

3.0 Affected Environment

This Environmental Assessment (EA) analyzes environmental, social, and economic issues at a site-specific level. The Proposed Action would consist of a trail system that would primarily be a bicycle and pedestrian trail to accommodate recreational bikers, joggers, hikers, dog walkers, and other non-motorized vehicles (herein referred to as the hiker/biker trail). Chapter 2 of this EA provides a detailed description of the Proposed Action. The descriptions of the affected environment presented in this chapter provide a level of detail needed to assess the range of potential impacts that may occur as a result of the implementation of the Proposed Action, as well as those of the No Action Alternative. Regulatory requirements vary by resource, and a description of the specific requirements is provided for the applicable resource.

The team used data collected for and presented in the Bureau of Land Management (BLM) *Resource Management Plan* (RMP) (2000) to establish environmental baseline conditions for the Proposed Action to the extent applicable. For resources in which data were not available from the RMP, the team identified relevant environmental conditions through geographic information system (GIS) data available from the Clark County website, maps and aerial photography, literature searches, agency coordination, and field investigations conducted in October 2010 and in April 2011.

Before conducting the field survey, the team reviewed many data sources to gain a general understanding of the ecology of the study area. Sources included the following:

- BLM, Nevada Department of Wildlife (NDOW), Nevada Natural Heritage Program (NNHP), and US Fish and Wildlife Service (USFWS) websites
- Aerial photographs
- Topographic maps
- Soil survey
- Previous environmental studies

Andy Herb (senior ecologist) walked the entire study area between October 12 and 15, 2010, and April 18 and 21, 2011, to identify and document wildlife use and general habitats, including potential Waters of the US (WOUS). All relevant features were recorded on 1-inch equals 200-foot scale color aerial photographs and/or with a submeter accurate global positioning system (GPS) device. BLM personnel conducted a field survey to verify the presence/absence of rare plants for Zone 2 in late February 2011.

All botanical nomenclature presented here follows the Plants Database (NRCS 2010). Nomenclature for birds follows that presented in *The Sibley Guide to Birds* (Sibley 2001) and all other wildlife nomenclature follows that used by NNHP (NNHP 2010).

The geographic study area for vegetation, drainage/washes, and soil resources encompasses approximately 201 acres of BLM lands along State Route (SR)-159 within the RRCNCA. The Zone 2 Trail study area generally runs parallel to the existing roadway and varies in distance away from the highway ranging from the edge of the Nevada Department of Transportation (NDOT) right-of-way (ROW) to about 2,000 feet. The alignment for the Proposed Action would lie within approximately 150 feet of the western edge of the study area.

The study area varies between approximately 3,700 and 3,800 feet above mean sea level (AMSL) and is mostly undeveloped, except for SR-159, the entrance/exit of the Visitor Center, the 13-mile Scenic Drive, the Vista Overlook and Exit Lots, and the Red Rock Overlook. It is located near the base of the Sandstone Bluffs, which are part of the Spring Mountains in the creosote bush-dominated basins of the Mojave Basin and Range Level IV Ecoregion (EPA 2011a).

This ecoregion is characterized by the presence of scattered shrubs, cacti, and grasses, and has historically been used for low-carrying capacity rangeland, wildlife habitat, urban development, military bases, recreation, and mining. Pocket mice, kangaroo rats, and the desert tortoise (*Gopherus agassizii*) are faunal indicators of this desert environment (EPA 2011a). The study area is typical of the ecoregion.

3.1 Identifying Resources for Analysis

The team approach in completing the site-specific EA will be to tier off the Programmatic Environmental Assessment (PEA) when appropriate, briefly summarize findings/conclusions when nothing has changed, and provide new information in sufficient detail. In addition, affected resources will be brought forward for analysis if needed.

This section discusses the resources identified by BLM as necessary to reach a reasoned choice among the range of alternatives. In designating the resources to be carried forward for analysis, environmental resources known to occur or with the potential to occur in the Proposed Action have been identified.

The BLM requires an analysis of potential impacts on resources for the following conditions:

- May cause disagreement about the best way to use a resource
- To resolve an unwanted resource condition
- May potentially have effects of a Proposed Action or alternatives
- Shown to have a cause and effect relationship with the Proposed Action or alternatives (BLM 2008)

The National Environmental Policy Act (NEPA) referenced in Chapter 1 of this EA is only one of many authorities that contain procedural requirements that pertain to assessment when the BLM is considering a federal action. Supplemental legislation requires that certain resources be examined to determine possible effects from a proposed action. **Table 3-1** lists the resources examined for this project and identifies those Supplemental Authorities (as listed in *NEPA Handbook H-1790-1*, Appendix 1) that were determined to be potentially impacted by the Proposed Action and, thus, were carried forward for additional analysis in this EA.

Table 3-1. Affected Resources

Determination*	Resource Description	Rationale for Determination
NI	Air Quality	The study area is currently under National Ambient Air Quality Standards (NAAQS) compliance for criteria pollutants. A short-term (temporary), intermittent increase in particulate matter 10 microns in diameter (PM ₁₀) is anticipated from construction activities, which would require a dust control permit. Chapter 2 includes construction mitigation measures for air quality. Impacts are assessed in this EA.
NP	Areas of Critical Environmental Concern	Per Table 3-1 in PEA, there would be no potential impact. ACEC designation is not required for the study area. "Protective measures provided through the RRCNCA Establishment Act already exceed any protective measures which could be implemented through an ACEC plan" (BLM 2005). The study area does not contain critical desert tortoise habitat.
NP	Areas with Wilderness Characteristics	The Proposed Action would be located in an area that does not meet the elements of wilderness character.
NP	BLM Natural Areas	The Proposed Action would not be located within the North Pine Creek Natural Area.

Table 3-1. Affected Resources (Continued)

Determination*	Resource Description	Rationale for Determination
NP	Cultural Resources	The BLM identified no significant resources in Zone 2 in 2011. See Chapters 3 and 4 and Appendix E in the PEA. If any inadvertent discoveries are made, construction will halt in the immediate vicinity, and BLM will be notified.
NP	Environmental Justice	No minority- or low-income communities are present in or near the study area.
NP	Farmlands (Prime or Unique)	There are no prime or unique farmland designations in the District.
PI	Fish and Wildlife Excluding Federally Listed Species	Impacts are assessed in this EA.
PI	Floodplains, Washes	Impacts are assessed in this EA. The study area is currently compliant with the Federal Emergency Management Agency (FEMA), Nevada Division of Environmental Protection (NDEP), and Clark County Regional Flood Control District (CCRFCD) regulations.
NI	Fuels/Fire Management	Impacts assessed in this EA. Normal conformance with seasonal fire restrictions would be adequate. Restrictions can be in effect any time between May 15 and October 1.
NI	Geology/Mineral Resources/Energy Production	No mining operations are present in the study area. This action would not sever mineral materials from the property.
NI	Greenhouse Gas (GHG) Emissions	Impacts are assessed in this EA.
NI	Hazardous Materials and Waste	Per the BLM, hazardous materials are not stored or dispensed on lands on or adjacent to the study area. A field investigation did not reveal any evidence of hazardous materials releases in the study area. The activities associated with the construction and maintenance of the Zone 2 Trail would require proper transportation, use, and/or storage of hazardous waste material. Chapter 2 of this EA includes construction mitigation measures for hazardous materials and waste.
PI	Health and Human Safety	Impacts are assessed in this EA.
PI	Hydrologic Conditions	Impacts are assessed in this EA.
PI	Invasive Species/Weeds	Impacts are assessed in this EA.
NI or PI	Lands/Access <ul style="list-style-type: none"> • Transportation • ROW • Parking 	Impacts are assessed in this EA. The Proposed Action would follow a plan of development for construction of the project. In addition, the Proposed Action would keep the footprint as small as possible and restrict motorized vehicles to existing access roads to minimize any additional disturbances.
NP	Livestock Grazing/ Range Management	Per Table 3-1 in PEA, there are no potential impacts. The Proposed Action would not be located within an area that has any authorized grazing allotments.
PI	Migratory Birds	Impacts are assessed in this EA.

Table 3-1. Affected Resources (Continued)

Determination*	Resource Description	Rationale for Determination
NP	Mining Claims	Per Table 3-1 in PEA, there is no potential impact. No mining claims are present in the study area.
NP	Native American Religious Concerns	Native American consultation through the PEA process indicated that no tribal properties are present in the study area and no Native American Religious concerns have currently been identified. Impacts are assessed in this EA under Cultural Resources. Steps taken in the Native American consultation in the Zone 2 EA are reported in Chapter 5.
NI	Noise	Some temporary noise would be present in the study area resulting from the use of equipment during construction. Noise was not studied in depth in the study area for the following reasons: <ul style="list-style-type: none"> • 50-foot noise levels will not be louder than 70 to 90 dBs • The distance from Calico Basin to the construction area is beyond the noise threshold of 5 miles • Noise would be limited to highway, trailhead parking, Cowboy Trails, etc.
NP	Paleontology	No paleontological resources have been identified in the study area. If any paleontological resources are discovered, they will be reported immediately to the BLM. Work is to halt in the immediate vicinity.
PI	Recreation	Impacts assessed in this EA. The study area is currently compliant with all RMP and recreation use regulations.
PI	Socioeconomics	Impacts are assessed in this EA.
PI	Soils	Impacts are assessed in this EA.
PI	Special Status Species (Plants and Animals)	Impacts are assessed in this EA.
PI	Threatened, Endangered or Candidate Animal Species	Impacts are assessed in this EA.
NP	Threatened, Endangered or Candidate Plant Species	No threatened, endangered, or candidate plant species are present in the Zone 2 Trail study area.
PI	Vegetation Excluding Federally Listed Species	Impacts are assessed in this EA.
PI	Visual Resources	Impacts are assessed in this EA.
NP	Water Resources – Drinking or Ground	The activities associated with the Zone 2 Trail would not be such as to cause any degradation of water quality during the ephemeral flow events or to subsurface water sources. Additionally, the Zone 2 Trail would not provide any new drinking water sources; therefore, water quality in association with drinking or ground water is not discussed further in this site-specific EA.

Table 3-1. Affected Resources (Continued)

Determination*	Resource Description	Rationale for Determination
NI	Water Resources/Quality – Wastewater	Restroom facilities (including expansion upgrades) at the trailhead parking areas would not be connected to a public sewer system. However, the BLM will be responsible for maintenance or contracting of maintenance for these facilities.
NI	Water Resources – Other than Drinking or Ground Water	See the discussion under Floodplains, Washes.
PI	Wetlands/Riparian Zones	Impacts are assessed in this EA.
NP	Wild and Scenic Rivers	Per Table 3-1 in PEA, there would be no potential impact. A field study in Fall 2010 confirmed that no wild and scenic rivers are present in the study area.
NI or PI	Wild Horses and Burros	Impacts are assessed in this EA. The Proposed Action would be located in the Red Rock Herd Management Area (HMA). Regarding the Red Rock HMA, no changes to the Appropriate Management Level (AML) for managing wild horses and burros would be required. The study area is currently compliant with BLM's Wild Free-Roaming Horses and Burros Act.
NP	Wilderness/WSA	Per Table 3-1 in PEA, there is no potential impact. The Proposed Action would not be located within designated Wilderness, WSAs, or ISAs. This portion of the trail is located in the vicinity of, but does not provide direct access points (for example, trailheads) to, any portions of Rainbow Mountain or La Madre Mountain Wilderness. Therefore, the proposed trailheads and trail in this location would not result in any direct or indirect impacts on Wilderness.
PI	Woodland/Forestry	All cactus and yucca species are regulated under the BLM Nevada Forestry Program and require salvaging. Impacts on all cacti and yucca (including Joshua trees) are assessed in this EA under this resource.

