## 5.1 AESTHETICS

This section of the Draft Environmental Impact Report (DEIR) describes the existing landform and aesthetic character of the project area and discusses the potential impacts to the visual character of the Town of Yucca Valley from implementation of the Yucca Valley General Plan Update (proposed project). This section includes a discussion of the qualitative aesthetic characteristics of the existing environment that would be potentially degraded by the proposed project's implementation and the consistency of the project with established relevant visual resources policies.

### 5.1.1 Environmental Setting

#### *5.1.1.1 Regulatory Setting*

Local laws, regulations, plans, or guidelines that are applicable to the proposed project are summarized below.

#### Town of Yucca Valley Ordinances

The Town of Yucca Valley's zoning and development regulation ordinances identify land use categories, development standards, and other general provisions that ensure consistency between the Town's General Plan and proposed development projects. The following is a description of the Town's ordinances that are applicable to the proposed project.

- **Ordinance 88.** Outlines the permitted and conditionally permitted land uses in the General Commercial District and also outlines the applicable development standards for all uses in this zoning district.

- **Ordinance 90.** Establishes the regulations and standards that assist in substantially reducing light pollution from commercial and residential land uses; minimizing light pollution that has a detrimental effect on the environment and the enjoyment of the night sky; reducing and minimizing lighting practices that cause unnecessary illumination of adjacent properties. Also implements the Yucca Valley General Plan.

- **Ordinance 125.** Outlines the permitted and conditionally permitted land uses in the Neighborhood Commercial District and the applicable development standards for all uses in this zoning district.

- **Ordinance 136.** Outlines the permitted and conditionally permitted land uses in the Hillside Reserve, Rural Residential, and Single Residential Districts and the applicable development standards for all uses in these zoning districts.

- **Ordinance 137.** Outlines the permitted and conditionally permitted land uses in the Multiple Residential District and the applicable development standards for all uses in this zoning district.

#### Town of Yucca Valley Commercial Design Guidelines

The Town's commercial design guidelines are intended to assist developers and project designers in understanding the Town's goals and objectives for achieving, enhancing, and or maintaining high quality development within commercial land use districts. The guidelines apply to proposed commercial projects, including new projects, additions, renovations, remodels, and other related projects requiring building permits. The guidelines include provisions for project design elements and architectural styles.

### 5.1.1.2 *Visual Setting*

The Town is near the southern boundary of the central portion of San Bernardino County, approximately 30 miles north of downtown Palm Springs in neighboring Riverside County (see Figure 3-1, *Regional Location*). As shown in Figure 3-1, the Town is surrounded by portions of unincorporated San Bernardino County and is near the City of Twentynine Palms and the unincorporated communities of Morongo Valley and Joshua Tree. The southern boundary of Yucca Valley is adjacent to Joshua Tree National Park. State Route 62 (SR-62) traverses the Town from east to west, and State Route 247 (SR-247) crosses the northern half of the Town from north to south.

#### Character and Land Use

The Town encompasses approximately 25,000 acres (or 39 square miles). As shown in Table 4-1, *Existing Land Use Summary*, and Figure 3-3, *Existing Land Use*, the vast majority of Town land is either single-family land uses (24.8 percent) or vacant (65.4 percent). This is due to the Town's low density residential character and isolated, high desert location. The Town's abundant vacant land generally consists of undeveloped desert saltbrush scrub, Joshua tree woodland, and pinyon-juniper woodland. The majority of roadways in the less developed portions of the Town are unimproved (i.e., dirt roads).

The most extensively developed area of Yucca Valley lies along SR-62, which generally coincides with the axis of the central valley. With a few exceptions, existing commercial and industrial uses are generally within one-half mile of the SR-62 corridor and concentrated in the Old Town and Mid-Town areas (see Figure 3-2, *Townwide Aerial*). Development near the highway is predominantly commercial, with a few multifamily residential units. Single-family homes comprise most of the remaining development away from SR-62, with the highest concentration of homes spreading across the valley floor and up the gently sloping alluvial fans. Scattered rural and semirural residential development has spread into hilly areas to the north and south. More than half of the Town's area is still undeveloped, however, including many of the steeper hills and ridgelines. The mountains that border the Town on the south are dedicated to open space and recreation as part of Joshua Tree National Park and Big Morongo Canyon Preserve.

#### Landform and Topography

Yucca Valley is at the boundary of two very distinct geomorphic provinces. The northern part of the Town, generally north of SR-62, lies within the Mojave Desert Province, an arid region of alluvial fans, desert plains, dry lakebeds, and scattered mountain ranges. In contrast, the southern part of the Town reaches up the north flank of the Little San Bernardino Mountains, a moderately high range that is the southernmost extension of the Transverse Ranges Province. Yucca Valley is in an east–west trending basin bounded by the Little San Bernardino Mountains on the south and the Sawtooth Mountains on the north. The Sawtooth Mountains extend eastward through the middle of the Town. As a result, the Town's topography is gentler in the south than in the north.

The Town encompasses highly variable terrain that includes a broad central valley, gently sloping alluvial fans, and rugged mountains. Within the Town limits, the central east-west trending valley slopes very gently to the east, from an elevation of about 3,400 feet above mean sea level (amsl) at its western edge, to about 3,100 feet amsl at its eastern edge. North of the valley, the Sawtooth Mountains form rounded hills with picturesque boulder outcrops. In addition to the Sawtooths, the valley is framed by the San Bernardino Mountains to the west, the Bartlett Mountains to the east, and the Little San Bernardino Mountains to the south (see Figure 5.1-1, *Mountain Ranges*). Peaks within the Town have elevations of between 3,800 and 4,500 feet amsl, and the highest peak in the Town's southern boundary reaches an elevation of about 4,600 feet amsl. South of Yucca Valley, the Little San Bernardino Mountains rise to more than 5,000 feet amsl. Compared to the Sawtooths, the Town's sparsely vegetated hillsides to the south are moderately steep, jagged, and have considerably fewer outcrops–a reflection of the variation in the underlying rock types within Yucca Valley.

### Scenic Vistas and Features

The Town's physical setting in the Morongo Basin region affords scenic views of the San Bernardino Mountains, Little San Bernardino Mountains, Sawtooth Mountains, Mojave Desert (including Joshua Tree National Park to the immediate south), and other undeveloped areas. Topography and a lack of dense vegetation or urban development offer scenic views throughout the Town, including to and from hillside areas. Scenic features include gently sloping alluvial fans, rugged mountains and steep slopes, mountain peaks and ridges, rounded hills with boulder outcrops, and desert woodlands (e.g., Joshua tree woodland areas of the Joshua Tree National Park) and open space. Scenic vistas are views of these features from public spaces. Figures 5.1-2a, 2b, and 2c, *Scenic Features and Resources*, show photographs of some of the scenic features and resources in and around the Town that are afforded to the Town residents and visitors. Many of the scenic resources are outside the Town limits and beyond the planning area boundary.

