite similar to the U.S. in terms of its percentage of White Alone population (about 75%). Mohave County and the SIA are much less diverse, with 89.3% and 86.1%, respectively, identifying themselves as White Alone. Clark County, the SIR, and the state of Nevada are more diverse with only 64.2%, 66.5% and 69.4% White. While the African American population of the U.S. numbers 13.0%, African Americans are far fewer in Arizona (4.2%) and Nevada (8.5%). The SIA was 2.4% African American in 2010. The Asian population constituted 4.9% of the U.S. population in 2010, and is known to be the fastest growing racial minority in the country. Concentrating in and around Las Vegas, Asians total 7.6% in Nevada and 9.1% in Clark County, but number 4.6% in the SIA. The presence of the Fort Mojave Indian Reservation gives Mohave County a higher proportion of Native Americans, at 2.3% of its population, than the U.S. average (1.0%). The Arizona Village CDP is a Native American enclave and is located entirely within Reservation boundaries.

As shown in Table 3.12-3, the concentration of Hispanics in Arizona (30.7%), Clark County (30.7%) and Nevada (27.8%) are nearly double that of the U.S. proportion of 16.8%. The SIA's 15% concentration of Hispanic residents is more similar to the 15.2% for Mohave County than it is to the 30.7% characterizing Clark County.

### 3.12.2.3 Area Housing Characteristics

The SIA's proportion of owner-occupied homes is 70.9%, which is well above the U.S. national average of 65.1 percent. Clark County has fewer owner-occupied homes and more renters, characteristic of large urban areas. The SIA has fewer renter-occupied homes (29.1%) than either the state or the U.S. average, and is similar in this regard to Mohave County. Typical values for owner-occupied homes vary primarily based on the presence of very expensive homes within Clark County and the Las Vegas area. Still, median housing values for this part of the nation are at least 10% higher than the national average $188,400. The SIA had a 2010 median value of $250,684, close to the comparable figure for Nevada ($254,200) and exceeding the value for the U.S. ($188,400). Homes in Mohave County are much less expensive, with a median value of $170,600. A significant number of homes are for seasonal, recreational, or occasional use, although renter-occupied homes might be smaller and with fewer amenities than primary residences (Table 3.12-4). Home values in general have continued to decline since 2010, but appear to be stabilizing in 2012.

**Table 3.12-4. ROI Areas: Tenure and Value of Owner-Occupied Housing Units (2010)**

| | Clark County Nevada | Mohave County Arizona | Searchlight Impact Region | Searchlight Impact Area | State of Nevada | State of Arizona | United States |
|---|---|---|---|---|---|---|---|
| 2010 occupied housing units | 715,365 | 82,539 | 797,904 | 65,419 | 1,006,250 | 2,380,990 | 116,716,292 |
| Owner-occupied | 57.1% | 69.9% | 58.4% | 70.9% | 58.8% | 66.0% | 65.1% |
| Renter-occupied | 42.9% | 30.1% | 41.6% | 29.1% | 41.2% | 34.0% | 34.9% |
| 2010 median owner-occupied housing unit value | $257,300 | $170,600 | $213,950 | $250,684 | $254,200 | $215,000 | $188,400 |

Source: U.S. 2010 Census

## 3.12.3 Affected Groups and Attitudes

This section discusses some of the groups who might be affected by the Proposed Project. Classifying stakeholders into groups does not imply that other stakeholders who do not fit into a particular group are being overlooked or are outside of the social and environmental review process. Discussion of the affected groups is simply a means to highlight and facilitate issue framing related to the social concerns of some stakeholders who may have a particular local or regional relationship to the host landscape (the Proposed Project area) that might be developed to harness wind energy. Social concerns were heard during the scoping process.

### 3.12.3.1 Public Land Recreational Users / Off-Highway Vehicle Users / Organizations and Supporting Industries

OHV enthusiasts have a unique historic relationship to the land. These recreationists depend on having physical connectivity to trails and courses that are unimpeded by any structures. Social concerns for this group relate to the potential loss of recreational resources. Moving beyond the immediate OHV users, social concerns relate to the social and economic welfare of supporting industries that depend on OHV demand (events and usage patterns) for their livelihoods and form an important part of the regional economy.

### 3.12.3.2 Environmental Groups and Stewards

Environmental groups and stewards have concerns about the potential loss of desert habitat that supports numerous species, including threatened and endangered species. These groups are also concerned with mitigation measures and the potential cumulative impacts on the host environment's ability to support biodiversity in the face of renewable energy development on a large-utility scale. Some environmental groups are also concerned with the loss of desert open space areas, the potential impacts on the carbon sequestration function of the unimpeded desert soils, and the potential loss of vegetation and drainage impacts. The social aspect relates to the feelings of unease in how the groups' historic stewardship role might be compromised by developments that may be perceived to be outside of their control.