* NP = not present in the area or impacted by the proposed or alternative actions
 NI = present, but not affected to a degree that detailed analysis is required
 PI = present with potential for relevant impact that needs to be analyzed in detail in the EA

3.2 Resource Description

This section identifies the existing condition, trends, and issues related to natural resources and human environment that may be affected by the Proposed Action.

3.2.1 Air Quality

The US Environmental Protection Agency (EPA) established the National Ambient Air Quality Standards (NAAQS) for criteria pollutants, including carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), lead, ozone (O₃), particulate matter less than 10 microns in diameter (PM₁₀), and particulate matter less than 2.5 microns in diameter (PM_{2.5}).

The Red Rock Canyon National Conservation Area (RRCNCA) is located in Hydrographic Basin 212, which is also the Las Vegas airshed. Any RRCNCA activities that could affect air quality conditions

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within the Las Vegas airshed would be subject to air quality emission control measures as designated in the State Implementation Plan (SIP) to attain and maintain NAAQS for this basin.

EPA has designated the Las Vegas airshed as a serious nonattainment area for CO and PM₁₀. As of July 21, 2010, however, EPA approved the state of Nevada's maintenance plan and request for redesignation. When finalized, the plan will bring the Las Vegas Valley into attainment status and compliance for CO.

EPA finalized its approval in 2004 of the Clark County PM₁₀ Plan as meeting the Clean Air Act (CAA) (1970) requirements for serious PM₁₀ nonattainment areas. As part of this action, EPA approved a series of rules adopted by the Clark County Department of Air Quality and Environmental Management (DAQEM) that control fugitive dust sources, including disturbed vacant lots, construction sites, unpaved roads, paved roads, and unpaved parking lots. Under these rules, any construction activities covering 0.25 acre or more are required to obtain a dust control permit in accordance with air quality regulations and Section 94, Permitting and Dust Control for Construction Activities (DAQEM 2004). The rules are the major control measures relied on in the PM₁₀ Plan to demonstrate attainment of the health-based standard (EPA 2010).

The CertainTeed Manufacturing Plant (located directly east of the RRCNCA along SR-159) is considered one of the Las Vegas Valley's major source emitters. The monitoring station located at the plant is the closest air quality monitoring station in proximity to the RRCNCA. Technical documentation supporting the plant's Title V permit indicates that the plant is in compliance for all criteria pollutant emission (DAQEM 2009).

Although the air quality in the general area is currently in compliance, unpaved trailheads at the Exit Lot contribute to PM₁₀ emissions in the RRCNCA. Additional use of unauthorized roadside vehicle parking near the Exit Lot also contributes to PM₁₀ emissions.

3.2.2 Cultural Resources and Native American Religious Concerns

Section 106 of the National Historic Preservation Act (NHPA) (1966, as amended) requires that federal agencies consider the effects of their undertakings on cultural resources. The RRCNCA currently operates under a BLM Protocol Agreement (2009) with the Nevada State Historic Preservation Officer (SHPO). Under Section 106 of the NHPA (1966, as amended), its attendant regulations, and the BLM State Protocol Agreement (PA), the BLM has defined the Area of Potential Effect (APE) as coterminous with the project corridor except in the Red Rock Wash area where site stewards have previously reported undocumented rock ring features.

As documented in Chapter 3, Section 3.4.1 of the PEA, there are 251 known sites in the RRCNCA, but none were identified in proximity to Zone 2. In 2011, the BLM conducted a pedestrian survey for the proposed alignment for Zone 2 and no significant cultural resources were found.

Informational (scoping) packets were mailed on May 6, 2009, to five federally recognized Native American Tribes to participate in the PEA process (see PEA Chapter 5, Section 5.5). No Native American concerns have currently been identified within the Zone 2 study area. The following tribes were contacted:

- Chemehuevi Indian Tribe
- Colorado River Indian Tribe
- Las Vegas Paiute Tribe
- Moapa Band of Paiutes
- Pahrump Paiute Tribe

Previous consultations have been held with federally recognized Native American tribal governments to determine the presence or absence of properties possessing significance to tribal religious beliefs or practices and cultural affiliation. Although such properties exist in the vicinity, none are present within

the Zone 2 Trail study area. The Native American tribes will be re-contacted as part of the Zone 2 EA review.

3.2.3 Fish and Wildlife Excluding Federally Listed Species

This section discusses the wildlife resources known or potentially present in or near the study area. Based on the habitats present (see **Section 3.2.18**), numerous species of mammals, birds, and reptiles could occur at the site. The following sections briefly describe those species that were either directly observed or that are likely to occur.

Mammals

According to the PEA (BLM 2009) and the *Proposed General Management Plan* (Management Plan) (BLM 2000), the RRCNCA is known to contain 55 species of mammals, including mostly:

- Small herbivores (such as squirrels, mice, rabbits, and hares)
- Carnivores (canines, cats, and weasels)
- Insectivores (bats)
- Native large herbivores

Based on the habitats present in the study area, not all of these mammals would have the potential to occur. Those observed or likely to occur are discussed below.

Small Herbivores

Although many rodent species would likely occur in the study area, the only one observed was the white-tailed antelope squirrel (*Ammospermophilus leucurus*). Others likely to occur would include the desert woodrat (*Neotoma lepida*), Merriam's kangaroo rat (*Dipodomys merriami*), and various species of mouse.

According to the *Management Plan* (BLM 2000), three species of lagomorphs (rabbits and hares) are known from the RRCNCA:

- Nuttall's cottontail (*Sylvilagus nuttallii*)
- Black-tailed jackrabbit (*Lepus californicus*)
- Desert cottontail (*Sylvilagus audubonii*)

Both the desert cottontail and black-tailed jackrabbit were observed in the study area.

Insectivores

The only insectivores potentially occurring in the study area are bats. The *Management Plan* (BLM 2000) lists the occurrence of 17 bat species in RRCNCA. Bats are often found around springs and in other areas with moisture (BLM 2000), but can also be found throughout the RRCNCA. Although occurrence in the study area is possible during foraging (especially along the washes), no bats are likely to be common. No suitable roosting sites were identified in the study area. Ten of the 17 bat species potentially occurring in the study area are considered special status species (SSS) and are discussed in **Section 3.2.16**.

Based on the habitats present, no shrews or other insectivores would likely be found in the study area.

Carnivores

The *Management Plan* (BLM 2000) lists nine carnivore species that can be found in the RRCNCA. Most of these species are found in higher elevations where there is taller woody vegetation, rock outcrops, and water sources (BLM 2000). However, several species are often found foraging in lower elevations and may be found in the study area, including:

- Coyote (*Canis latrans*)
- Badger (*Taxidea taxus*)
- Gray fox (*Urocyon cinereoargenteus*)
- Western spotted skunk (*Spilogale gracilis*)
- Kit fox (*Vulpes macrotis*)

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Native Large Herbivores

The only native large herbivores known to occur at RRCNCA are as follows:

- Mule deer (*Odocoileus hemionus*)
- Elk (*Cervus elaphus*)
- Bighorn sheep (*Ovis canadensis*)

Because these species tend to spend most of their time in higher elevations, occurrence in the study area would be unlikely.

3.2.4 Herpetofauna

According to the *Management Plan* (BLM 2000), there are 41 species of herpetofauna known or likely to occur in RRCNCA, including 39 reptiles and 2 amphibians. These are briefly discussed below.

Reptiles

Reptiles reproduce on land and either produce eggs or live young that are miniature and sexually immature versions of adults (Hammerson 1999; Hanson and Hanson 1997; and NDOW 2011). Most reptiles have dry, scaly skin that is approximately 30 times more resistant to desiccation than amphibian skin. Reptiles in the Mojave Desert include turtles, tortoises, lizards, and snakes (Hanson and Hanson 1997).

Of the 39 reptile species known from RRCNCA, most would have the potential to occur in or near the study area. The majority of reptiles are lizards and snakes. Many species of lizards are well-adapted to basking in the desert sun and can be seen during daylight hours (BLM 2000).

Some of the most likely to be seen in the study area would include:

- Western fence lizard (*Sceloporus occidentalis*)
- Desert side-blotched lizard (*Uta stansburiana*)
- Desert spiny lizard (*Sceloporus magister*)

Many other reptiles cannot tolerate full sun and are found only in shady areas during daylight hours or are active only at night. Two-thirds of the snake species known to occur at RRCNCA are nocturnal, as well as the western banded gecko (*Coleonyx variegatus*) and desert night lizard (*Xantusia vigilis*) (BLM 2000).

Other reptiles that may be found in the study area would include:

- Sidewinder (*Crotalus cerastes*)
- Coachwhip (*Masticophis flagellum*)
- Western patch-nosed snake (*Salvadora hexalepis*)
- Gopher snake (*Pituophis melanoleucus*)
- Common kingsnake (*Lampropeltis getulus*)

Three reptiles known to occur in RRCNCA and likely to occur in the study area are considered SSS and are discussed in **Section 3.2.16**.

Amphibians

The *Management Plan* (BLM 2000) identifies two amphibian species as occurring in RRCNCA:

- Red-spotted toad (*Bufo punctatus*)
- Pacific chorus frog (*Pseudacris regilla*)

Because there are no aquatic habitats in or near the study area, neither species is expected to occur.

Fish

The study area does not contain any fish habitat.

3.2.5 Floodplains and Washes

Executive Order 11988: Floodplain Management orders each federal agency proposing new facilities within a floodplain to demonstrate compliance with standards and criteria promulgated under the National Flood Insurance Program.

The Zone 2 Trail would be located entirely within the Red Rock watershed. The watershed is characterized by well-defined channels in the mountainous upper reaches that discharge onto a broad alluvial fan at lower elevations and poorly defined ephemeral washes with braided gravelly, sandy, and/or caliche beds. These drainages flow easterly from the Spring Mountains toward Las Vegas. Higher flows and flooding occur seasonally in the Red Rock watershed during local rain events and especially thunderstorms during the spring and summer months. Hydrograph routing and peak flow attenuation features occur over the alluvial fans. Peaks flows are offset rather than being additive (Montgomery 1991). There are no surface waters or springs within the study area.

The Clark County Regional Flood Control District (CCRFCD) is responsible for developing and implementing a comprehensive flood control master plan to alleviate flooding in the Las Vegas Valley. As part of the Master Plan, CCRFCD has constructed, or designated for construction, flood control conveyances and detention basins throughout the Las Vegas Valley. However, there are currently no constructed conveyance channels in the project site. The study area is currently compliant with Nevada Division of Environmental Protection (NDEP) and CCRFCD regulations.

The effective floodplain within the project area is a Zone A, or approximate, floodplain. In Zone A floodplains, FEMA has established no base flood elevations (BFEs). The relevant FEMA FIRM panels 320032150E and 320032125E show the effective Zone A floodplain within the study area.

Hydraulic analysis used the effective FEMA 100-year hydrology and more detailed NDOT design hydrology to define the existing and proposed floodplain conditions.

The Zone 2 Trail would cross the approximate FEMA 100-year floodplain in trail segments 2C, 2D, and 2E. The floodplain in segments 2C and 2D is in Red Rocks sub-basin RR8, and the floodplain in segment 2E is in Red Rocks sub-basin RR7.