### Light and Glare

Sources of light and glare within the confines of the Town include buildings (interior and exterior), security, sign illumination, and parking-area lighting. These sources are mostly associated with the residential, commercial, and industrial uses located throughout the Town. Other sources of nighttime light and glare include street lights and vehicular traffic along surrounding roadways. Additionally, some ambient lighting from surrounding communities and roadways also exists.

## 5.1.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

AE-1 Have a substantial adverse effect on a scenic vista.

AE-2 Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.

AE-3 Substantially degrade the existing visual character or quality of the site and its surroundings.

AE-4 Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

## 5.1.3 Environmental Impacts

### Methodology Approach

The evaluation of aesthetics and aesthetic impacts is highly subjective. It requires the application of a process that objectively identifies the visual features of the existing environment and their importance. The characterization of aesthetics involves establishing the existing visual characteristics—including visual resources and scenic vistas—unique to the Town. Visual resources are determined by identifying existing landforms (e.g., topography and grading), views (e.g., scenic resources such as natural features or urban characteristics) viewing points/locations, and existing light and glare (e.g., nighttime illumination). Changes to the existing aesthetic environment from implementation of the General Plan Update are identified and qualitatively evaluated based on the proposed modifications to the existing setting and the viewers' sensitivity. It should be noted, however, that there are no locally designated or defined standards or methodologies for the assessment of aesthetic impacts. The project-related impacts are compared to the existing setting using the threshold criteria discussed above in Section 5.1.2, *Thresholds of Significance*.

Potential land use effects of the proposed General Plan Update on surrounding land uses are considered in the discussion of land use compatibility in Section 5.9, *Land Use and Planning*.

The following impact analysis addresses thresholds of significance for which the Initial Study disclosed potentially significant impacts. The applicable thresholds are identified in brackets after the impact statement.

***IMPACT 5.1-1: FUTURE DEVELOPMENT THAT WOULD BE ACCOMMODATED BY THE GENERAL PLAN UPDATE WOULD NOT SUBSTANTIALLY ALTER OR DAMAGE SCENIC VISTAS OR RESOURCES IN THE TOWN OR ALONG A STATE SCENIC HIGHWAY. [THRESHOLDS AE-1 AND AE-2]***

***Impact Analysis:*** The desert environment, natural resources, and active open space opportunities are a core aspect of Yucca Valley's character. The Town's physical setting in the Morongo Basin region affords scenic views of the San Bernardino Mountains, Little San Bernardino Mountains, Sawtooth Mountains, Mojave Desert (including Joshua Tree National Park to the immediate south), Bartlett Mountains, and other undeveloped areas (see Figure 5.1-1, *Mountain Ranges*). Topography and a lack of dense vegetation or urban development offer scenic views throughout the Town, including to and from hillside areas. Scenic vistas and features include gently sloping alluvial fans, rugged mountains and steep slopes, mountain peaks and ridges, rounded hills with boulder outcrops, desert woodlands (e.g., Joshua tree woodland areas of the Joshua Tree National Park), and open space. Figures 5.1-2a, 2b, and 2c, *Scenic Features and Resources*, show photographs of some of the scenic features and resources in and around the Town that are afforded to the Town residents and visitors. Many of the scenic resources are located outside the Town limits and beyond the planning area boundary.

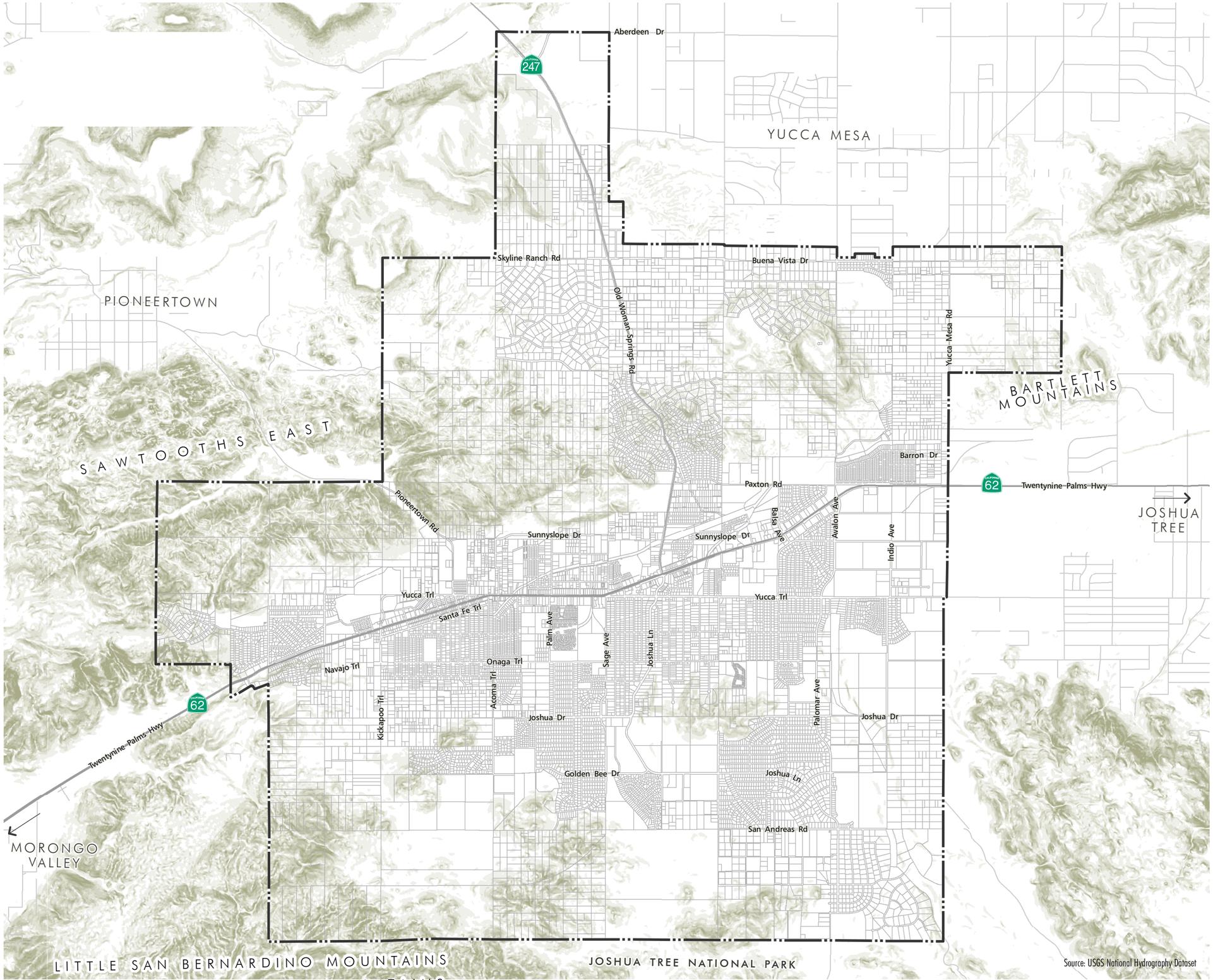
According to the California Scenic Highway Mapping System of the California Department of Transportation (Caltrans), there are no state-designated scenic highways in or near Yucca Valley (Caltrans 2011). However, SR-62, which bisects the Town north to south (see Figure 3-2, *Townwide Aerial*) is considered an "Eligible State Scenic Highway – Not Officially Designated" by Caltrans. SR-247, which bisects the north half of the Town in an east to west direction, carries the same distinction. The following policies were identified in the General Plan Update to ensure consistency with the proposed scenic highway designation:

- **Policy OSC 8-7:** Preserve scenic views along primary transportation corridors, particularly SR-62, recreational trails, and from public open spaces.
- **Policy OSC 8-8:** Preserve and enhance natural scenic resources associated with major roadway viewsheds and open space corridors, as essential assets reflecting the community's image and character.

Future development in accordance with the General Plan Update would allow for development of currently undeveloped parcels and intensification of other areas (including areas along SR-62), which have the potential to impact scenic vistas and resources in Yucca Valley. However, the General Plan Update designates several areas within the hillsides, along wildlife corridors, and adjacent to the Joshua Tree National Park as Open Space Conservation and Open Space Recreation (see Figure 3-5, *Proposed Land Use Plan*). Within the vicinity of the Town, vast natural landscapes have also been set aside as public and private conservation lands (see Figure 5.3-1, *Conservation Areas*), to not only protect their ecological values and the species that rely on them, but help preserve their visual character. These areas consist of Wildlife Corridor Evaluation Areas and Open Space Resource Areas (see Figures 5.3-4, *Wildlife Corridor Evaluation Areas*, and 5.3-5, *Open Space Resource Areas*).

# 5.1 AESTHETICS

## Figure 5.1-1
## MOUNTAIN RANGES




Source: USGS National Hydrography Dataset

YUCCA VALLEY GENERAL PLAN
DRAFT EIR

TYV-01 08.26.13

0 1,500 3,000 6,000 Feet

THE PLANNING CENTER DC&E

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Joshua trees and desert landscape.

Rock outcroppings.

Figure 5.1-2a
SCENIC FEATURES AND RESOURCES

Desert landscape and mountain ranges.

Rock outcroppings.

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Figure 5.1-2b
SCENIC FEATURES AND RESOURCES

Mountain ranges and hillsides.

Joshua trees and desert landscape.

Desert landscape and mountain ranges.

Rock outcroppings.

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Figure 5.1-2c
SCENIC FEATURES AND RESOURCES

Joshua trees.

Desert landscape and mountain ranges.

Desert landscape, hillsides, and mountain ranges.

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Additionally, the existing and proposed scale and design of the Town, as well as its existing and future land uses, complement and do not deter from the backdrop scenery of the surrounding mountains, hillsides, and desert environment. The height of the surrounding mountains also ensures that they will remain a scenic backdrop to Yucca Valley and surrounding communities without detriment from future development that would be accommodated by the General Plan Update. Specific policies included in the General Plan Update to protect hillsides and ridgelines in the Town include:

- **Policy OSC 8-5:** Preserve the steep slopes of the Sawtooth and Little San Bernardino Mountains and individual landmark peaks such as Burnt Mountain and Bartlett Mountain as permanent open space to protect their scenic value.

- **Policy OSC 8-6:** Minimize the impact of hillside development by requiring conformance with the Town's Municipal Code, and by utilizing the following principles:

    a. Limit development of steep slopes through conformance with Town regulations that consider slope in the determination of appropriate minimum lot area for subdivisions and parcel maps, permitted floor area ratio (FAR), and density.

    b. Encourage clustered development to preserve steep slopes as private or common open spaces to the greatest extent practicable.

    c. Preserve the form of the existing topography by limiting cuts and fills, or through the requirement of natural landform grading.

    d. Evaluate the height and visibility of new development to minimize the visual impacts new buildings create on natural landforms.

    e. Promote hillside development that respects the natural landscape by designing grading and development patterns that follow natural topographic contours.

    f. Encourage higher densities as a trade-off to support preservation of natural features and slopes that maintain the Town's desert character.

Furthermore, future development and/or redevelopment activities would be controlled by the design standards and guidelines outlined in the Town's ordinances and commercial design guidelines, such as the height and placement of buildings and structures, the design of setback areas, and landscaping and architectural design parameters.

Policies and actions in the proposed General Plan Update give substantial consideration to the preservation of scenic vistas and resources (see Land Use Element Policies LU 1-5 and LU 2-19 and Action LU 4, and Open Space and Conservation Policies OSC 1-2, OSC 1-5, OSC 1-6, OSC 4-3, OSC 8-2 through OSC 8-8 and Actions OSC 1, OSC 16, OSC 18, OSC 32, OSC 33, and OSC 34, listed below in Section 5.1.4, *Relevant General Plan Policies and Implementation Actions*). For example, the policies and actions call for the retention of important natural features, preservation of views, and new development and landscaping that is sensitive to visual resources, which in turn helps ensure the preservation of scenic vistas and resources in and around the Town. As also outlined in Chapter 3, *Project Description*, one of the goals of the General Plan Update is to maintain the desert character and environment of Yucca Valley.

Adherence to the design standards of the Town's ordinances and commercial design guidelines and implementation of the policies of the General Plan Update would ensure that future development that would be accommodated by the General Plan Update would be developed in a manner that would not cause significant impacts on scenic vistas or resources.

***IMPACT 5.1-2: FUTURE DEVELOPMENT THAT WOULD BE ACCOMMODATED BY THE GENERAL PLAN UPDATE WOULD ALTER THE VISUAL APPEARANCE OF THE TOWN BUT WOULD NOT SUBSTANTIALLY DEGRADE THE EXISTING VISUAL CHARACTER OR QUALITY OF THE TOWN AND ITS SURROUNDINGS. [THRESHOLD AE-3]***

***Impact Analysis:*** As noted above, future development in accordance with the General Plan Update would allow for development of currently undeveloped parcels and intensification of other areas of the town, including areas along SR-62 and residential development on undeveloped desert and hillside areas. Although development allowed in various areas of the Town would alter the visual character of their immediate vicinity, it would not result in a substantial change or degradation of the visual character or quality in Yucca Valley.