### 3.12.3.3 Project Construction Workers and Suppliers to the Renewable Energy Industry

Many members of this group of stakeholders are either unemployed (out of work) or underemployed (not making full use of their skills, experience, training, or education). These stakeholders view the clean energy economy transition and projects such as renewable energy as potential future economic

opportunities that will also improve their social welfare. Since the area is still struggling with the consequences of the Great Recession, social attitudes towards future employment opportunities and cross-training are favorable and hopeful. Suppliers to the renewable energy industry are firms and establishments that can provide goods or services necessary to build, operate, and decommission the Proposed Project or other renewable projects in the area. These firms can potentially be local, regional, or national in origin and have a vested interest in participating in renewable energy development. The livelihood of this group depends on economic opportunities for sustainably developing renewable energy in the region.

#### 3.12.3.4 Utility Off-Taker and End-Use Energy Consumers

The processors, distributors, and ultimate consumers of electricity to be generated by the Proposed Project are a social group that is considered in the socioeconomic impact evaluation. The Proposed Project's energy output would be delivered to a grid system for use by final retail consumers. These consumers have various social attitudes toward renewable energy that relates to its reliability, cost, and the environmental sustainability of this resource. These attitudes also include concerns for the resources consumed (e.g., water) and the tradeoffs necessary to achieve emission-free wind power generation. The average consumer is concerned with how their local energy bill or electricity rates might potentially change with the introduction of wind energy assets. It is possible that power generated by the Proposed Project may flow to grids serving regions outside of Nevada, including California and Arizona.

#### 3.12.3.5 Local Private Land Owners / Large Lot Owners / Residents

In the Proposed Project vicinity, private landowners, large lot owners, and residents from Nevada, Arizona, and California have various attitudes toward renewable energy development.

Some support renewable energy development, some oppose a change to the desert environment, while others are indifferent to the proposed development. Local landowners are also concerned about effectively permanent changes to the natural high desert environment (given the 30-year lease aspect of the ROW grant), wildlife, and potential impacts on property values.

### 3.12.4 Economic Existing Conditions

The immediate project vicinity landscape has been significantly altered by human use. Because of its location between Las Vegas and Arizona communities and tourist attractions, this portion of the Puite-Eldorado Valley has historically been used as a major transportation thoroughfare and utility corridor. Modern and built-environment features of the landscape include an interstate highway (US-95 corridor); a mainline railroad track; the historic resort and mining communities of Boulder City, Laughlin, Cal-Nev-Ari, and Searchlight, Nevada, with their various casinos, gas stations, and small businesses; and several high-voltage transmission lines that converge in and transverse the area. The economy of Searchlight is based on its casinos, which cater to gaming tourists traveling between Nevada, Arizona, and California.

#### 3.12.4.1 Economic Base and Trends: Employment, Earnings, and Income

The economic base describes the industries, jobs, earnings, and wealth that collectively define the economy of the region. Since the most comprehensive economic indicators are compiled at the county level, county-level data have been used to describe the regional economy. Key industries and economic trends that are relatively more important to the character of the region are highlighted in more detail.

#### 3.12.4.2 Area Income Levels

Two measures are most commonly used to assess the relative prosperity of a population. The first, per capita income, is calculated by taking total personal income from all sources for the region and dividing it by the total number of people living there. It is best used in comparing a large number of diverse areas,

but its interpretation is sensitive to differences in family size, which can affect the size of the denominator of the measure.

Table 3.12-5 shows that the SIA has the highest per capita income of all the areas included in the table, with its $31,642 income exceeding the national average of $27,334 by 16 percent. With its older population and smaller household size, SIA households might not be so much in greater economic prosperity than their neighbors elsewhere, but rather their household incomes are divided among fewer householders and certainly fewer children. In contrast, Mohave County had a 2010 per capita income of only $21,523.

**Table 3.12-5. ROI Areas: 2010 Household Income**

| | Clark County Nevada | Mohave County Arizona | Searchlight Impact Region | Searchlight Impact Area | State of Nevada | State of Arizona | United States |
|---|---|---|---|---|---|---|---|
| 2010 Estimated Average Household Income | $72,600 | $51,979 | $70,467 | $74,498 | $72,112 | $67,436 | $70,883 |
| 2010 Estimated Median Household Income | $56,258 | $39,785 | $54,554 | $57,800 | $55,726 | $50,448 | $51,914 |
| 2010 Estimated Per Capita Income | $27,422 | $21,523 | $26,873 | $31,642 | $27,589 | $25,680 | $27,334 |

Source: U.S. 2010 Census

The second useful measure of income is median household income, which reflects the halfway point in incomes as they might be arranged from the lowest to the highest. It tends to be a more accurate reflection of the community than average household income, which can be skewed by a few very rich individuals. Both average household income and median household income are shown in Table 3.12-5. When considered together, these two measures provide information that one measure alone cannot. The SIA displays the highest average household income of all the areas ($74,498), above the national average of $70,883, and higher than Clark County's average household income of $72,600. This pattern supports the previously cited observation that the SIA consists of older, more established households with fewer children and comparatively higher income earners, including pensioners.