RR7 and RR8 represent 6.6 square miles of the 70-square-mile watershed. Of the total 16,400 linear feet of the Zone 2 Trail, approximately 1,460 linear feet (9 percent) would be constructed through the 100-year floodplain. Additional short lengths of trail would pass through minor wash crossings and smaller drainages and rills.

The latest Clark County Master Plan does not identify any known ongoing FEMA studies for the Red Rock watershed or any proposed improvements in the upper Red Rock watershed (upstream of the Red Rock Detention Basin).

Figure 3-1 identifies the 100-year floodplain and washes associated with the Zone 2 Trail.

Figure 3-1. 100-Year Floodplain and Washes

3.2.6 Fuels/Fire Management

Fire management guidance in the context of RRCNCA resources is provided in various BLM documents. The BLM Las Vegas Field Office (LVFO) Fire Management Plan (FMP), Fire Management Unit (FMU) 6, Red Rock NCA (LE) [low elevation] provided objectives and strategies for handling wildland fire suppression and wildland fire operational issues (BLM 2001). The Zone 2 EA study area lies within a low-elevation desert tortoise habitat. Fire management directives are to fully suppress wildfires to prevent eco-type conversion from native plant communities to non-native invasive annual grass monocultures. Due to high visitor use and fast moving fire behavior, rapid fire suppression response and visitor evacuation of the area are required.

The BLM's 1998 RMP provided objectives and guidance on the fire management resource, especially in the areas of wildland fire suppression. Map 2-11 in BLM's 1998 RMP shows that the Zone 2 trail lies within Fire Suppression Zone 1 and has been designated a Fuel Reduction Area (BLM 1998a). General characteristics of Fire Suppression Zone 1 are as follows:

- Area does not contain critical desert tortoise habitat.
- Dominate vegetation is perennial.
- High recreation and visitor use, high fuel carryover potential, and high urban/wildland interface factor are occurring.
- Interchange mutual aid assistance factor is high.
- Unique vegetation communities exist.
- Non-attainment air quality is an issue.
- Higher percentage of human-caused fires are taking place.

The BLM also provided guidance to implement fire suppression policies under Section (1) Biodiversity, Subsection (1B) Ecosystem Management in the Record of Decision for RRCNCA (BLM 2005).

In particular, there is a need to do the following:

- Implement strategies to minimize habitat type conversion fires stemming from invasive exotic annual grasses
- Implement an aggressive fire suppression policy for all fires in low-elevation communities (Blackbrush)

43 CFR 9210 establishes procedures to prevent or suppress wildfires on public lands and gives specific BLM employees the authority to issue fire prevention orders to close or restrict trail access and use.

In the RMP ROD, the BLM mandate for wildland firefighting, whether caused by lightning or humans, is to "protect human life, property and natural resources..." In addition, the current tactic for fighting wildfires in the Blackbrush and Creosote bush vegetation communities where the Zone 2 Trail would be constructed is to respond "immediately and forcefully." The primary objective in wildland fire management is to minimize the amount of burned acreage (BLM 2000).

3.2.7 Greenhouse Gas Emissions

In its *Fourth Assessment Report*, the Intergovernmental Panel on Climate Change (IPCC) stated that warming of Earth's climate system is unequivocal and that warming is very likely due to anthropogenic greenhouse gas concentrations (IPCC 2007).

The issue of global climate change is an important national and global concern that the federal government is addressing in several ways. Carbon dioxide (CO₂) emissions are the predominant

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greenhouse gas (GHG). The US Department of Transportation is evaluating four groups of strategies to reduce transportation GHG emissions:

- Introduce low-carbon fuels
- Increase vehicle fuel economy
- Improve transportation system efficiency (such as lowering speed limits or reducing congestion to improve fuel economy)
- Reduce carbon-intensive travel activity (such as increasing vehicle occupancy)

The federal government is evaluating options to achieve GHG reductions within these strategies.

EPA has been working toward specific regulation of GHG emissions. In a preliminary step, EPA has begun a process that would require Clark County, Nevada, and 12 other states with current permitting programs to revise their programs to better regulate GHG. Clark County has committed to submitting its SIP in 2011.

Under the current permitting program, Title V operations are monitored for CO, ammonia, nitrogen oxide, PM₁₀, PM_{2.5}, SO₂, and volatile organic compounds. The closest major emitter in the area of the RRCNCA (CertainTeed manufacturing plant) is in compliance with its permit on all of these criteria pollutants.

No emitters are present in the general proximity of the study area that would require compliance with the GHG Reporting Rule. In addition, GHG emissions in the study area are not evaluated because the primary use is non-motorized vehicles.

3.2.8 Health and Human Safety

A number of health and human safety hazards currently exist for recreational users that visit the RRCNCA. For example, there is the potential for flash flooding, wildland fires, dehydration, heat exhaustion, and distress attributed to using the trail slopes.

The current safety conditions/risks are as follows:

- Cyclists, runners, and others use the SR-159 road shoulder for training and conditioning.
- Temperatures consistently over 100 degrees in the summer can cause heat-related issues.
- There is a high potential for flash flooding during the months of December through March.
- Risks of thunderstorms increases during the monsoon season (particularly in July and August).
- Wildland fires are part of the desert ecosystem.
- Safe drinking water is available at the Red Rock Canyon Visitor Center (approximately 200 feet north) and the Red Rock Canyon Campground (1.8 miles due west).
- Human interaction with wildlife (for example, reptiles) can cause sickness or injury.
- A restroom facility located at the Vista Lot provides a means for the disposal of human waste.
- A shade shelter with interpretive display can be found at the Vista Lot.
- A trash receptacle exists at the Vista Lot.
- A helipad is located at the Vista Lot.

3.2.9 Hydrologic Conditions

US Army Corps of Engineers (USACE) HEC-RAS step-backwater modeling software version 4.0.0 was used to determine existing and proposed hydrologic conditions for the floodplain and wash crossings (USACE 2008). FEMA's 1991 flood insurance study defined regulatory hydrology for the 10-year, 50-year, and 100-year events (Montgomery 1991). Effective FEMA hydrology was used to define the

existing 100-year floodplain for sub-basin RR7 (impacting trail segment 2E). FEMA 100-year flow was estimated at 1,998 cubic feet per second. The existing triple CMPs do not pass the 10-year or 100-year flows and SR-159 is overtopped.

NDOT hydrology data were used to define the existing conditions 100-year floodplain for sub-basin RR8 (impacting trail segments 2C and 2D). NDOT hydrology is more detailed and slightly more conservative than effective FEMA hydrology for NDOT structures in the vicinity of SR-159. NDOT divides the total flow in RR8 at SR-159 among these three structures. The total NDOT flow in sub-basin RR8 at SR-159 is 7,195 cubic feet per second, while the FEMA 100-year flow is 6,894 cubic feet per second.

Trailside drainage was generally designed for nuisance flows. Nuisance flows were assumed to be no more than 10 cubic feet per second. Rainfall and runoff was defined for the Vista Overlook and Exit Lot trailheads using the CCRFCD hydrologic criteria and drainage design.

A portion of the Overlook Trailhead drains toward SR-159. Existing conditions hydrology was developed for the Overlook Trailhead to ensure that the project would not increase runoff to NDOT swales adjacent to SR-159. Existing roadside swales convey site flows parallel to SR-159 adjacent to and away from the existing trailhead area. At the Exit Lot Trailhead, the existing drainage pattern is away from NDOT facilities.

3.2.10 Invasive Species/Weeds

According to the Nevada Department of Agriculture (NDA), weeds are defined as plant species that are considered pests by law or regulation (NDA 2011). According to NDA, 47 noxious weeds are listed for Nevada, organized into three categories: A, B, and C:

- Category “A” includes 30 species that are not found or are found in limited distribution in the state and require control in all areas.
- Category “B” includes nine species that are established in certain areas and only require control in areas where populations are not well established or are previously unknown.
- Category “C” includes eight species that are generally widespread and control is at the discretion of the state quarantine officer.

Although none of the Nevada-listed noxious weeds were observed in the study area, three non-native and invasive species were found and should be treated as noxious weeds (BLM 2011e):

- Compact brome (*Bromus madritensis*)
- Cheatgrass (*Bromus tectorum*)
- Prickly Russian thistle (*Salsola tragus*) (AlpineEco 2011)

All three of these species are widespread and abundant throughout most of the study area, especially in areas recently burned and/or otherwise disturbed.

Discussions with the BLM specialist (BLM 2011d, 2011e) produced a list of weeds known to occur in RRCNCA. Currently, no weed list specific to the RRCNCA has been prepared. The Zone 2 EA will use the Nevada-listed noxious weeds. Emphasis will be placed on addressing all non-native species, not just those listed as “noxious.”

The LVFO *Noxious Weed Plan* (BLM 2006) serves as the basis for the *RRC Zone 2 Multi-use Trail System Project Weed Management Plan* (see **Appendix A** for details). The strategies and practices set forth in *LVFO Noxious Weed Plan* provide the general requirements (framework) for weed management and control along the Zone 2 Trail, including footprint and associated trail elements.

3.2.11 Lands/Access (Transportation/ROW/Parking)

The proposed hiker/biker trail for RRCNCA is located approximately 17 miles west of Las Vegas beginning at the end of West Charleston Boulevard and extending southerly through portions of the SR-159 corridor toward SR-160. The only paved routes into and crossing the RRCNCA are SR-159 and SR-160. All visitors must use these high-speed routes to access the diverse amenities within RRCNCA. Currently, no paved off-highway route for recreational users exists besides the shoulder of SR-159, which varies in width from 5 to 8 feet. Cyclists and runners frequently use this road shoulder, and the experience can be unpleasant and stressful due to exhaust fumes, noise, and high-speed traffic.

Transportation

Bike riders and hikers are currently parking in many casual (unimproved) and undesignated areas to access many trails in the RRCNCA. Oftentimes (especially on weekends), the parking areas overflow and people park along the shoulder on SR-159. The BLM tracks visits and vehicle counts at recreation management areas (RMAs) for all of the RRCNCA. **Table 3-2** shows the number of visits to RMA sites and vehicle counts located within the Proposed Action study area for October 2008 through September 2010. See Figure 2-1 in the PEA for the locations of the RMA sites.

Table 3-2. Visits and Vehicle Counts to Sites within the Proposed Action Study Area

RMA Site	October 1, 2008 – September 30, 2009		October 1, 2009 – September 30, 2010	
	Visits	Vehicle Counts	Visits	Vehicle Counts
Fee Booth	7,767.96	1,023	2,473.23	175
Desert Cave Rec (Cowboy Trails)	3,073.40	462	3,009.88	175
Red Rock Overlook, SR-159	16,352.20	1,487	7,257.50	372
Scenic Drive Exit	3,108.13	470	4,209.29	228

Source: BLM 2010d

NDOT widened the road shoulder by approximately 2 feet to more safely accommodate use by cyclists. In addition, the speed limit has been lowered to 50 mph along SR-159. Unauthorized road shoulder parking occurs near the Exit Lot. Vehicles pull across traffic and the road shoulder at multiple points along SR-159 to park. When motorists leave, they back out onto the highway. In some cases, safe sight distance is inadequate and non-motorized users may be difficult to see. This has become a major safety issue, especially on high use days.