The majority of the development potential of the General Plan Update would occur in areas of the Town already designated for development, as shown in Figures 3-4, *Current Land Use Plan*, and 3-5, *Proposed Land Use Plan*. As shown in these figures, proposed land use designations would generally remain similar to those existing. For example, the majority of existing rural, low, medium, and medium-high density residential land uses in the Town would remain and the land use designations of these areas would also remain. The General Plan Update would also concentrate on redevelopment efforts of underutilized parcels and the replacement, expansion, or refurbishment of existing development in other areas of the Town. Additionally, the majority of the areas currently designated open space would remain open space under the proposed General Plan Update land use plan. As also outlined in Chapter 3, *Project Description*, one of the goals of the General Plan Update is to maintain the desert character and environment of Yucca Valley. Another goal states, "Encourage infill development along SR-62 and on vacant sites in developed areas to conserve the Town's hillsides and wildlife corridors to the greatest extent practical." Therefore, implementation of the General Plan Update would not introduce a substantial amount of new development or intensify development in a manner that would damage or alter the visual character or quality of the Town.

Additionally, the Town is committed to preserving the desert environment and its natural resources, which are important to the heritage, character, economy, and overall quality of life of the community. Policies and actions in the General Plan Update express the Town's vision for balanced growth and ensure that new development anticipated under the General Plan Update is integrated into the natural desert topography of the Town and its surroundings to help preserve the desert environment and its resources. An exhaustive list of proposed General Plan policies relating to visual character and resources is included below under Section 5.1.4, *Relevant General Plan Policies and Implementation Actions*. Views of the surrounding steep slopes, ridgelines, and hilltops are also an important contributor to the visual character and identity of the Town. As a result, the General Plan Update addresses development of these areas in the various policies of Land Use Element and Open Space and Conservation Element (see applicable policies listed in Section 5.1.4) to ensure the retention of important natural features and that new development is sensitive to the visual resources of the surrounding natural hillside areas. In particular, the General Plan Update includes policies and actions ensuring the preservation of ridgelines and hillsides in their natural state. For example, Action LU 4 calls for the Town to enact a hillside ordinance to protect certain slopes and other natural topographic features.

Within the vicinity of the Town, vast natural landscapes have also been set aside as public and private conservation lands (see Figure 5.3-1, *Conservation Areas*), not only to protect their ecological values and the species that rely on them, but to help preserve their visual character. These areas consist of Wildlife Corridor Evaluation Areas and Open Space Resource Areas (see Figures 5.3-4 and 5.3-5). As outlined in the Open Space and Conservation Element, two of the goals for these areas are to preserve the natural scenic character of the Town and to support less intense development near to conservation areas. The Land Use and Open Space and Conservation and Open Space elements of the General Plan Update outline policies and actions to help preserve these natural open space areas. Specific policies include:

- **Policy OSC 1-6:** Encourage the preservation, integrity, function, productivity and long term viability of environmentally sensitive habitats, wildlife corridors and significant geological features within the Town.

- **Policy OSC 4-3:** Require new development proposals to minimize impacts to existing habitat and wildlife to the maximum extent practicable. Require revegetation of disturbed natural habitat areas with native or non-invasive naturalized species.

Furthermore, future development and/or redevelopment activities that would be accommodated under the General Plan Update would be controlled by the design standards and guidelines outlined in the Town's ordinances (Ordinances 88, 125, 136, and 137, which apply to the General Commercial, Neighborhood Commercial, Hillside Reserve, Rural Residential, Single Residential, and Multiple Residential Districts) and commercial design guidelines, such as the height and placement of buildings and structures; the design of setback areas; and landscaping and architectural design parameters. Adherence to the provisions of the ordinances and commercial design guidelines would continue to be ensured through the Town's development review and building permit process.

For the reasons outlined above, future development that would be accommodated under the General Plan Update would not substantially degrade the existing visual character or quality of the Town or its surroundings and no significant impacts would occur.

***IMPACT 5.1-3: FUTURE DEVELOPMENT THAT WOULD BE ACCOMODATED BY THE GENERAL PLAN UPDATE WOULD GENERATE ADDITIONAL LIGHT AND GLARE IN THE TOWN, WHICH COULD IMPACT SURROUNDING LAND USES; HOWEVER, LIGHT AND GLARE WOULD BE MINIMIZED THROUGH ADHERENCE TO THE TOWN'S LIGHTING STANDARDS FOR NEW DEVELOPMENT. [THRESHOLD AE-4]***

***Impact Analysis:*** Sources of light and glare exist within the confines of the Town, including building lighting (interior and exterior), security-lighting, sign illumination, and parking-area lighting. These sources are mostly associated with the multifamily residential, commercial, and industrial uses along and near of SR-62 and in the Old Town and Mid-Town areas. Single-family, rural, and semirural residential development spread across the valley floor and up the gently sloping alluvial fans are also sources of nighttime lighting in the Town. Other sources of nighttime light and glare include street lights and vehicular traffic along surrounding roadways. Additionally, some ambient lighting from surrounding communities and roadways also exists.

Future development in accordance with the General Plan Update would allow for development of currently undeveloped parcels and alteration, intensification, and redistribution of some existing land uses. Because the Town and surrounding area are largely undeveloped, the lighting associated with improvements and structures of future development projects that would be accommodated by the General Plan Update could increase nighttime light and glare within the project area, including Joshua Tree National Park. There are portions of the Town that would be developed with more light-intensive land uses under the General Plan Update (e.g., conversion of vacant land or underutilized areas into residential, commercial, or industrial uses). Sources of light and glare from new development or redevelopment would include lighting needed to provide nighttime street and building illumination, security lighting, nighttime traffic, sign illumination, and lighting associated with construction activities.

Undeveloped portions of the Town; redevelopment of underutilized areas; and replacement, expansion, or refurbishment of existing development in other areas of the Town would have the potential to introduce new sources of light and glare that could adversely affect day or nighttime views in the Town and have impacts on sensitive biological resource areas such as wildlife corridors and open space and conservation areas. For example, the development of hillside and rural residential land uses (as accommodated by the General Plan Update) along the southern boundary of the Town (see Figure 3-5, *Proposed Land Use Plan*), which is adjacent to and abuts Joshua Tree National Park, would increase the number of light sources in these areas and in turn could impact sensitive biological

resources and areas of this National Park. In addition, the communities that surround the Town could be affected by light and glare generated by future development. Furthermore, lighting in a rural desert context, especially glaring light, has the potential to impact the visual quality of the nighttime sky and natural open space areas.