By comparison, the median household income of $57,800 in the SIA removes the dramatic impact of a few very high incomes. Clark County's median household income is nearly as high as that for the SIA, suggesting that many of the SIA's retiree incomes are relatively high and are comparable to professional incomes in the Las Vegas area.

The region's economy can also be examined by levels of personal income instead of employment, as shown on Figure 3.12-2. Between 1970 and 2000, the services sector of the economy grew much faster than the non-services-related sectors or government, to account for 72.1% of the two-county SIA's economy in 2000. Since then, the accommodation and food services sector and construction sector have continued to grow. Overall during this period, the relative level of prosperity in the region was improving.

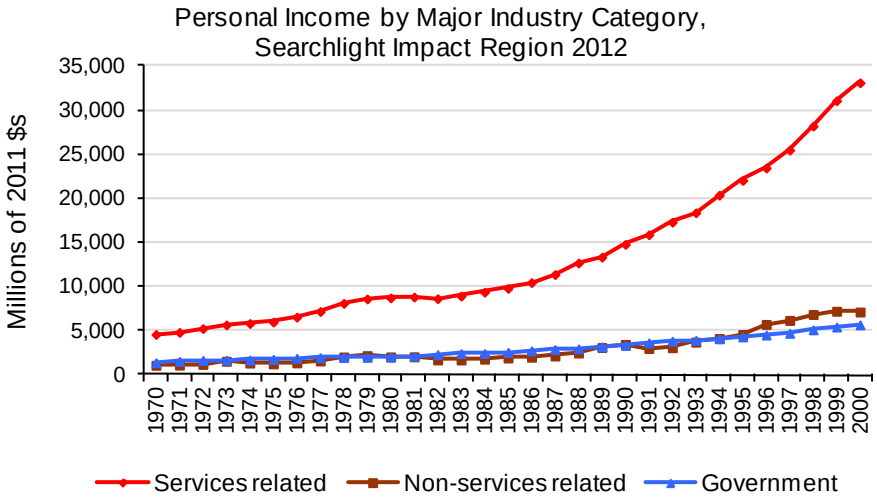


**Figure 3.12-2. Personal Income by Major Industry Category, Two-County SIR (Headwaters Economics 2012)**

A second sector growing rapidly in the region is non-labor income, i.e., payments to owned assets that come as dividends, interest, rent, and transfer payments. The majority of transfer payments go to senior citizens and veterans as Social Security, Medicare, and pensions. In 2010, non-labor income comprised 36.5% of the SIR's $77.4 billion economy and was growing (Figure 3.12-3). This is less than the 38% non-labor income for the combined economy of Arizona and Nevada (Headwaters, 2012). Note that the sudden rise in transfer payments beginning around 2008 is the effect of countercyclical social welfare programs increasing payments as the Great Recession began. Dividends, interest, and rent fell a bit later as first stock prices, and then interest rates declined.