Right-of-Way

The NDOT ROW along SR-159 is a 150-foot-wide corridor roughly centered on the highway. A 32-foot clear zone width was established for SR-159 based on average daily traffic counts of 4,800 vehicles per day at Station 358, with a design speed of 65 mph and 1V:6H or flatter foreslopes per current AASHTO criteria. Station 358 is located on SR-159 (Blue Diamond Road) 0.1 mile north of the County Road to Red Rock Canyon (NDOT 2009).

Parking

The BLM reports that the parking lots associated with the 13-mile Scenic Drive are completely inadequate for handling traffic volume, vehicle sizes, and frequency of use based on current NCA visitation (BLM 2010c).

Many trailheads and parking areas in the vicinity of SR-159 are developed to various levels. Some of these facilities adequately meet the current needs of visitors; others can be filled beyond capacity on high-use days in RRCNCA. On such days, there is heavy use of the shoulder of SR-159 for parking.

The Entrance and Fee Booth Lot for the 13-mile Scenic Drive currently provides 50 parking spaces. Existing paved parking areas in the study area also include the Vista Overlook and the Exit Lots. The Vista Lot provides the following amenities:

- Parking
- Restrooms
- Shaded picnic areas
- Interpretive elements
- A world famous view

Current capacity at the Vista Lot is 28 spaces for vehicles including 4 that are Americans with Disabilities Act (ADA)-compliant. It does not, however, meet anticipated demand over the next 10 years, with more than three times the existing spaces required to do so (Robert Peccia & Assoc. 2001).

Several gravel parking areas located along SR-159 currently provide parking, trail access, and staging areas. In general, these areas provide very few additional amenities. They are hot, dry, and dusty much of the year, lacking shade and pavement; and they do not provide restrooms, picnic areas, or bicycle racks.

The Exit Lot was built to provide equestrian parking and staging at the north end of the area where equestrians are permitted. It is a simple gravel lot on the north side of the exit from 13-mile Scenic Drive onto SR-159 with multiple points of access. It is highly used by equestrians. This parking area provides a capacity for 40 automobiles and nearly 15 trucks towing horse trailers. It was expanded in 2007 to accommodate more equestrian use and improve safety (BLM 2010b).

3.2.12 Migratory Birds

The RRCNCA is known to contain at least 170 bird species (BLM 2000). Additionally, 33 bird species are commonly associated with creosote bush and blackbrush vegetation (which constitute the majority of the study area) in RRCNCA.

Although most are not likely to nest in or near the study area, other birds that may be found during various parts of the year include:

- Passerines, such as
 - Cactus wren (*Campylorhynchus brunneicapillus*)
 - Black-tailed gnatcatcher (*Polioptila melanura*)
 - Ash throated flycatcher (*Myiarchus cinerascens*)
 - Scott's oriole (*Icterus parisorum*)
 - Mourning dove (*Zenaida macroura*)
- Other flycatchers, sparrows, warblers, and finches
- Raptors, such as
 - American kestrel (*Falco sparverius*)
 - Redtail hawk (*Buteo jamaicensis*)
 - Turkey vulture (*Cathartes aura*)
 - Cooper's hawk (*Accipiter cooperii*)
- Other non-passerines, such as
 - Greater roadrunner (*Geococcyx californianus*)
 - Gambel's quail (*Callipepla gambelii*)
 - Various hummingbirds

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The most common birds observed during the field survey include roadrunner, Gambel's quail, raven, horned lark (*Eremophila alpestris*), western scrub jay (*Aphelocoma californica*), ash-throated flycatcher, mourning dove, and white-crowned sparrow (*Zonotrichia leucophrys*). Three birds known to occur in RRCNCA and likely to occur in the study area are considered a SSS and are discussed in **Section 3.2.16**.

Migratory birds, including their nests, eggs, and nestlings, are protected under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. 703 et seq.). Previous studies in 2005 identified potential habitat for several species in the vicinity of the campground and fire station. Species included western burrowing owl (*Athene cunicularia hypugea*), black-tailed gnatcatcher (*Poliopitila melanura*) and phainopepla (*Phainopepla nitens*) (BLM 2005). Several species of birds are known for building nests in cactus, yucca, Joshua trees, mesquite trees, and on the ground. Potential nest locations have been observed in and around the Visitor Center. Additional surveys in and around the Visitor Center did not identify any suitable nesting habitat, but observations included the presence of several raptors and other sensitive and migratory birds. Species included: golden eagle (*Aquila chrysaetos*), red-tailed hawk (*Buteo jamaicensis*), prairie falcon (*Falco mexicanus*), loggerhead shrike (*Lanius ludovicianus*), common poor-will (*Phalaenoptilus nuttallii*), rock wren (*Salpinctes obsoletus*), Say's phoebe (*Sayornis saya*), Brewer's sparrow (*Spizella breweri*), and western meadow lark (*Sturnella nelecta*) (BLM 2007).

3.2.13 Recreation

The RRCNCA has more than 1 million visitors each year (BLM 2011f). With more than 30 miles of trails in the NCA, many of the recreation activities that use these trails include, but are not limited to:

- Hiking
- Biking
- Equestrian
- Picnicking
- Off-Highway Vehicle (OHV) use
- Sightseeing
- Street cycling

Hiking

The RRCNCA offers more than 30 miles of hiking trails (BLM 2011f). Hiking is allowed on designated trails, and hikers are asked to stay within existing trails to avoid damaging the ecosystems. Hikers in RRCNCA tend to drive to the 13-mile Scenic Drive or trailheads to begin their hikes on designated trails.

Biking

Biking is a popular form of recreation at RRCNCA. Mountain bikers may use the paved 13-mile Scenic Drive, SR-159 shoulders, or designated mountain bike trails within RRCNCA (BLM 2008). Other cyclists either bike onto BLM managed lands of the RRCNCA from nearby communities such as Summerlin South or Blue Diamond, or they drive into RRCNCA to park at a designated parking area or trailhead before they begin their ride.

Equestrian

Equestrian activities are a popular form of recreation in the RRCNCA. Equestrian use is limited to designated equestrian trails. Equestrian users generally drive to the trailhead at the exit point of the 13-mile Scenic Drive where they unload their horses and head out on the designated equestrian trails.

Picnicking

A shaded picnic area with interpretive elements currently exists at the Vista Lot. Adjacent to the Visitor Center, the Red Rock Canyon Day-Use Pavilion includes benches and picnic tables for day use. Additional picnic tables are available at the Red Rock Canyon Campground located 1.8 miles due west.

Off Highway Vehicle Use

Off-highway vehicle (OHV) use is allowed on designated roads only. The Las Vegas Field Office provides one designated OHV route in the vicinity of the Proposed Action. Located in RRCNCA, Rocky Gap Road is a four-wheel drive route that can be accessed from the Lost Creek/White Springs exit on the 13-mile Scenic Drive.

Sightseeing

The RRCNCA provides great opportunities for sightseeing. This includes activities such as taking photography, observing nature, and enjoying the world famous view. An existing kiosk with interpretive design features is currently available at the Vista Overlook.

Street Cycling

High-speed biking (or street) cycling is also a popular form of recreation at RRCNCA. Although SR-159 has a 4- to 8-foot-wide shoulder that is used by street cyclists, the 13-mile Scenic Drive is currently the only paved bike trail in the RRCNCA, and it is shared with motorized vehicles.

BLM requires a Special Recreation Permit for recreation activities that are competitive, commercial, or organized with a certain group size or larger. This may include special events like a 5-kilometer run.

3.2.14 Socioeconomics

The RRCNCA is located in southern Nevada on the western edge of Clark County, approximately 17 miles west of the Las Vegas Strip. This is the most populated county in Nevada. With nearly 2 million residents in 2010, it represents more than 72 percent of the state's total population (Census Bureau 2011). Clark County's population grew by 41 percent between 2000 and 2010, and state models project increases up to 21 percent or 3 million residents by 2030 (State of Nevada Demographer 2010). Nye County is located to the west of RRCNCA, with a population of nearly 44,000 (Census Bureau 2011). Las Vegas tourism reached approximately 37 million visitors in 2010, and 23 million in 2011 (LVCVA 2010 and LVCVA 2011).

The community of Calico Basin is located on the eastern edge of the RRCNCA (north of SR-159) and is within the closest proximity to the Proposed Action. Calico Basin has approximately 60 parcels with an estimated population of 75 to 100 (Rogers 2008). Other nearby communities include Blue Diamond with a population of 290, and Summerlin South with a population 24,085. Another small community located west of the RRCNCA within the nearby Spring Mountain National Recreation Area of the Toiyabe National Forest is the Mount Charleston community with a population of 357 (Census Bureau 2011).

Approximately 1 million people visit RRCNCA annually. Visitation draws from the local residents and visitors to Clark and Nye counties, as well as from other US residents and international visitors.

The data obtained from the National Survey on Recreation and the Environment (NSRE), a federal survey of Americans' outdoor recreation activities, provides insight to national trends in outdoor recreation activities. Between 2000 and 2007, the total number of people who participated in one or more outdoor activities grew by 4.4 percent from an estimated 208 million to 217 million. Of specific relevance to the RRCNCA, the survey suggests that Americans' interest in nature and nature-based recreation is growing. According to NSRE data, growth in days visiting wilderness and other wildland areas increased more than 12 percent between 2000 and 2007. General trends in nature-based outdoor recreation activities show that within this same time period, the number of days of participation in walking for pleasure outdoors grew almost 14 percent. Growth in activities including sightseeing, photography, and observing elements of nature (for example, flowers, trees, natural scenery, birds, other wildlife, nature exhibits, wilderness, and wildlands) has been the most rapid, at 60 percent or greater (Cordell 2008).

3.2.15 Soils

Soils in the valley areas of the RRCNCA have developed on alluvial and colluvial fans of coarse material derived from limestone, sandstone, and granitic materials that have been washed into the valley from the surrounding mountains. Soils that have formed in this material are generally gravelly loams or gravelly sandy loams. Younger soils have formed in the active drainages and there are little or no diagnostic soil horizons (entisols). Older soils on higher ground on ridges between the drainages may contain soils with some developed pedogenic features (aridisols). The limestone and sandstone parent materials have high calcium carbonate content. The dispersal of carbonate material by wind erosion has resulted in carbonate accumulation in almost all soils.

Under the arid conditions little downward movement of the soluble constituents has occurred. Most leaching is confined to the translocation of the soluble material (usually carbonates) from the surface to subsoil, resulting in the formation of a cemented or petrocalcic layer within 1 to 3 feet below the soil surface (BLM 2000). Wind and water erosion is low to moderate, but over time fine particles have been removed from the surface leaving a layer 1 to 3 inches of thick coarse gravel loam or gravelly sandy loam on the surface. Over time weathering has also left few to many rock fragments on the surface. The organic matter content of the soil surface layer is very low, typically less than 0.5 percent. The soils are very fragile and susceptible to ground disturbance from animals, humans, and motorized vehicles.

Soils identified within Zone 2 were obtained from the US Department of Agriculture's Natural Resources Conservation Service (NRCS) web soil survey 2.3 and soil surveys published by the Soil Conservation Service, which included the Clark County Area, Nevada (2006), and the Las Vegas Valley Area Nevada, Part of Clark County (1985). No soil sampling or soil analysis was conducted. Soil associations and soil series within the construction zone of the Proposed Action were identified by overlaying the proposed trail location onto soil maps. A soil association represents the dominant soils within a mapped area having similar properties within a taxonomic class such as a soil series. Other minor soils or inclusions may be present within the mapped area that have properties and behavioral patterns similar to those of the dominant soil or soils, or have properties that may be divergent in their use but are in areas too small to map and thus do not affect their general use and management for resource planning.