Ordinance 90 of the Town contains lighting standards that would be applicable to development activity associated with future development accommodated by the General Plan Update. The purpose of this ordinance is to establish the regulations and standards that assist in substantially reducing light pollution from commercial and residential land uses; to minimize light pollution that has a detrimental effect on the environment and the enjoyment of the night sky; to reduce and minimize lighting practices that cause unnecessary illumination of adjacent properties; and to implement the Yucca Valley General Plan.

For example, Section 8.7.030 (Outdoor Lighting Fixtures) of Ordinance 90 requires that any new construction and/or new lighting in any residential, commercial, or industrial land use districts be fully shielded or recessed in such a manner as to preclude adverse impacts to adjacent property as a result of light trespass. All proposed exterior lighting associated with future development projects would be required to be designed, arranged, directed, or shielded in such a manner as to contain direct illumination onsite, in accordance with the provisions of Section 8.7.030. Focusing lights where they are needed for public safety and direction reduces light pollution and glare, allowing the night sky to be observed and enjoyed in a more natural state. Preservation of dark skies continues to be a priority for the Town and will be a consideration in future project design as the community grows. Section 8.7.030 also provides lighting standard for recreational facilities (both public and private) and on- and off-site business signs. Adherence to the provisions of Ordinance 90 would continue to be ensured through the Town's development review and building permit process.

Additionally, all future development projects that would be accommodated by the General Plan Update would be required to comply with California's Building Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24, Part 6, of the California Code of Regulations), which outlines mandatory provisions for lighting control devices and luminaires.

Furthermore, the General Plan Update contains policies and actions designed to minimize light and glare impacts from new development projects and help ensure the Town's enjoyment of the dark sky environment (see Land Use Element Policy LU 1-13 and Action LU 16 and Opens Space and Conservation Policy 8-1 listed below in Section 5.1.4, *Relevant General Plan Policies and Implementation Actions*). For example, Policy OSC 8-1 calls for minimizing impacts to night skies by enforcing the Outdoor Lighting and Night Sky Ordinance (Ordinance 90).

In addition to the Joshua Tree National Park, vast natural landscapes have also been set aside as public and private conservation lands within the vicinity of the Town to protect their ecological values and the species that rely on them (see Figure 5.3-1, *Conservation Areas*). These areas consist of Wildlife Corridor Evaluation Areas and Open Space Resource Areas (see Figures 5.3-4, *Wildlife Corridor Evaluation Areas*, and 5.3-5, *Open Space Resource Areas*). These areas do not preclude development from occurring; however, the Town requires that development in these areas be carefully managed to protect and preserve habitat and migratory corridors. Measures to ensure that light and glare impacts to sensitive habitats and corridors would not occur from future development projects include the provision of proper shielding of lighting adjacent to sensitive habitat areas, in accordance with Town Ordinance 90.

Adherence to the design standards of Ordinance 90 and other existing regulations and implementation of the policies of the General Plan Update would ensure that light and glare from new development and redevelopment projects accommodated by the General Plan Update would be minimized and that significant impacts would not occur.

### 5.1.4 Relevant General Plan Policies and Implementation Actions

The following are relevant policies and implementation actions of the General Plan Update that are designed to reduce potential aesthetic and light and glare impacts of future development in Yucca Valley.

#### Housing Element

***Housing Element Policies***

None applicable.

***Housing Element Programs***

| | |
|---|---|
| H 2-7 | Continue to enforce Town Codes on property development and maintenance. Use the Code Enforcement program as the primary tool for bringing substandard housing units into compliance and for improving overall housing conditions in Yucca Valley (H2-7). |
| Program H4-4 | Seek new funding sources to continue the Home Rehabilitation Program to enable lower income and senior households to maintain and rehabilitate their homes. Once funding has been secured, the program shall be advertised on the Town's website and at Town Hall, the Community Center, the Library, and local churches and social service agencies. |

#### Land Use Element

***Land Use Element Policies***

| | |
|---|---|
| LU 1-2 | Require that adjacent land uses and development types complement one another. |
| LU 1-5 | Encourage land use development patterns that preserve the Town's scenic resources such as ridgelines and hillsides. |
| LU 1-7 | Preserve and enhance the distinctiveness, character and livability of residential neighborhoods. |
| LU 1-8 | Require adequate exterior housing structure and property maintenance to protect property values, neighborhood quality, and public safety. |
| LU 1-12 | Preserve the desert character of existing low density residential areas to the greatest extent possible. |
| LU 1-13 | Carefully plan transitions and design interfaces between residential and non-residential land uses (walls, lighting and landscaping) to ensure compatibility. |
| LU 1-16 | Require high quality building design, property maintenance, amenities for pedestrian access, and adequate circulation, utilities, and infrastructure. |
| LU 1-17 | Encourage the renovation of existing commercial and industrial areas to improve appearance, environmental responsiveness, use of infrastructure, and functionality. |
| LU 1-23 | Adequately buffer or otherwise ensure compatibility between commercial and industrial uses and residential areas. |

| | |
|---|---|
| LU 2-10 | Require adequate buffering between the wastewater treatment plant and adjacent uses. |
| LU 2-11 | Require adequate buffering for residential uses immediately to the west and south of the East Side Special Policy Area. |
| LU 2-19 | Development on slopes 30% or greater shall be in accordance with the Hillside Development Ordinance. |

***Land Use Element Implementation Actions***

| | |
|---|---|
| LU 4 | Enact a hillside ordinance to protect certain slopes and other natural topographic features. |
| LU 5 | Amend the development code to create standards addressing appropriate treatments to buffer industrial and commercial uses from residential and other sensitive uses. |
| LU 16 | Rural Mixed Use SPA: Develop design guidelines for properties located north of Skyline Ranch Road that includes guidance regarding: building design and materials, landscaping, walls and fences, lighting, and screening of outdoor storage. Special consideration should also be given to noise compatibility and circulation issues in the area, by implementing design solutions (building and site design) that minimize conflicts between industrial and residential uses. |

## Open Space and Conservation Element

***Open Space and Conservation Element Policies***

| | |
|---|---|
| OSC 1-2 | Support regional, state, and federal efforts to evaluate, acquire, and conserve open space areas in and around Yucca Valley. |
| OSC 1-5 | Encourage new development to retain natural open space areas as part of project design to the greatest extent practicable. |
| OSC 1-6 | Encourage the preservation, integrity, function, productivity and long term viability of environmentally sensitive habitats, wildlife corridors and significant geological features within the Town. |
| OSC 4-3 | Require new development proposals to minimize impacts to existing habitat and wildlife to the maximum extent practicable. Require revegetation of disturbed natural habitat areas with native or non-invasive naturalized species. |
| OSC 4-4 | Minimize and mitigate urban development impacts on sensitive habitat and wildlife areas. |
| OSC 8-1 | Minimize impacts to night skies by enforcing the Outdoor Lighting and Night Sky Ordinance (Ord. No.90). |
| OSC 8-2 | Protect, preserve and enhance the Town's hillsides, mountains, canyons, and natural desert terrain. |
| OSC 8-3 | Encourage development that provides public views of ridgelines and desert landscaping through building siting, design and landscaping. |

OSC 8-4 Reduce the negative impacts of hillside development including excessive cuts and fills, unattractive slope scars, and erosion and drainage problem.