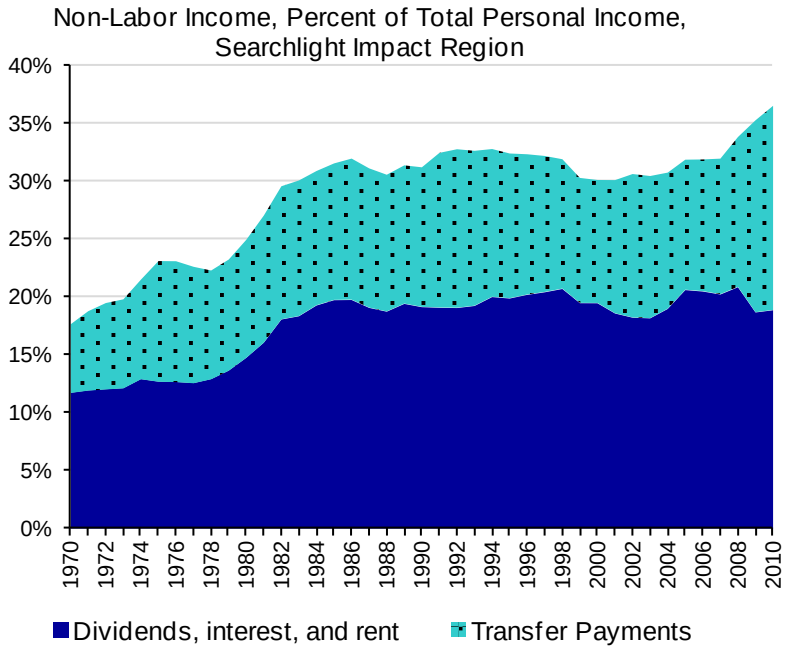


**Figure 3.12-3. Non-labor Income as a Percent of Total Personal Income, Two-County SIR (Headwaters Economics 2012b)**

Figure 3.12-4 illustrates 2006-10 Census American Community Survey estimates of the most prevalent job classifications in the SIA and Searchlight two-county region, with the U.S. average for comparison. Both have more people involved in service jobs than the U.S. as a whole, as would be expected in a region where gaming and tourism dominate the local economies. Bureau of Labor Statistics (BLS) data show that 29.8% of jobs in the SIA are in the tourism sector, compared to a U.S. average of 7.9%. Note that the BLS data refer to all types of jobs that might fall into a given industry sector, including management, technical services, and laborers, while the 2006-10 census estimates on Figure 3.12-3 refer to occupations that cut across many different sectors. Both the SIA and region lag the U.S. markedly in professional jobs and in production, transportation, and material moving. Within the SIR, travel and tourism accounts for 36.4% of employment, which is far greater than the 14.9% U.S. average. There are pockets within the SIR with even greater tourism dependence. Arts, entertainment, recreation, accommodations and food service employment accounts for 27.3% of jobs in the Seachlight CDP, 35.7% in the Arizona Village CDP, and 53.7% of jobs in the Laughlin CDP. Both the Searchlight area and region have very little employment in farming, fishing, and forestry. Both have proportions of jobs in construction and management similar to the rest of the nation.

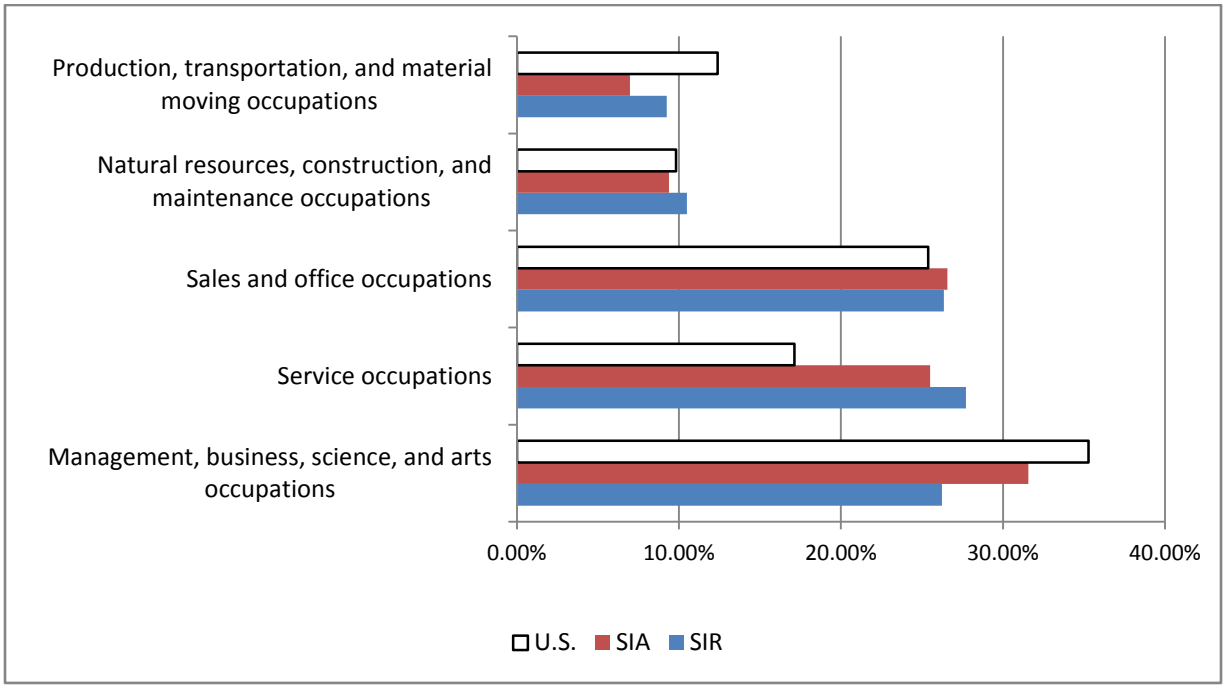


**Figure 3.12-4. 2006-10 Estimated Employed Population Aged 16 and Over by Occupation (U.S. Census Bureau, American Community Survey, 2006-10)**

Unemployment rates for the two-county region in 2011 were higher at 13.6% than the rate for Arizona and Nevada at 10.8% (Headwaters Economics 2012). Nevada has been affected especially severely during the Great Recession. In April 2012 according to BLS data, unemployment rates were 11.6% in Clark County, 8.8% in Mohave County, 11.7% in Nevada, 8.2% in Arizona, and 8.1% for the U.S.