Figure 3-2 a, b, and c show the soils associated with the Zone 2 trail.

Soil Units

Zone 2 is characterized by six soil map units. Soil factors affecting the planning, trail construction, and restoration of disturbed areas include:

- Soil texture
- Depth
- Depth to restrictive layer for water movement or plant growth
- Drainage classification
- Capability to store water for plant use
- Influence of calcium carbonates on the availability for plant nutrients

Vace-Jean Association

Soils are shallow to deep, well drained to excessively drained, gently sloping on fan remnants.

The Vace soils formed in calcareous loess and mixed alluvium. The 2-inch surface layer is a gravelly fine sandy loam over a loam subsoil to a depth of 8 inches. The substratum consists of cemented material. Depth to abrupt textural change, petrocalcic layer, is about 4 to 14 inches. Soils contain moderate carbonates and have very low available water capacity (about 1.0 inches).

The Jean soils formed in alluvium derived from limestone, sandstone, and quartzite. The 1-inch surface layer is gravelly fine sand over a loamy fine sand subsoil to a depth of 18 inches. The substratum consists

of stratified extremely gravelly sand to very gravelly loamy fine sand. Soils contain moderately low carbonates and have a low available water capacity (about 3.7 inches).

Zeheme Extremely Gravelly Fine Sandy Loam

Soils are shallow, well drained, gentle to moderate sloping on mountains.

The Zeheme soils formed in colluvium residuum weathered from limestone. The 3-inch surface layer is extremely gravelly fine sandy loam. The subsoil is a gravelly fine sandy loam to a depth of 9 inches over a lithic bedrock at a depth of 9 to 19 inches. Soils contain moderate calcium carbonates and have a very low available water capacity (about 0.6 inches).

Zeheme-Potosi-Rock Outcrop Association

Soils are shallow, well drained, moderate to very steep slopes on mountains.

The Potosi soils formed in colluvium and/or residuum weathered from limestone. The surface soil and subsoil are extremely gravelly loam to a depth of 11 inches over lithic bedrock at a depth of 11 to 21 inches. Soils contain moderate calcium carbonates and have a very low available water capacity (about 0.6 inches).

The Zeheme soils are as described above and rock outcrops may be found near cliffs.

Bludiamond-Diamondhil Association

Soils are deep, well drained, gentle slopes on fan remnants.

The Bludiamond, a very gravelly surface soil, formed in mixed alluvium derived from limestone and sandstone. The 16-inch surface layer is a gravelly sandy clay loam. The subsoil is a very gravelly sandy clay loam to a depth of 16 to 26 inches, and a very gravelly sandy loam to a depth of 36 inches. The substratum is a cemented material. Soils contain moderate calcium carbonates and have a very low available water capacity (about 2.7 inches).

The Bludiamond soil formed in a thin mantle of eolian sands over mixed alluvium derived from limestone and sandstone. The 8-inch surface layer is a loamy fine sand. Subsoils from 8 to 26 inches are gravelly sandy clay loam and very gravelly sandy loam to a depth of 26 to 36 inches. Substratum is a cemented material. Soils contain high calcium carbonates and have a very low available water capacity (about 1.8 inches).

The Diamondhil soil formed in mixed alluvium derived from calcareous sandstone. The 10-inch surface soil is a very cobbly sandy clay loam. This subsoil from 10 to 31 inches is an extremely cobbly fine sandy loam and gravelly sandy loam. The substratum is a cemented material. Depth to duripan layer is about 24 to 39 inches. Soils contain high calcium carbonates and a very low available water capacity (about 1.8 inches).

Purob-Irongold Association

Soils are deep, well drained, gentle slopes on fan remnants.

The Purob soils were formed in alluvium derived from limestone. The 3-inch surface layer is extremely gravelly loam. The subsoil from 3 to 19 inches is very gravelly loam. The substratum is a cemented material. Depth to petrocalcic layer is present at about 14 to 20 inches. Soils contain high calcium carbonates and have a very low available water capacity (about 1.6 inches).

The Irongold soils are formed in alluvium derived from limestone. The 7-inch surface layer is an extremely gravelly loam. The subsoil from 7 to 11 inches is a very gravelly loam. A layer of cemented material is present between 11 to 34 inches. The substratum is an extremely gravelly loam coarse sand.

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Depth to petrocalcic layer is about 11 to 14 inches. Soils contain very high calcium carbonates and have a very low available water capacity (about 1.3 inches).

Purob Extremely Gravelly Loam

Soils are deep, well drained, moderate to steep slopes on fan remnants.

The Purob extremely gravelly loam soils are formed in alluvium derived from limestone. The 3-inch surface layer is extremely gravelly loam. The subsoils from 3 to 19 inches are very gravelly loam. The substratum is a cemented material. Depth to petroclacic layer is about 14 to 20 inches. Soils contain very high calcium carbonates and have a very low available water capacity (about 1.3 inches).

Soil factors affecting the construction and reclamation potential were obtained from the NCSS websoil survey. Table 3-3, Table 3-4, and Table 3-5 show soil suitability factors and ratings.

Table 3-3. Soil Suitability Factors and Ratings

Soil Suitability Factors (NCSS Websoil Survey)	Rating	Rating Description
Roadfill material. Material excavated from proposed trail, service road, or access road. Factors affecting ease of excavation and performance of material after it is in place. Ratings based on soil depth, depth to restrictive layer, cobbles and stones, and depth to water table.	Good	Suitable depth of soil, no restrictive layers, few cobbles and stones.
	Poor	Shallow soil due to restrictive layer, cobbles, and/or rock fragments.
Road Natural Surface. Factors affecting construction and traffic ability on the service road proposed for construction activities. Ratings are based on slope, plasticity index, hazard of soil slippage, and content of sand.	Slight	No significant limitations affecting construction activities. Very low maintenance expected.
	Moderate	One or more limitations can cause some difficulty in construction. May require maintenance during temporary use.
	Severe	One or more factors can make construction very difficult or very costly. May require additional engineering controls and greater maintenance during temporary use.
Resistance to soil compaction. Soil resistance to motor vehicle and construction equipment used during construction and reclamation activities. Ratings are based on content of rock fragment, soil texture, surface soil structure, and content of organic matter.	Moderate	Soil has one or more features that could result in compaction.
	Low	Soil has one or more properties that make soil compaction very likely.
Reclamation material. Factors affecting soil erosion and soil productivity of reclaimed disturbed areas. Ratings are based on the content of calcium carbonates, available water capacity, erodibility, texture, and rock content. Soils are expected to be lacking in organic matter.	Poor	Soil has one or more properties that limit reclamation potential.
Topsoil material. Factors that affect plant growth, ease of excavating, loading, and spreading the material and reclamation of the borrow area. Ratings are based on rock fragments, slope, soil texture, carbonate content, and depth to bedrock or cemented pan	Poor	Soil has one or more properties that limit the suitability of the material as a topsoil for plant establishment and sustained growth.
Mechanical planting. Factors affecting mechanical transplanting of trees and shrubs. Ratings are based on slope, depth to a restrictive layer, content of sand, rock fragments, and depth to water table.	Poorly suited	The soil has one or more properties that are unfavorable for the specified management aspect. Requires special design and extra maintenance.
	Unsuited	Expected performance of the soil is unacceptable for the specified management aspect or extreme measures are needed to overcome the undesirable soil properties.

Table 3-4. Soil Factors for Trail Construction

Map Unit	Soil Unit	Roadfill Material	Service Road Natural Surface	Resistance to Soil Compaction
261	Vace-Jean Association			
	Vace (50%)	Poor Cemented layer (1.00)	Severe Restrictive layer (1.00) Low strength (0.50)	Moderate Sand content (0.23) Soil structure (0.20)
	Jean (35%)	Good	Slight	Moderate Soil structure (0.20)
341	Zeheme Extremely Gravelly Fine Sandy Loam	Poor Bedrock (1.00)	Severe Restrictive layer (1.00) Slope (0.50) Sandiness (0.50)	Low Sand content (0.23) Soil structure (0.20)
342	Zeheme-Potosi-Rock Outcrop Association			
	Zeheme (50%)	Poor Bedrock (1.00)	Severe Slope (1.00)	Low Sand content (0.23) Soil structure (0.20)
	Potosi (20%)	Poor Bedrock (1.00)	Severe Slope (1.00)	Low Surface structure (1.00) Sand Content (0.48)
411	Bludiamond-Diamondhil Association			
	Bludiamond, Very Gravelly Surface (40%)	Poor Cemented layer (1.00)	Moderate Sandiness (0.50)	Not rated
	Bludiamond (25%)	Poor Cemented layer (1.00)	Moderate Sandiness (0.50)	Not rated
	Diamondhil (20%)	Poor Demented layer (1.00) Cobbles (0.63)	Slight	Not rated
731	Purob-Irongold Association			
	Purob (60%)	Poor Cemented layer (1.00)	Slight	Low Sand content (0.48) Surface structure (0.20)
	Irongold (25%)	Poor Cemented layer (1.00)	Slight	Low Sand content (0.48) Surface structure (0.20)
732	Purob Extremely Gravelly Loam	Poor Cemented layer (1.00)	Moderate Slope (0.50) Sandiness (0.50)	Low Sand content (0.48) Surface structure (0.20)

Ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Table 3-5. Soil Factors for Reclamation

Map Unit	Soil Unit	Reclamation Material	Topsoil Suitability	Mechanical Planting Trees and Shrubs
261	Vace-Jean Association			
	Vace (50%)	Poor Drought (1.00) Cemented layer (1.00)	Poor Depth to cement layer (1.00)	Unsuited Restrictive layer (1.00) Rock fragments (0.50)
	Jean (35%)	Poor Too sandy (1.00) Wind erosion (1.00) Drought (1.00)	Poor Too sandy (1.00) Rock fragment (1.00)	Unsuited Restrictive layer (1.00) Rock fragments (1.00)
341	Zeheme Extremely Gravelly Fine Sandy Loam	Poor Drought (1.00) Cemented layer (1.00) Carbonates (0.32)	Poor Rock fragment (1.00) Cemented layer(1.00)	Unsuited Restrictive layer (1.00) Rock fragments (1.00) Sandiness (0.50)
342	Zeheme-Potosi-Rock Outcrop Association			
	Zeheme (50%)	Poor Drought (1.00) Cemented layer (1.00) Carbonates (0.32)	Poor Rock fragment (1.00) Cement layer (1.00)	Unsuited Restrictive layer (1.00) Rock fragments (1.00) Sandiness (0.50)
	Potosi (20%)	Poor Drought (1.00) Depth to bedrock (1.00)	Poor Rock fragment (1.00) Cement layer (1.00)	Unsuited Restrictive layer (1.00) Rock fragments (1.00) Sandiness (0.50)
411	Bludiamond-Diamondhil Association			
	Bludiamond, Very Gravelly Surface (40%)	Poor Drought (1.00)	Poor Rock fragment (1.00)	Poorly suited Rock fragments (0.75) Sandiness (0.50)
	Bludiamond (25%)	Poor Wind erosion (1.00) Drought (1.00)	Poor Rock fragment (1.00)	Poorly suited Rock fragments (0.75)
	Diamondhil (20%)	Poor Drought (1.00) Carbonates (1.00) Cemented layer (1.00)	Poor Rock fragment (1.00) Cemented layer (1.00)	Poorly suited Rock fragments (0.75)
731	Purob-Irongold Association			
	Purob (60%)	Poor Drought (1.00) Cemented layer (1.00) Carbonates (1.00)	Poor Rock Fragment (1.00) Carbonates (1.00) Cemented layer (1.00)	Poorly suited Rock fragments (0.75) Sandiness (0.50)
	Irongold (25%)	Poor Drought (1.00) Cemented layer (1.00) Carbonates (1.00)	Poor Rock Fragment (1.00) Carbonates (1.00) Cemented layer (1.00)	Poorly suited Rock fragments (0.75) Sandiness (0.50)
732	Purob Extremely Gravelly Loam	Poor Drought (1.00) Cemented layer (1.00) Carbonates (1.00)	Poor Rock Fragment (1.00) Carbonates (1.00) Cemented layer (1.00)	Poorly suited Rock fragments (0.75) Sandiness (0.50)

Ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Figure 3-2a. Zone 2 – Soils Map 1

Figure 3-2b. Zone 2 – Soils Map 1

Figure 3-2c. Zone 2 – Soils Map 1

3.2.16 Special Status Species

Special Status Species (SSS) are defined as those listed as sensitive, critically endangered, recommended as critically endangered, or protected by the BLM or NDOW. According to the species list from USFWS (USFWS 2008), PEA (BLM 2009), the Management Plan (BLM 2000), the BLM Southern Nevada District Office website (BLM 2011a), the Nevada Natural Heritage Program (NNHP) website (NNHP 2010), results of the field survey, and discussions with BLM specialists (BLM 2011c and BLM 2011d), there are 20 SSS that could be found in or near the study area, identified in **Table 3-6** and discussed below. One species, desert tortoise (*Gopherus agassizii*) is listed by the US Fish and Wildlife Service (USFWS) as threatened and is discussed separately in **Section 3.2.17**, Threatened, Endangered, or Candidate Animal Species.

Table 3-6. Special Status Species Potentially Occurring in the Study Area

Common Name	Scientific Name	Status ¹		
		USFWS	BLM	NDOW
Plants				
White bear poppy	<i>Arctomecon merriamii</i>	--	N	--
Spring Mountains milkvetch	<i>Astragalus remotus</i>	--	N	--
Blue Diamond cholla	<i>Cylindropuntia multigeniculata</i>	--	--	CE,CY
Yellow two-tone beardtongue	<i>Penstemon bicolor</i> ssp. <i>bicolor</i>	--	N	--
Birds				
Golden eagle	<i>Aquila chrysaetos</i>	--	N	P
Western burrowing owl	<i>Athene cunicularia</i>	--	N	P
Peregrine falcon	<i>Falco peregrinus</i>	--	N	P
Herpetofauna				
Desert tortoise (Mojave population)	<i>Gopherus agassizii</i>	LT	S	P
Banded Gila monster	<i>Heloderma suspectum cinctum</i>	--	N	P
Western chuckwalla	<i>Sauromalus obesus obesus</i>	--	N	--
Mammals				
Pallid bat	<i>Antrozous pallidus</i>	--	--	P
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	--	N	P
Spotted bat	<i>Euderma maculatum</i>	--	N	P
Allen's big-eared bat	<i>Idionycteris phyllotis</i>	--	N	P
Small-footed myotis	<i>Myotis ciliolabrum</i>	--	N	--
Long-eared myotis	<i>Myotis evotis</i>	--	N	--
Big free-tailed bat	<i>Nyctinomops macrotis</i>	--	N	--
Fringed myotis	<i>Myotis thysanodes</i>	--	N	P
Long-legged myotis	<i>Myotis volans</i>	--	N	--
Yuma myotis	<i>Myotis yumanensis</i>	--	N	--

¹Status from NNHP (2010):

CE = critically endangered

CY = protected as cactus, yucca, or Christmas tree

LT = listed threatened

N = sensitive in Nevada

-- = no status

P = protected

S = special status because of USFWS designation

Special Status Plants

As indicated in **Table 3-6**, four special status plant species could potentially occur in the study area. Each is briefly described below.

White Bear Poppy

White bear poppy (*Arctomecon merriamii*) is a BLM-sensitive plant species that is most commonly found in limestone gravels of disturbed sites in south central Nevada at an elevation of 900 to 1,400 meters AMSL (Niles and Leary 2007; Knight and Clemmer 1987; and Baldwin, et al. 2002). It is a perennial herbaceous plant that grows from a stout taproot to a height of 20 to 30 centimeters (cm). The leaves are mostly basal and covered with very long (up to 1 cm) white hairs. Flowers occur singly and are white with six petals approximately 3 to 3.5 cm long (Knight and Clemmer 1987). It usually flowers in April or May. White bear poppy is known to occur in the RRCNCA. Based on BLM review, white bear poppy is not likely to occur within the Zone 2 Trail study area (BLM 2011d).

Spring Mountains Milkvetch

Spring Mountains milkvetch (*Astragalus remotus*) is a BLM-sensitive plant species that is endemic to the Spring Mountains and found between 1,150 and 1,650 meters AMSL (Niles and Leary 2007). It is found only on gravelly-rocky slopes and hillsides along the southeastern base of the mountains (Niles and Leary 2007). It is a perennial herbaceous plant and has multiple white to cream colored flowers. It usually flowers in April or May. Spring Mountains milkvetch is known to occur in the RRCNCA. Based on BLM review, Spring Mountains milkvetch is not likely to occur within the Zone 2 Trail study area (BLM 2011d).

Blue Diamond Cholla

Blue Diamond cholla (*Cylindropuntia multigeniculata*) is listed as critically endangered by NDOW and is also protected by the Nevada Division of Forestry under the Nevada Revised Statutes (NRS) 527 “Protection of Christmas Trees, Cacti and Yucca” (see **Section 3.2.18**). It is an endemic cactus species known only from the Blue Diamond Hills of the Spring Mountains between 1,093 to 1,295 meters AMSL (NNHP 2001a). It is usually found on dry, open carbonate ledges, crevices, and rocky colluvium in close proximity to overlying gypsum beds up-slope (NNHP 2001a). It grows 10 to 60 cm tall and flowers in late spring, most commonly in May (NNHP 2001a; Baker 2005). Blue Diamond cholla is known to occur in the RRCNCA. Based on BLM review, Blue Diamond cholla is not likely to occur within the Zone 2 Trail study area (BLM 2011d).

Yellow Two-tone Beardtongue

The yellow two-tone beardtongue (*Penstemon bicolor* ssp. *Bicolor*) is a BLM-sensitive species that is probably endemic to Nevada (NNHP 2001b). It is found only in calcareous or carbonate soils in washes, along roadsides, in rock crevices or outcrops, or in similar places receiving enhanced runoff (NNHP 2001b). It is a perennial herbaceous plant that grows up to 50 cm tall with multiple, mostly yellow flowers (Smith 2005 and NNHP 2001b). It flowers in the spring, most commonly in April or May. Yellow two-tone beardtongue is known to occur in the RRCNCA, and several plants were found just upstream of the study area in Wash OW-1. Based on BLM review, yellow two-tone beardtongue has the potential to occur within the Zone 2 Trail study area (BLM 2011d).

Special Status Animals

Table 3-6 indicates 16 special status animal species that could potentially occur in the study area, as described below.

Golden Eagle

The golden eagle (*Aquila chrysaetos*) is a BLM-sensitive species and protected by NDOW. It has a body length of 30 to 41 inches, with a wingspan of more than 6 feet (Audubon 2011). It is usually dark brown with a pale golden nape (Audubon 2011). It can be found in about any habitat during migration but is most common in grasslands and mountain forests. Its diet consists of mostly small mammals like rabbits and large rodents, but also feeds on carrion (Audubon 2011). It usually makes a nest 3 to 4 feet deep and 8 to 10 feet in diameter of sticks, brush, and leaves 10 to 100 feet high in a large tree or on a rocky ledge (Alsop 2001; Audubon 2011). The golden eagle is known to occur at RRCNCA (BLM 2000) and could be found foraging in the study area; no suitable nesting habitat is present.

Western Burrowing Owl

The western burrowing owl (*Athene cunicularia*) is a BLM-sensitive species, as well as protected by NDOW. It has a body length of 8.5 to 11 inches, with a wingspan of 20 to 24 inches (NDOW 2011). It is sandy brown, with a white to cream colored breast and belly, and has a round head and no ear tufts (NDOW 2011). It can be found in grasslands, deserts, and scrublands characterized by low-growing vegetation with both natural and artificial burrows (California Burrowing Owl Consortium [CBOC] 1993 and NDOW 2011). The burrowing owl is an opportunistic feeder and its diet consists of mostly large arthropods such as beetles, scorpions and grasshoppers, but it also includes small mammals like mice and ground squirrels (NDOW 2011). It usually nests in burrows made by ground squirrels, gophers, badgers, and other ground-dwelling animals, but it can also nest in culverts, debris piles, or openings beneath cement or asphalt pavement (NDOW 2011 and CBOC 1993). The nesting season usually begins in late March to April. The burrowing owl is known to occur at RRCNCA (BLM 2000) and could be found nesting and/or foraging in the study area.

Peregrine Falcon

The peregrine falcon (*Falco peregrinus*) is a BLM-sensitive species, as well as protected by NDOW. It has a body length 13 to 19 inches, with a wingspan of 40 inches (NDOW 2011). The male is gray above with a black head, whitish neck, and pale underneath (NDOW 2011). Females are generally browner than males (NDOW 2011). The peregrine falcon can be found in mountains, valleys, and coastlines and its diet consists of mostly other birds (NDOW 2011). It does not usually build a nest but lays eggs in a hollow or depression on a cliff (NDOW 2011). The peregrine falcon is known to occur at RRCNCA (BLM 2000) and could be found foraging in the study area; no suitable nesting habitat is present.

Banded Gila Monster

The banded Gila monster (*Heloderma suspectum cinctum*) is a BLM-sensitive species and protected by NDOW. It is found in deserts and desert grasslands up to 5,000 feet AMSL in Clark, Lincoln, and Nye counties of Nevada (Hanson and Hanson 1997; NDOW 2011; and NDOW 2007). It is a large (18 to 24 inches long), heavy-bodied lizard with a large head; short, swollen tail; and a mottled pattern of black and pink, orange, or yellow (NDOW 2011). It primarily eats small mammals and the eggs of mostly ground-breeding birds, as well as reptiles, insects, and carrion (NDOW 2011). It is venomous, producing venom in glands located in the lower jaw (NDOW 2011). Gila monsters reach sexual maturity at approximately 4 to 5 years of age and females lay a clutch of 1 to 8 eggs in July to August (NDOW 2011). The banded Gila monster is known from the RRCNCA (BLM 2000) and could be found in the study area.

Western Chuckwalla

The western chuckwalla is a BLM-sensitive species and is found in rocky areas within the Great Basin, Mojave, and Sonoran deserts (NDOW 2011). It is usually 8 to 9 inches long (snout to vent), with a total length of around 16 inches (Smith and Brodie 1982). Males are generally light gray with possible orange,

yellow, or red hues; with a blackish chest, head, and limbs; and a light yellow tail (NDOW 2011). Females tend to be less showy in coloration. The western chuckwalla is a herbivore and primarily eats leaves, flowers, buds, and fruit (NDOW 2011). It finds shelter in rock crevices, hibernates during cold months, and can be inactive during extreme heat (NDOW 2011). It has a lifespan of approximately 15 years and reproduction begins at about 2 years for males and 5 years for females (NDOW 2011). Mating usually occurs from May to June, and females lay 5 to 16 eggs underground about a month later (NDOW 2011). The western chuckwalla is known from the RRCNCA (BLM 2000) and could be found in the study area.