OSC 8-5 Preserve the steep slopes of the Sawtooth and Little San Bernardino Mountains and individual landmark peaks such as Burnt Mountain and Bartlett Mountain as permanent open space to protect their scenic value.

OSC 8-6 Minimize the impact of hillside development by requiring conformance with the Town's Municipal Code, and by utilizing the following principles:

a. Limit development of steep slopes through conformance with Town regulations that consider slope in the determination of appropriate minimum lot area for subdivisions and parcel maps, permitted floor area ratio (FAR), and density.

b. Encourage clustered development to preserve steep slopes as private or common open spaces to the greatest extent practicable.

c. Preserve the form of the existing topography by limiting cuts and fills, or through the requirement of natural landform grading.

d. Evaluate the height and visibility of new development to minimize the visual impacts new buildings create on natural landforms.

e. Promote hillside development that respects the natural landscape by designing grading and development patterns that follow natural topographic contours.

f. Encourage higher densities as a trade-off to support preservation of natural features and slopes that maintain the Town's desert character.

OSC 8-7 Preserve scenic views along primary transportation corridors, particularly SR-62, recreational trails, and from public open spaces.

OSC 8-8 Preserve and enhance natural scenic resources associated with major roadway viewsheds and open space corridors, as essential assets reflecting the community's image and character.

***Open Space and Conservation Element Implementation Actions***

OSC 1 Implement development regulations and guidelines that minimize or eliminate impacts of development on natural open space areas.

OSC 10 Review development proposals adjacent to designated open space lands and assure that land uses are compatible, and buffers and/or linkages are provided when necessary to maintain natural resource value.

OSC 15 Establish standards and regulations that implement, support, and protect open space, wildlife corridors, and protected biological resources.

OSC 16 Establish standards and regulations in the Development Code which minimize impacts of new development on open space and conservation areas.

OSC 18 Adopt a comprehensive grading ordinance that will protect and conserve open space and natural and visual resources.

OSC 32 Evaluate the benefits of pursuing official designation of SR 247 and 62 as scenic highways and enact a Corridor Protection Program. The program could:

a) Mitigate activities within the corridor that detract from its scenic quality by requiring proper siting, landscaping or screening.

b) Prohibit billboards so that they do not detract from scenic views.

c) Make development more compatible with the environment and in harmony with the surroundings.

d) Regulate grading to prevent erosion and cause minimal alteration of existing contours.

OSS 33 Develop a Hillside Ordinance that establishes standards and regulations which implement measures in the following areas, at a minimum:

a) Requires structures in areas with slopes ranging from 15% to less than 30%, to conform to the natural topography and natural grade by using appropriate techniques, including stepped or split-level foundations, stem walls, stacking, and clustering. Walls shall be as natural appearing as possible. Conventional grading may be considered for limited portions of a project when its plan includes special design features, extensive open space, or significant use of greenbelts.

b) Restricts development on slopes 31% to less than 40% to sites where it can be demonstrated that safety will be maximized while environmental and aesthetic impacts will be minimized. Use of large parcels, variable setbacks, and variable building structural techniques (e.g., stepped foundations) shall be expected. Extra erosion control measures may be included as conditions of approval.

c) Prohibits pad grading in slopes 41% or greater.

OSC 34 In conjunction with the hillside development regulations, establish and maintain maps that identify those hillsides and associated areas subject to the regulations.

OSC 35 Consider establishing a density bonus program, providing density incentives for those projects which minimize and eliminate impacts to hillsides and ridgelines.

### 5.1.5 Existing Regulations

#### State

- California's Building Energy Efficiency Standards for Residential and Nonresidential Buildings, Title 24, Part 6, of the California Code of Regulations

### Town of Yucca Valley Ordinances and Guidelines

- Ordinances 88, 90, 125, 136, 137, and 140
- Commercial Design Guidelines

## 5.1.6 Level of Significance Before Mitigation

Upon implementation of regulatory requirements and standard conditions of approval, the following impacts would be less than significant: 5.1-1, 5.1-2, and 5.1-3.

## 5.1.7 Mitigation Measures

No significant adverse impacts were identified and no mitigation measures are necessary.

## 5.1.8 Level of Significance After Mitigation

No significant impacts were identified with regard to aesthetics.

## 5.1.9 References

California Department of Transportation (Caltrans), Division of Design. 2011. California Scenic Highway Mapping System. http://www.dot.ca.gov/hq/LandArch/scenic_highways/.

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## 5.2 AIR QUALITY

This section of the Draft Environmental Impact Report (DEIR) evaluates the potential for the Town of Yucca Valley General Plan Update (proposed project) to impact air quality in a local and regional context. The analysis in this section is based on buildout of the proposed land use plan; vehicle miles traveled (VMT), provided by Fehr and Peers as modeled using the San Bernardino County Transportation Analysis Model (SBTAM) for trips (origin-destination method) (see Appendix I to this DEIR);[1] electricity use provided by Southern California Edison (SCE), natural gas use provided by the Southern California Gas Company (SoCalGas), waste generation identified for the Town of Yucca Valley by the California Department of Resources Recycling and Recovery (CalRecycle), and water use for the Town based on the Hi-Desert Water District's (HDWD) 2010 Urban Water Management Plan (UWMP). The air quality model output sheets are included in Appendix C of this DEIR.

### 5.2.1 Environmental Setting

#### *5.2.1.1 Regulatory Setting*

Ambient air quality standards (AAQS) have been adopted at state and federal levels for criteria air pollutants. In addition, both the state and federal government regulate the release of toxic air contaminants (TACs). The Town of Yucca Valley is in the Mojave Desert Air Basin (MDAB) and is subject to the rules and regulations imposed by the Mojave Desert Air Quality Management District (MDAQMD) as well as the California AAQS adopted by the California Air Resources Board (CARB) and National AAQS adopted by the United States Environmental Protection Agency (EPA). Federal, state, regional, and local laws, regulations, plans, or guidelines that are potentially applicable to the General Plan Update are summarized below.