### 3.12.4.3 Agriculture

In 2000, the employment share for agriculture and agricultural services was 1.2% for the two-county region. Table 3.12-6 contains data released by the 2007 Census of Agriculture, showing that while the region has nearly a million acres in farms, most of the land is dryland pasture used to support cattle. Judging by the low value of crops sold, most of the cropland in the region is devoted to growing hay, which is fed on-farm to cattle. Within the SIA, only the area south of Bullhead City appears to have

significant irrigated cropland. Agriculture is not an important industry to the economy or culture of the SIA in terms of employment or personal income.

**Table 3.12-6. Two-County Region Agriculture 2007**

| | Clark County Nevada | Mohave County Arizona | Searchlight Impact Region |
|---|---|---|---|
| Number of farms | 193 | 334 | 527 |
| Land in farms (acres) | 88,381 | 858,392 | 946,773 |
| Irrigated land (acres) | 65,206[a] | 159,053 | 224,259 |
| Cattle and calves inventory | 5,018 | 15,488[a] | 20,506 |
| Value of crops sold | $4,723,000 | $12,157,000 | $16,880,000 |
| Value of livestock sold | $5,517,000 | $6,475,000 | $11,992,000 |
| Net cash farm income | $1,619,000 | $1,051,000 | $2,670,000 |

Source: Census of Agriculture 2007.
[a] Non-disclosed for 2007. Figure is for 2002.

### 3.12.4.4 Commuting and Traffic

Commuting patterns in and out of Clark and Mohave County were examined to determine the level of movement between the counties and through the SIR (Census Bureau, Local Employment Division [LED] Origin-Destination Data Base 2010). Looking only at primary jobs in 2010, 1,174 Clark County residents commuted to Mohave County to work, primarily to the communities of Bullhead City and Mohave Valley. A much larger stream of 9,897 Mohave County residents commuted to work in Clark County, especially to Laughlin, Las Vegas, and Boulder City. Many of these commuters would drive within view of the Proposed Project area.

### 3.12.4.5 Public Revenues

Clark County funds numerous public services. These services include traditional governmental activities such as those of the County Recorder, Clerk, Assessor, Treasurer, airports, hospital, Family Services, Social Services, and criminal justice system, including courts, District Attorney, Public Defender, and Juvenile Justice Services. For the large portion of the County's population residing in its unincorporated areas, the County provides a full range of local services, such as fire and police protection, road maintenance and construction, animal control, parks and recreation, building inspection, and water and sewage systems. County revenues totaled $7.25 billion in 2009. Ad valorem (combined real and personal property tax revenues) totaled $870 million or 29 percent of total Clark County revenues (Comprehensive Annual Financial Report 2009).

# 3.13 Environmental Justice

This section presents descriptive information about communities within the Proposed Project area and their racial compositions. Data were obtained from the 2010 Decennial Census for the analysis of existing conditions relevant to environmental justices. Minority populations are considered to be anywhere not classified as "white alone" in the U.S. decennial census. At the national, state, county, and place geography levels and base count updates are based on estimates from the U.S. Census Bureau and, in some cases, state demographers. At the Census Tract and Block Group levels, base count information is established on sources such as local estimates, trends in U.S. Postal Service deliverable address counts, and counts from the Nielsen Claritas Master Address File. For the environmental justice study, the ROI is the same as that described in Section 3.12, Socioeconomics.

## 3.13.1 Region of Influence

The ROI for the environmental justice analysis is the communities near the Proposed Project area.

## 3.13.2 Existing Environment

### 3.13.2.1 Minority Populations

In 2010, the U.S. Census classified 35.8% of the population of Clark County, Nevada, and 10.7% of the population of Mohave County, Arizona, as belonging to racial minorities, compared to 30.6% for the State of Nevada and 24.4% for the State of Arizona. The SIA population was 13.9% nonwhite[3] in 2010, and generally less racially diverse than either southern Nevada or northwestern Arizona.

Table 3.12-3 in Section 3.12-Socioeconomics, provides 2010 Census populations by race and origin for the several units of geography defined for the Proposed Project. In the following paragraphs, changes that have occurred in the size and distribution of minority populations since 2000 are evaluated.

By 2010, nonwhite racial minorities had increased in Clark and Mohave counties, respectively, from 28.4 to 35.8%. For the SIA, racial minorities in 2010 comprised 13.9% of the total population, a modest increase over 11.9% in 2000.

Regardless of race, total populations grew faster than the cumulative 9.7% growth rate that typified the U.S. from 2000–2010. The SIA is estimated to have grown by 197.5%, outpacing their containing

[3] Minority populations include Hispanic, Black (or African American), American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, and other nonwhite races. Categories of race include White, Black, American Indian/Alaska Native, Asian, Hawaiian/Pacific Islander, and Other. Beginning with the 2000 Census, individuals were given the option to identify more than one race, resulting in 72 distinct race combinations. For purposes of this report, the concept "racial minority" is analogous to "nonwhite," and is defined by subtracting the number of White Alone (single race is White) persons from the sum total of all individuals reporting their race for the geographic area in question.

counties of Clark (41.8%) and Mohave (29.1%). Certain racial minority populations grew even faster. Within the SIA, Asians increased by 711% from 977 to 6,947 persons, and the African American population expanded by 312% in the SIA.