Bats

The BLM lists the 10 SSS bats as sensitive and NDOW lists them as protected. Bats are usually found in and around springs, as well as in other areas with moisture (BLM 2000). Although occurrence of the SSS bats in the study area is possible during foraging (especially along the washes), none of these bats are likely to be common or found roosting. No suitable roosting sites were identified in the study area. No bats were observed because surveys were completed during the day.

3.2.17 Threatened, Endangered or Candidate Animal Species

Desert Tortoise

The desert tortoise (*Gopherus agassizii*) is the only threatened, endangered, or candidate animal species potentially occurring in the study area. It is listed by the USFWS as threatened, by the BLM as sensitive, and by NDOW as protected. It is found in the Mojave Desert in a variety of habitats, between 1,000 and 4,000 feet AMSL, from sandy flats to rocky foothills, including alluvial fans, washes, and canyons (USFWS 2011 and NDOW 2011). It has a high domed shell and elephant-like legs (see **Photo 1**) and grows up to 15 inches long (carapace only) and weighs up to 15 pounds (USFWS 2011). It is a herbivore, with its diet consisting primarily of herbs, grasses, cacti, and yucca (USFWS 2011). Its lifespan is usually 30 to 45 years, although 80 years or more is possible (NDOW 2011).



Photo 1. Desert Tortoise

The desert tortoise spends up to 95 percent of its life underground (USFWS 2011). It relies on burrows to escape the temperatures of cold winters and hot summers. Spring and summer burrows vary from 18 inches to 5 feet long but may be only a few inches below the surface (USFWS 2011). Winter burrows tend to be about 8 feet long and may be as deep as 2 or 3 feet below the surface (USFWS 2011).

Tortoises hibernate for up to 9 months per year, becoming most active from March to June and September to October (USFWS 2011). Reproduction begins between 12 and 20 years of age, with clutch sizes between 1 and 14 eggs (USFWS 2011). Eggs are usually laid between May and July in a shallow hole near the entrance to a burrow (NDOW 2011). Hatchlings emerge between 90 and 120 days later and must survive on their own (USFWS 2011).

Most of the study area and adjacent areas are known to be occupied by the tortoise, although it is considered an area of relatively low density (BLM 2011c and BLM 2000). No tortoises or their burrows were observed in the study area.

3.2.18 Vegetation Excluding Federally Listed Species

Although RRCNCA is known for its complex vegetative mosaic, which can be difficult to divide into discrete vegetative units or plant communities (BLM 2000; Niles and Leary 2007), the 201-acre study area contains three relatively distinct vegetation communities:

- Creosote bush (*Larrea tridentata*)
- Desert wash
- Blackbrush (*Coleogyne ramosissima*)

The study area also contains two other non-vegetated land cover types:

- Disturbed areas (such as roads, buildings, and parking lots)
- Channels associated with washes

Creosote bush and blackbrush communities are “zonal” community types and are generally determined by elevation gradients. The desert wash community is considered “transzonal” or “azonal” and is determined by other environmental factors such as shade or soil moisture. Zonal communities generally demonstrate a clear pattern of distribution, while transzonal communities are more variably and diffusely situated (BLM 2000; Niles and Leary 2007).

The size and general description of the three vegetation communities and other non-vegetated cover types identified in the study area are listed in **Table 3-7**. Each community is briefly described in the following sections.

Table 3-7. Land Cover Types Found in the Study Area

Land Cover Types	Symbol	Area (acres)	Percent of Study Area	General Description
Vegetated Types				
Creosote Bush	CB	157.8	78	Found across most of the study area; includes large recently burned areas (creosote bush burned [CBB]); contains substantial pockets of Joshua tree and other yucca/cacti
Desert Wash	DW	12.9	6	Generally narrow bands along washes; contains some small trees
Blackbrush	BB	1.2	1	Small area within CB community; may have covered a larger area before recent fires
Non-Vegetated Types				
Disturbed	D	15.7	8	Includes roads, buildings, and other areas mostly devoid of vegetation
Washes	W	13.8	7	Includes only the channels associated with ephemeral streams; must have a defined bed and bank, and generally lack vegetation
	Total	201.4	100	

Creosote Bush

The creosote bush community covers approximately 157.8 acres or 78 percent of the study area (see **Figure 3-3a, b, c**). This community is dominated by shrubs, with creosote bush as the most dominant (see **Photo 2**). Other shrubs commonly found in this community within the study area include burrobush (*Ambrosia dumosa*), Acton’s brittlebrush (*Encelia actoni*), Arizona jointfir (*Ephedra fasciculata*), blackbrush, and spiny menodora (*Menodora spinescens*). Common herbaceous plants include the non-native compact brome (*Bromus madritensis*) and cheatgrass (*Bromus tectorum*), as well as native species like desert needlegrass (*Achnatherum speciosum*), big galleta (*Pleuraphis rigida*), desert trumpet (*Eriogonum inflatum*), and apricot globemallow (*Sphaeralcea ambigua*).



Photo 2. Creosote bush-dominated community with scattered yucca and cacti, looking southwest

Some portions of the creosote bush community (especially near the eastern end of the study area) contain many banana yucca (*Yucca baccata*) and Mojave yucca (*Yucca schidigera*) (see **Photo 3**), as well as many species of cacti. Common cacti observed include Wiggin’s cholla (*Cylindropuntia echinocarpa*), branched pencil cholla (*Cylindropuntia ramosissima*), Engelmann’s hedgehog cactus (*Echinocereus engelmannii*), spiny star (*Escobaria vivipara*), mat cholla (*Grusonia parishii*), and beaver prickly pear (*Opuntia basilaris*).



Photo 3. Mojave yucca in creosote bush community; measuring stick is 5 feet high

The creosote bush community also includes several large areas within the study area that have been burned since 2006 (BLM 2010a). These areas tend to have drastically less shrub cover than the rest of the community, contain higher densities of herbaceous plants, and/or have locations that are mostly devoid of vegetation (see **Photo 4, Photo 5, and Photo 6**). Where shrubs are present, they tend to be younger and smaller. The most common herbaceous plants in these burn areas are non-native species such as compact brome, cheatgrass, and prickly Russian thistle (*Salsola tragus*), or native species that have an affinity for disturbed areas such as desert trumpet and Texas stork’s bill (*Erodium texanum*).



Photo 4. Intact creosote bush community on left and burned creosote bush community on right; notice differences in herbaceous versus woody vegetation cover



Photo 5. Burned creosote bush community that formerly had a relatively high density of Yucca species



Photo 6. Burned creosote bush area near the Scenic Drive Exit Lot, looking north

Desert Wash

The desert wash community covers approximately 12.9 acres or 6 percent of the study area (see **Figure 3-3a, b, c**). It is found only along the five ephemeral drainages or “washes” identified in the study area and is generally dominated by shrubs and some small trees that are adapted to increased moisture associated with occasional surface flows (see **Photo 7**). The most dominant woody plants found in this community within the study area include big sagebrush (*Artemisia tridentata*), desert willow (*Chilopsis linearis*), Mojave rabbitbrush (*Ericameria paniculata*), and Sonoran scrub oak (*Quercus turbinella*). Common herbaceous plants include Indian ricegrass (*Achnatherum hymenoides*), compact brome, cheatgrass, western tansymustard (*Descurainia pinnata*), and prickly Russian thistle.



Photo 7. Desert wash community in Red Rock Wash with riprap along the embankment for SR-159 on the left, looking west

Blackbrush

The blackbrush community covers approximately 1.2 acres or 1 percent of the study area (see **Figure 3-3a, b, c**). It is dominated by blackbrush, with creosote bush, desert needlegrass, compact brome, cheatgrass, and prickly Russian thistle.

The only area of blackbrush within the study area is a small pocket nestled in a larger creosote bush area that was burned in 2006 (see **Photo 8**). This pocket appears to have not been burned and was once likely part of a larger blackbrush community that covered the adjacent hillside (much like the nearby flanks of Blue Diamond Hill to the south).



Photo 8. Burned creosote bush community in the foreground with patch of intact blackbrush community in the background, looking west

Disturbed

The disturbed community covers 15.7 acres or 8 percent of the study area (see **Figure 3-3a, b, c**). It is mostly non-vegetated and is a result of human activities. The majority of this cover type is dominated by SR-159 and the associated pull-outs, parking lots, and shoulders; as well as the buildings associated with the Overlook. Widely scattered plants may be found in disturbed areas (see **Photo 9**), but most are non-native species such as compact brome, cheatgrass, and prickly Russian thistle, or native species that have an affinity for disturbed areas such as desert trumpet and Texas stork’s bill.



Photo 9. Disturbed area near SR-159 with sparse vegetation cover

Washes

The washes cover 13.8 acres or 7 percent of the study area (see **Figure 3-3a, b, c**). They are associated with the five ephemeral drainages identified in the study area and generally consist of sandy or gravelly, non-vegetated channels. Some widely scattered pockets of sparse desert wash vegetation can be found in areas of recent sediment deposition or on small “islands” located within the channels. See **Section 3.2.20** for further discussion of these channels.

See **Figure 3-3 a, b, and c** show the vegetation associated with the Zone 2 trail.

Figure 3-3a. Zone 2 – Vegetation

Figure 3-3b. Zone 2 – Vegetation

Figure 3-3c. Zone 2 – Vegetation

3.2.19 Visual Resources

The visual resources within RRCNCA, including the Rainbow Mountain and La Madre wilderness areas, are a unique natural setting with open desert and limestone mountains dominated by sandstone cliffs. The Scenic Drive offers stunning views of the Spring Mountains, in particular, the conservation area's showcase: a set of sandstone peaks and walls called the Keystone Thrust. The walls are up to 3,000 feet high, and the highest point is La Madre Mountain, at 8,154 feet.

This dramatic setting provides vistas from the Zone 2 trail and overlooks. The trail roughly parallels SR-159 from the Visitor Center entrance road to the Exit Lot, and completes the loop of the Scenic Drive. Travelers on SR-159 and visitors to the RRCNCA Visitor Center would have views of the trail.

Management Considerations

To comply with regulations requiring protection of the scenic value of federal lands, the BLM has developed a Visual Resource Management (VRM) program.

The BLM's VRM system protects visual resources by establishing criteria for the extent and manner in which change or development is allowed in an area. The program inventories and places BLM managed lands into one of four VRM classes based on the relative value of the visual resource. As stated in the BLM *Handbook H-8400-6, Visual Resource Management*, "The approved VRM objectives (classes) provide the visual management standards for the design and development of future projects and for rehabilitation of existing projects." The four VRM classes range from the most restrictive Class I for the most highly valued visual resources, to the least restrictive Class IV. The Rainbow Mountain and La Madre Wilderness Areas are managed as Class I.

The area of potential effect for the Proposed Action would be managed as Class II. Changes within Class II areas "should not be evident in the characteristic landscape. Contrasts are seen, but must not attract attention" (BLM 2005). The BLM *Handbook H-8431* states the Class II objective as follows:

The objective to this 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.

Existing Visual Resource Conditions

See Section 3.12.2 of the PEA for a detailed description of the existing conditions of the area. The following summarizes conditions in the area of the Proposed Action.