#### Federal and State Laws

***Ambient Air Quality Standards***

The Clean Air Act (CAA) was passed in 1963 by the U.S. Congress and has been amended several times. The 1970 Clean Air Act amendments strengthened previous legislation and laid the foundation for the regulatory scheme of the 1970s and 1980s. In 1977, Congress again added several provisions, including nonattainment requirements for areas not meeting National AAQS and the Prevention of Significant Deterioration program. The 1990 amendments represent the latest in a series of federal efforts to regulate the protection of air quality in the United States. The CAA allows states to adopt more stringent standards or to include other pollution species. The California Clean Air Act, signed into law in 1988, requires all areas of the state to achieve and maintain the California AAQS by the earliest practical date. The California AAQS tend to be more restrictive than the National AAQS based on even greater health and welfare concerns.

The National and California AAQS are the levels of air quality considered to provide a margin of safety in the protection of the public health and welfare. They are designed to protect "sensitive receptors" most susceptible to further respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

Both California and the federal government have established health-based AAQS for seven air pollutants, which are shown in Table 5.2-1, *Ambient Air Quality Standards for Criteria Pollutants*. These pollutants include ozone ($O_3$), nitrogen dioxide ($NO_2$), carbon monoxide (CO), sulfur dioxide ($SO_2$), coarse inhalable particulate matter ($PM_{10}$), fine

[1] SBTAM is a subregional regional transportation model based on the Southern California Association of Government's TransCad model.

inhalable particulate matter ($PM_{2.5}$), and lead (Pb). In addition, the state has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

***Table 5.2-1***
***Ambient Air Quality Standards for Criteria Pollutants***

| *Pollutant* | *Averaging Time* | *California Standard* | *Federal Primary Standard* | *Major Pollutant Sources* |
|---|---|---|---|---|
| Ozone ($O_3$) | 1 hour | 0.09 ppm | * | Motor vehicles, paints, coatings, and solvents. |
| | 8 hours | 0.070 ppm | 0.075 ppm | |
| Carbon Monoxide (CO) | 1 hour | 20 ppm | 35 ppm | Internal combustion engines, primarily gasoline-powered motor vehicles. |
| | 8 hours | 9.0 ppm | 9 ppm | |
| Nitrogen Dioxide ($NO_2$) | Annual Average | 0.030 ppm | 0.053 ppm | Motor vehicles, petroleum-refining operations, industrial sources, aircraft, ships, and railroads. |
| | 1 hour | 0.18 ppm | 0.100 ppm | |
| Sulfur Dioxide ($SO_2$) | Annual Arithmetic Mean | * | 0.030 ppm[2] | Fuel combustion, chemical plants, sulfur recovery plants, and metal processing. |
| | 1 hour | 0.25 ppm | 0.075 ppm[1] | |
| | 24 hours | 0.04 ppm | 0.14 ppm[2] | |
| Respirable Coarse Particulate Matter ($PM_{10}$) | Annual Arithmetic Mean | 20 µg/m$^3$ | * | Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays). |
| | 24 hours | 50 µg/m$^3$ | 150 µg/m$^3$ | |
| Respirable Fine Particulate Matter ($PM_{2.5}$) | Annual Arithmetic Mean | 12 µg/m$^3$ | 12 µg/m$^{3-3}$ | Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays). |
| | 24 hours | * | 35 µg/m$^3$ | |
| Lead (Pb) | Monthly | 1.5 µg/m$^3$ | * | Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline. |
| | Quarterly | * | 1.5 µg/m$^3$ | |
| | 3-Month Average | * | 0.15 µg/m$^3$ | |
| Sulfates ($SO_4$) | 24 hours | 25 µg/m$^3$ | * | Industrial processes. |

**Table 5.2-1**
**Ambient Air Quality Standards for Criteria Pollutants**

| Pollutant | Averaging Time | California Standard | Federal Primary Standard | Major Pollutant Sources |
|---|---|---|---|---|
| Visibility-Reducing Particles | 8 hours | ExCo =0.23/km visibility of 10≥ miles[1] | No Federal Standard | Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt. |
| Hydrogen Sulfide | 1 hour | 0.03 ppm | No Federal Standard | Hydrogen sulfide ($H_2S$) is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas, and can be emitted as the result of geothermal energy exploitation. |
| Vinyl Chloride | 24 hour | 0.01 ppm | No Federal Standard | Vinyl chloride (chloroethene), a chlorinated hydrocarbon, is a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites, due to microbial breakdown of chlorinated solvents. |

Source: CARB 2013.
Notes: ppm: parts per million; $\mu g/m^3$: micrograms per cubic meter
[1] When relative humidity is less than 70 percent.
[2] On June 2, 2010, a new 1-hour $SO_2$ standard was established and the existing 24-hour and annual primary standards were revoked. The 1971 $SO_2$ national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
[3] On December 14, 2012, EPA lowered the federal primary PM2.5 annual standard from 15.0 $\mu g$/m3 to 12.0 $\mu g$/m3. The new annual standard will become effective 60 days after publication in the Federal Register. EPA made no changes to the primary 24-hour PM2.5 standard or to the secondary PM2.5 standards.
* Standard has not been established for this pollutant/duration by this entity.

## Air Pollutants of Concern

### *Criteria Air Pollutants*

The pollutants emitted into the ambient air by stationary and mobile sources are regulated by federal and state law. Air pollutants are categorized as primary or secondary pollutants. Primary air pollutants are emitted directly from sources. CO, volatile organic compounds (VOC), $NO_2$, $SO_2$, $PM_{10}$, $PM_{2.5}$, and lead are primary air pollutants. Of these, CO, $SO_2$, $NO_2$, $PM_{10}$, and $PM_{2.5}$ are "criteria air pollutants," which means that AAQS have been established for them. VOC and oxides of nitrogen ($NO_x$) are air pollutant precursors that form secondary criteria pollutants through chemical and photochemical reactions in the atmosphere. $O_3$ and $NO_2$ are the principal secondary pollutants.

A description of each of the primary and secondary criteria air pollutants and their known health effects is presented below.

**Carbon Monoxide (CO)** is a colorless, odorless gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. CO is a primary criteria air pollutant. CO concentrations tend to be the highest during winter mornings with little to no wind, when surface-based inversions trap the pollutant at ground levels. The highest ambient CO concentrations are generally found near traffic-congested corridors and intersections. The primary adverse health effect associated with CO is interference with normal oxygen transfer to the blood, which may result in tissue oxygen deprivation (SCAQMD 2005; EPA 2012). The MDAB is designated under the California and National AAQS as being in attainment of CO criteria levels (CARB 2013).