The Hispanic population of the two counties grew as a percentage of the total population from 22% to 30.7% in Clark County and from 11% to 15.2% in Mohave County. The comparatively greater growth in Clark County is attributed to the concentration of Hispanic service workers within the Las Vegas area.

Hispanics and American Indians have experienced a higher rate of population growth within the SIA than they have within the SIR, and each group appears to be growing at about the same pace. Blacks and Asians, while constituting very small portions of the population, have shown the highest statistical growth.

#### 3.13.2.2 Low-Income Populations

A common measure of the absence of income at the household level is whether families meet the federal definitions for poverty. Within the SIA, an estimated 8.1% of families lived at poverty level in 2010 (Table 3.13-1). This rate was lower than the U.S. rate (10.1%) for 2010, slightly lower than the rates for Nevada (8.6%) and Clark County (8.7%), and sharply lower than the rates for Arizona (10.9%) and Mohave County (11.6%) for the same year.

**Table 3.13-1. Estimated 2010 Families with Incomes Below National Poverty Level**

| | Clark County Nevada | Mohave County Arizona | Searchlight Impact Region | Searchlight Impact Area | State of Nevada | State of Arizona | United States |
|---|---|---|---|---|---|---|---|
| All families | 8.7% | 11.6% | 9.0% | 8.1% | 8.6% | 10.9% | 10.1% |
| Married-couple families | 4.7% | 6.5% | 4.9% | 4.8% | 4.6% | 6.2% | 4.9% |
| Male householder families | 10.1% | 10.5% | 10.1% | 10.0% | 10.0% | 15.6% | 14.7% |
| Female householder families | 22.4% | 39.4% | 23.8% | 28.9% | 23.5% | 28.6% | 28.9% |
| Families with children | 13.1% | 22.3% | 14.3% | 24.2% | 13.3% | 17.2% | 15.7% |
| Families without children | 1.7% | 3.5% | 1.9% | 2.5% | 1.7% | 2.3% | 2.2% |

Source: U.S. 2010 Census

Senior citizens have comparatively lower poverty rates than do families with children. The preponderance of persons over the age of 60 in the SIA partially explains the lower overall poverty rates for this area as compared to the wider region and U.S. (see Table 3.12-2 in Section 3.12-Socioeconomics) For instance, within the Searchlight CDP the median age was 63.6 years in 2010, yet there were no people or households living below the poverty level in the Census year of 2010. Consistent with national patterns, the poverty rates of families with children (14.3%) in the SIA were considerably higher than those without children (1.9%). Family poverty rates were highest among female-headed families, where 23.8% of families in the SIA lived below the poverty line in 2010.

# 3.14 Human Health and Safety

This section defines existing conditions relative to human health and safety to establish a baseline against which potential impacts may be measured. The Proposed Project would be located on undeveloped lands administered by the BLM and would be potentially affected by existing hazards in the Proposed Project area, including earthquakes, flooding, wildfire, and existing soil or groundwater contamination. Hazards associated with seismic conditions are addressed in Section 3.1, Geology, Soils, and Minerals; Flood-related hazards are detailed in Section 3.3, Water Resources; and fire management risks are outlined in 3.8 Land Use. Other potential natural hazards, hazards related to existing infrastructure, and hazards associated with uses of the site and its vicinity are discussed below.

## 3.14.1 Region of Influence

The ROI for solid and hazardous wastes is within the boundaries of the Proposed Project area. In order to assess the potential for offsite conditions to affect the project footprint, federal and state environmental regulatory record searches were conducted within a 1-mile radius from the project boundary. According to the NDEP Bureau of Corrective Actions online site list, no hazardous waste facilities subject to corrective action are located on the proposed site (NDEP 2011). Additionally, results of an Environmental FirstSearch™ Report prepared on August 3, 2011, showed that the project site was not located in any of the referenced environmental databases and that no properties of environmental concern were located within 1 mile of the project site (FirstSearch 2011). A Phase 1 Environmental Site Assessment is currently under preparation and will be completed prior to project construction.

## 3.14.2 Existing Environment

### 3.14.2.1 Potential Hazardous Materials and/or Wastes

Hazardous material is defined as any material that, because of its quantity, concentration, or physical or chemical characteristics, might pose a real hazard to human health or the environment. Hazardous materials include flammable or combustible material, toxic material, poisonous and infectious materials, corrosive material, oxidizers, aerosols, biohazards, and compressed gasses.