Characteristic Landscape Setting

The setting of the Zone 2 Trail is characterized by the form, line, color and texture of the landforms, vegetation, and structures associated with the desert landscape within the Basin and Range province of southern Nevada. The landforms of the Spring Mountains that raise above the desert valley floor create the overall dominant visual impression and sense of place for the trail within this unique Mojave Desert setting. The vegetation patterns of the desert valley establish a sense of vastness within the setting.

- **Landforms** – The Spring Mountains create the dominant backdrop to the trail setting.
 - The form of the mountains is very rugged, diverse, and massive in scale. The adjacent desert valley floor is rolling and provides a sense of vastness.
 - There is a strong sense of horizontal lines within the mountain setting created by the geologically unique Keystone Thrust Fault that runs north-south along the western edge of

the RRCNCA. This sandstone layer is covered by a more resistant limestone layer, creating a very strong banding in the sheer cliff faces of Red Rock Canyon. In addition, there are vertical lines in the cliff faces created by the erosion patterns that appear as triangular shaped columns. The Calico Hills include arches, domes, holes, and other natural shapes.

- There is a startling color contrast of red sandstone layered through gray limestone in the sheer cliff faces of Red Rock Canyon and in the surrounding formations, including the Calico Hills.
- The texture of the cliff faces is very coarse, creating a strong pattern of shadows and highlights that change with lighting conditions.
- **Vegetation** – Low growing vegetation patterns within the desert valley floor also create a sense of diversity.
 - The plant forms vary within the patterns of desert shrub lands and desert washes. The creosote bush community dominates the setting with its open pattern of shrubs and pockets of Joshua tree, yucca, and cacti, with interspersed grasses. Desert washes include some small trees within broad flat gravel areas.
 - The edges between the shrub lands and washes create a linear pattern.
 - There is a contrast between the green, gray-green, and tan hues created by the patterns of shrub lands and washes.
- **Structures** – In general, there is a lack of dominant or visually intrusive structures within the overall setting. The Red Rock Overlook includes a covered picnic area, a parking area, and interpretive panels and a restroom structure. The Visitor Center is architecturally complimentary to the desert setting.

Distance Zones

Distance zones are divided into three classifications, and landscapes are evaluated based on the perceived visual quality from these zones. Foreground-middle ground is visible to the observer and sensitive to change and includes areas seen from the highways and viewing locations that are less than 3 to 5 miles away. Unauthorized parking along SR-159 can alter the scenic quality in the foreground-middle ground zone, especially on weekends.

Views from Red Rock Vista Overlook provide foreground-middle ground views of the RRCNCA that are not interrupted by man-made structures, although the view is crisscrossed by unpaved trails.

The background zone includes areas that are visible beyond the foreground-middle ground zone but are less than 15 miles from the viewer. This background zone in the project area would include views from SR-159 toward the Spring Mountains, which form the horizon.

The seldom seen zone is anything further than 15 miles from the viewer. Because of the backdrop of the Spring Mountains, there are few seldom seen zones from SR-159, and none located along the proposed trail alignment.

Sensitivity Levels

Sensitivity levels are the measure of public concern for scenic quality. Because of the existing disturbance along the road, the area immediately adjacent to the existing SR-159 is considered medium sensitivity.

Areas west of SR-159 are considered high sensitivity because there are few man-made facilities along SR-159 to block the scenic views of the RRCNCA. While areas such as the Exit Lot, the Overlook, and the Visitor Center contain man-made structures, these structures are in place to enhance the visitor's experience by providing parking spaces and public facilities. Unpaved bike and hiking trails can be seen from many points along SR-159, but they blend in with the surrounding terrain in form and color.

3.2.20 Wetlands/Riparian Zones

No wetlands or riparian zones are present in the study area. However, there are five “washes” that are potential waters of the US (WOUS) and these are discussed below. Three of the washes contain desert wash vegetation which is described in **Section 3.2.18**.

Waters of the US Definition

USACE and EPA define WOUS as all waters that are, have been, or are susceptible to use in interstate or foreign commerce (33 CFR 328.3(a)). This includes, among others, most lakes, rivers, streams, mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds; and tributaries of these waters.

These waters are “protected” by Section 404 of the Clean Water Act if they are at least one of the following (USACE 2007 and USACE 2008):

- A traditional navigable water (TNW)
- A wetland adjacent to a TNW
- A relatively permanent water (RPW), including tributaries that typically flow year-round or have a continuous flow at least seasonally, typically three months
- A wetland that directly abuts a RPW
- A wetland adjacent to a RPW, but only if it can be shown that the feature has a “significant nexus” with a TNW
- A non-RPW or wetland adjacent to a non-RPW, if the feature has a “significant nexus” with a TNW

The significant nexus evaluation includes an assessment of the flow characteristics and functions of the feature to see “if they have more than an insubstantial or speculative effect on the chemical, physical, or biological integrity of TNWs (USACE 2007).” If they do, then they are considered under the jurisdiction of Section 404.

Potential Waters of the US

The study area contains five potential WOUS and all are ephemeral drainages or “washes.” All of these washes have a distinct ordinary high water mark and defined bed and banks. However, they are all non-RPWs and are non-jurisdictional under Section 404 of the Clean Water Act because they do not have a significant nexus with a TNW (Colorado River) (USACE 2010). The washes are listed in **Table 3-8**, shown on (**Figure 3-3a, b, c**), and briefly described below.

Table 3-8. Washes Present in the Study Area

Wash ID	Name	Photo Number	Approximate Width (feet)	Length in Study Area (feet)	Area (acres)
OW-1	Unnamed	13	5 to 10	430	0.15
OW-2	Red Rock Wash	16, 17	50 to 150	1,500	10.60
OW-3	Lower Pine Creek Wash	18	5 to 15	1,020	2.90
OW-4	Unnamed	14	3 to 5	690	0.12
OW-5	Unnamed	15	3 to 5	280	0.03
			Total	3,390	13.8

Unnamed Washes

The study area contains three unnamed washes; all of which were dry during the field survey. These are identified on **Figure 3-3a, b, c** as OW-1 (**Photo 10**), OW-4 (**Photo 11**), and OW-5 (**Photo 12**). These washes vary from 3 to 10 feet wide and have mostly sandy channels (with some gravel and exposed bedrock) that are 3 to 5 feet below the surrounding grade. Washes OW-4 and OW-5 are tributaries to the Lower Pine Creek Wash and OW-1 is a tributary to the Red Rock Wash. Wash OW-1 is the only unnamed wash that has adjacent desert wash vegetation. The other two washes appear to flow too infrequently to develop this vegetation type.



Photo 10. OW-1, looking upstream (north) from near SR-159



Photo 11. OW-4, looking downstream (northwest) from SR-159



Photo 12. OW-5, looking downstream (northwest) from near SR-159

Red Rock Wash

Red Rock Wash, the largest wash in the study area, receives flows from Turtlehead Peak, Keystone Thrust, La Madre Mountain, and White Rock Hills to the north, as well as Ice Box Canyon to the west. It has multiple channels consisting mostly of sand, with substantial areas of gravel and cobble. It was dry during the field survey but has a very broad floodplain with a well-developed desert wash plant community. The wash crosses under SR-159 in two locations. The westernmost crossing consists of a single concrete box culvert and the eastern crossing consists of a seven-cell concrete box culvert. Because the single box culvert is too small to carry most of the flows, the flows are directed parallel to SR-159 to the seven-cell box culvert (**Photo 13** and **Photo 14**).



Photo 13. Red Rock Wash (OW-2), looking upstream (west) along SR-159



Photo 14. Red Rock Wash (OW-2), looking upstream (west) along SR-159 from east end of wash

Lower Pine Creek Wash

Lower Pine Creek Wash is the second largest wash in the study area (**Photo 15**). It carries flows from Pine Creek Canyon, Bridge Mountain, and Rainbow Mountain to the west under SR-159 and eventually to Red Rock Wash. The study area includes a portion of the main channel and a tributary from the north. Both consist mostly of sand, with some gravel. Both channels were dry during the field survey, and the main channel has a very broad floodplain with a well-developed desert wash plant community. The wash crosses under SR-159 in three culverts, which appear to be somewhat undersized because sediment deposits and drift lines indicate large areas of deep, ponded water on the upstream side.



Photo 15. Lower Pine Creek Wash (OW-3), looking upstream (north) from SR-159 at the northernmost channel

3.2.21 Wild Horses and Burros



Photo 16. Wild burro on SR-159 near the study area

The *Wild Free-Roaming Horses and Burros Act* (1971) mandates that the BLM manage wild horses and burros in areas where they existed at that time (BLM 2000). The BLM was directed to evaluate areas to determine if they have food, water, cover, and space to sustain a healthy and diverse wild horse and burro population over the long-term (BLM 2009). Areas that meet these criteria are designated as Herd Management Areas (HMAs).

The Red Rock HMA encompasses approximately 160,000 acres of BLM public land and approximately 25,000 acres of US Forest Service (USFS) public land in southern Clark County. The wild horses and burros generally rely on some portion of either the BLM or USFS public lands to provide their required habitat

throughout the year. The 2010 wild horse and burro population estimate (adults only) for the Red Rock HMA is 35 wild horses and 54 wild burros.

The Proposed Action would be located in the Red Rock HMA. The 2011 estimated population is 29 to 44 wild burros and 48 to 58 wild horses. The wild burros primarily live north of SR-160 and the wild horses are generally south of SR-160.

The study area is situated within the Red Rock HMA. Historically within the Red Rock HMA, wild horses are concentrated south of Bonnie Springs and burros are concentrated in areas to the north and east of Bonnie Springs (overlapping the study area) (BLM 2000). Wild burros are often found on the roadways in and near the study area as shown in **Photo 16**, and numerous vehicle-burro accidents have occurred (BLM 2011b).

3.2.22 Woodland/Forestry

Much of the creosote bush community, especially near the eastern end of the study area, contains relatively dense stands of Joshua tree (*Yucca brevifolia*) or Joshua tree “woodland,” as shown in **Photo 17** and **Photo 18**.



Photo 17. Joshua tree in the creosote bush community; measuring stick in foreground is 5 feet high



Photo 18. Relatively dense Joshua tree near the eastern end of the study area in the creosote bush community

The BLM provided guidance to protect Threatened and Endangered Species (TES) plant species and other vegetation listed by federal or state agencies under Section (3) Vegetation, Subsection (3.3) in the RMP/ROD for RRCNCA (BLM 2005). In particular, there is a need to “Restore plant productivity on disturbed areas” by “rehabilitating, reclaiming or revegetating with native species, areas subjected to surface disturbing activities.”

Cactus, Yucca, and Christmas Trees

The removal or possession of any native cactus (any member of the *Cactaceae* family), yucca (members of the *Yucca* genus), and “Christmas trees” (evergreen trees) for commercial purposes is regulated by *NRS 527.060* through *527.120*, and *Nevada Administrative Code Chapter 527* (NNHP 2011; BLM 2011a). Any of these plants removed or possessed must have a shipping permit issued by the state forester fire warden, BLM, or USFS.

All cactus and yucca species are regulated under the BLM Nevada Forestry Program and require salvaging. NDOW-protected species include cacti or yucca. Many of these species may be present in the study area, including Joshua trees. According to the BLM (BLM 2011d), the removal and transport of any of these plants greater than 3 feet tall would require a shipping permit issued by the BLM since the project is on BLM lands.

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