Exposure to hazardous materials or wastes could occur due to existing conditions at the project site and due to project-related activities. There would be a potential for encountering hazards and hazardous material sites in the Proposed Project area during construction and O&M if existing and past land use activities possess indicators of hazardous material storage and use. Examples of past and current land uses that could have resulted in unknown contamination include the following:

- Storage or use of petroleum products (fuels and lubricants), solvents, paints, explosives, and cleaning chemicals;
- Rural residences and farms that commonly have old or inactive underground storage tanks (USTs);
- Pesticide and/or herbicide-polluted runoff from residential or agricultural properties;
- Illegal dumping;
- Land actions involving ROW leases and permits (e.g., gasoline and natural gas pipelines, telecommunication sites, military sites, and transportation facilities);
- Commercial and industrial sites (historic and current) that could have soil or groundwater contamination from unreported hazardous substance spills; and
- BLM-authorized minerals program.

The primary reason to define potentially hazardous sites is to protect worker health and safety and to minimize public exposure to hazardous materials associated with waste handling during construction,

O&M, and decommissioning activities. If encountered, contaminated soil may qualify as hazardous waste, thus requiring handling and disposal according to local, state, and federal regulations.

Hazardous materials management involves the prevention, investigation, and remediation of illegal hazardous materials actions on public lands; the proper authorization, permitting, and regulation of the uses of hazardous materials; and timely, efficient, and safe responses to hazardous material incidents. Although the BLM issues authorizations that could result in the direct storage, and potential use, of hazardous materials on public lands, the unexpected release or disposal of these materials is proactively addressed through standard operating procedures, stipulations, and terms and conditions that are included in authorization documents.

The BLM Hazardous Materials Program has the responsibility for compliance with federal, state, and interstate, and local management requirements. All non-DOI groups whose activities are on BLM-managed lands and facilities (such as claimants, concessionaires, contractors, permitees, and lessees) are responsible for meeting the same requirements. The Hazardous Materials Program is also responsible for aggressively pursuing potentially responsible parties to correct their contamination of the BLM-administered lands and to facilitate or recover cleanup costs (BLM 1998).

A hazardous wastes and materials evaluation was conducted to attempt to identify potential environmental issues located in the project area and at locations identified within a 1-mile radius from the project boundary. The purpose of this task was to identify database listings present within the project area or on adjoining land that might have the potential to affect the environmental condition of the defined project area. As part of this evaluation, a regulatory database report conforming to the requirement set for by the American Society for Testing and Materials (ASTM), Standards on Environmental Site Assessments for Commercial Real Estate E1527-05 and the EPA rule for All Appropriate Inquiry standards as set forth in Title 40 of CFR Section 312.10, was performed. The objective of the database report was to identify recognized environmental conditions, which are defined by ASTM International as "the presence or likely presence of any hazardous substance or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property." The work was also conducted in general accordance with EPA's AAI standards, whose objective is to identify conditions indicative of releases and threatened releases of hazardous substances on, at, in, or to the site. In addition, a Phase I Environmental Site Assessment is currently being prepared for the project area.

A review of the environmental database report prepared by FirstSearch (2011), in addition to a review of NDEP Bureau of Corrective Actions (NDEP 2011) and EPA (2011) online databases, indicates that no active leaking UST sites, brownfields, active remediation sites, or waste management facilities have been identified within a 1-mile radius of the Proposed Project site. Two historical corrective action cases were listed in the FirstSearch report within a 1-mile radius of the Proposed Project site boundaries, as shown in Table 3.14-1. Both facilities reported release of petroleum to soil and were granted regulatory closure by NDEP in 2001 following cleanup. Given the regulatory status of these two facilities, and their location downgradient to the west of the project site boundary, these two facilities do not represent an environmental condition for the Proposed Project. In addition, review of NDEP Bureau of Corrective Actions active UST online databases indicated that four active registered USTs were located within 1-mile radius of, but greater than 0.44 mile from, the project boundary, as shown in Table 3.14-1. No facilities of environmental concern to the Proposed Project were found.

**Table 3.14-1. Potentially Contaminated Sites in the Proposed Project Vicinity**

| Site Name | Site Address | Town | Site Type | Status | Distance from Proposed Project Site |
|---|---|---|---|---|---|
| Searchlight Nugget Shell | 230 Highway 95 North | Searchlight | Leaking UST Facility | Granted Regulatory Closure | 0.49 mile |
| Clark County Metro Station | 210 North US-95 | Searchlight | State Corrective Action (Soil) | Granted Regulatory Closure | 0.52 mile |
| Searchlight Boat & RV | 250 East Cottonwood Cove Road | Searchlight | Regulated UST Facility | Active Permit | 0.45 mile |
| Terrible Herbst #243 | 670 South US-95 | Searchlight | Regulated UST Facility | Active Permit | 0.83 mile |
| Rebel Oil #47 | 650 South US-95 | Searchlight | Regulated UST Facility | Active Permit | 0.89 mile |
| Colton's General Store | 675 South US-95 | Searchlight | Regulated UST Facility | Active Permit | 0.94 mile |

Note: US-95 = U.S. Interstate 95; UST = underground storage tank

The BLM LVFO reported no knowledge of any existing problematic dumping or spills in the project area. No improvements have been implemented to address illegal dumping. However, the amount of solid waste illegally dumped in the project area is projected to become more common due to increases in population, especially as urban areas expand closer to public land boundaries (BLM personal communication 2009).

### 3.14.2.2 Fire Hazards

The Clark County Community Wildfire Risk/Hazard Assessment Project, commissioned by the Nevada Fire Safe Council, was published in 2005. The purpose of the assessment was to evaluate the risk of communities located in Clark County and adjacent to federal lands most vulnerable to wildfire risks. The assessment considered five primary indicators of risk and/or hazards as follows: (1) community design; (2) construction material; (3) defensible space; (4) availability of fire suppression resources; and (5) physical conditions such as vegetation, fuel loads, and topography (RCI Concepts [RCI] 2005).

The Clark County Community Wildfire Risk/Hazard Assessment Project identified the town of Searchlight as a 'Moderate Hazard' community. This rating was based on the steep topography in the project area and the limited availability of adequate wildfire suppression resources. Searchlight is classified as an intermix wildland-urban interface based on the scattering of structures in the wildland interface and the lack of a clear demarcation between buildings, open and undeveloped spaces, and potential wildland fuels. Fuel hazards in the community are considered low, with widely spaced vegetation consisting primarily of annual grasses and shrubs (bursage, creosote bush, and Joshua trees), in addition to rocky terrain. However, steep mountain slopes surrounding and within the community, with southwest facing slopes of 10 to 40 percent, can intensify fire behavior in the Propose Project area. The worst-case scenario for wildfire in the Searchlight area, according to the assessment, is described as occurring on a summer afternoon during standard working hours when local volunteer firefighting resources might be unavailable for quick fire suppression response. This worst-case scenario would be intensified on windy days and in a year with above normal annual grass growth (RCI 2005).

Clark County Fire Department Rural Station 75, a volunteer station located in Searchlight, provides fire response resources for the Searchlight area. Additional fire response resources can be requested from the BLM, NPS, and U.S. Forest Service through the Las Vegas Interagency Communications Center, in addition to the Nevada Division of Forestry, the Boulder City Fire Department, and the Cal-Nev-Ari

volunteer fire station. Water for fire suppression resources in Searchlight consists of 500 gallons per minute (gpm) hydrants located within 500 feet of structures, community water supply wells, and two 1-million-gallon storage tanks (RCI 2005).

#### 3.14.2.3 Searchlight Airport

The Searchlight Airport is located approximately two miles south of Searchlight, with a portion of the airport runway located on the western extent of the Proposed Project area. The airport is located on public lands owned by the BLM and offers no services. The runway is composed of asphalt, is approximately 5,040 feet long, and is unlighted. Aircraft operations at the airport consist of approximately 25 flight operations per month, with 100% general aviation usage (AirNav 2011). Due to the proximity of Proposed Project WTG locations to the Searchlight Airport, coordination with the FAA would be necessary to ensure the safety of general aviation users, construction workers, and the public.

#### 3.14.2.4 Transmission Lines and Pipelines

Four existing electrical transmission lines currently cross portions of the Proposed Project area. The Western Davis-Mead 230-kilovolt transmission line crosses the extreme eastern portion of the project area at the location of the proposed Western switching station, approximately 7.5 miles east of Searchlight. Two additional Western-owned transmission lines and a Nevada Energy transmission line cross the southwestern portion of the project area.

#### 3.14.2.5 Mining

Nevada's mineral deposits have attracted the attention of miners and prospectors for more than 150 years, leaving behind a legacy of shafts, adits, glory holes, stopes (excavation in the form of steps), mill sites, and other features. In particular, the Searchlight Mining District was founded in 1898 after the discovery of gold ore in the area. The exploration and mining for gold, silver, and other precious metals and minerals has continued in the vicinity to the present day. According to a review of readily available mining claim information from the BLM (2011), currently there are approximately 561 active mining claims located within the Proposed Project site boundaries, in addition to 1,827 closed mining claims. Numerous active and closed mining claims are additionally located within the immediate project vicinity. The actual locations would be verified by on-the-ground surveys prior to WTG tower construction to ensure there is no overlap with an existing mining claim.

The BLM LVFO reported no knowledge of existing environmental concerns related to past or active mine sites identified within the project area (BLM 2009). The BLM has been addressing abandoned mine lands closures through bat gating/cupolas and backfill/foam closures. Some of the described closures have occurred in the Searchlight area. Historical mining concerns include water quality impacts, biological impacts, and the presence of explosives and/or hazardous gases that are typically associated with underground workings.