**Volatile Organic Compounds (VOCs)/Reactive Organic Gases** are compounds composed primarily of atoms of hydrogen and carbon. Internal combustion associated with motor vehicle usage is the major source of VOCs. Other sources of VOCs include evaporative emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols (SCAQMD 2005). There are no ambient air quality standards established for VOCs. However, because they contribute to the formation of $O_3$, the MDAQMD has established a significance threshold for this pollutant.

**Nitrogen Oxides ($NO_x$)** are a by-product of fuel combustion and contribute to the formation of ground-level $O_3$, $PM_{10}$, and $PM_{2.5}$. The two major forms of $NO_x$ are nitric oxide (NO) and nitrogen dioxide ($NO_2$). NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure. The principal form of $NO_2$ produced by combustion is NO, but NO reacts with oxygen quickly to form $NO_2$, creating the mixture of NO and $NO_2$ commonly called $NO_x$. $NO_2$ acts as an acute irritant and is more injurious than NO in equal concentrations. At atmospheric concentrations, however, $NO_2$ is only potentially irritating. $NO_2$ absorbs blue light; the result is a brownish-red cast to the atmosphere and reduced visibility. $NO_2$ exposure concentrations near roadways are of particular concern for susceptible individuals, including people with asthma asthmatics, children, and the elderly. Current scientific evidence links short-term $NO_2$ exposures, ranging from 30 minutes to 24 hours, with adverse respiratory effects, including airway inflammation in healthy people and increased respiratory symptoms in people with asthma. Also, studies show a connection between breathing elevated short-term $NO_2$ concentrations and increased visits to emergency departments and hospital admissions for respiratory issues, especially asthma (SCAQMD 2005, EPA 2012). The MDAB is designated an attainment area for $NO_2$ under the National and California AAQS (CARB 2013).

**Sulfur Dioxide ($SO_2$)** is a colorless, pungent, irritating gas formed by the combustion of sulfurous fossil fuels. It enters the atmosphere as a result of burning high-sulfur-content fuel oils and coal and from chemical processes at chemical plants and refineries. Gasoline and natural gas have very low sulfur content and do not release significant quantities of $SO_2$. When sulfur dioxide forms sulfates ($SO_4$) in the atmosphere, together these pollutants are referred to as sulfur oxides ($SO_x$). Thus, $SO_2$ is both a primary and secondary criteria air pollutant. At sufficiently high concentrations, $SO_2$ may irritate the upper respiratory tract. Current scientific evidence links short-term exposures to $SO_2$, ranging from 5 minutes to 24 hours, with an array of adverse respiratory effects including bronchoconstriction and increased asthma symptoms. These effects are particularly important for asthmatics at elevated ventilation rates (e.g., while exercising or playing.) At lower concentrations and when combined with particulates, $SO_2$ may do greater harm by injuring lung tissue. Studies also show a connection between short-term exposure and increased visits to emergency departments and hospital admissions for respiratory illnesses, particularly in at-risk populations including children, the elderly, and asthmatics (SCAQMD 2005, EPA 2012). The MDAB is designated attainment under the California and National AAQS (CARB 2013).

**Suspended Particulate Matter ($PM_{10}$ and $PM_{2.5}$)** consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. Two forms of fine particulates are now recognized and regulated. Inhalable coarse particles, or $PM_{10}$, include particulate matter with an aerodynamic diameter of 10 microns (i.e., 10 millionths of a meter or 0.0004 inch) or less. Inhalable fine particles, or $PM_{2.5}$, have an aerodynamic diameter of 2.5 microns (i.e., 2.5

millionths of a meter or 0.0001 inch) or less. Particulate discharge into the atmosphere results primarily from industrial, agricultural, construction, and transportation activities. Both $PM_{10}$ and $PM_{2.5}$ may adversely affect the human respiratory system, especially in people who are naturally sensitive or susceptible to breathing problems. EPA scientific review concluded that $PM_{2.5}$, which penetrates deeply into the lungs, is more likely than $PM_{10}$ to contribute to health effects and at concentrations that extend well below those allowed by the current $PM_{10}$ standards. These health effects include premature death in people with heart of lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, increased respiratory symptoms (e.g., irritation of the airways, coughing, or difficulty breathing). Diesel particulate matter (DPM) is classified by the CARB as a carcinogen. Particulate matter can also cause environmental effects such as visibility impairment,[2] environmental damage,[3] and aesthetic damage[4] (SCAQMD 2005; EPA 2012). The MDAB is a nonattainment area for $PM_{2.5}$ and $PM_{10}$ under California and National AAQS (CARB 2013).

**Ozone ($O_3$)** is commonly referred to as "smog" and is a gas that is formed when VOCs and $NO_x$, both by-products of internal combustion engine exhaust, undergo photochemical reactions in the presence of sunlight. $O_3$ is a secondary criteria air pollutant. $O_3$ concentrations are generally highest during the summer months when direct sunlight, light winds, and warm temperatures create favorable conditions for the formation of this pollutant. $O_3$ poses a health threat to those who already suffer from respiratory diseases as well as to healthy people. Breathing $O_3$ can trigger a variety of health problems including chest pain, coughing, throat irritation, and congestion. It can worsen bronchitis, emphysema, and asthma. Ground-level $O_3$ also can reduce lung function and inflame the linings of the lungs. Repeated exposure may permanently scar lung tissue. $O_3$ also affects sensitive vegetation and ecosystems, including forests, parks, wildlife refuges and wilderness areas. In particular, $O_3$ harms sensitive vegetation, including forest trees and plants during the growing season (SCAQMD 2005; EPA 2012). The MDAB is designated moderate nonattainment under the California AAQS (1-hour and 8-hour) and National AAQS (8-hour) (CARB 2013).

**Lead (Pb)** is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the EPA's regulatory efforts to remove lead from on-road motor vehicle gasoline, emissions of lead from the transportation sector dramatically declined by 95 percent between 1980 and 1999, and levels of lead in the air decreased by 94 percent between 1980 and 1999. Today, the highest levels of lead in air are usually found near lead smelters. The major sources of lead emissions to the air today are ore and metals processing and piston-engine aircraft operating on leaded aviation gasoline. Once taken into the body, lead distributes throughout the body in the blood and is accumulated in the bones. Depending on the level of exposure, lead can adversely affect the nervous system, kidney function, immune system, reproductive and developmental systems, and the cardiovascular system. Lead exposure also affects the oxygen-carrying capacity of the blood. The lead effects most commonly encountered in current populations are neurological effects in children and cardiovascular effects (e.g., high blood pressure and heart disease) in adults. Infants and young children are especially sensitive to even low levels of lead, which may contribute to behavioral problems, learning deficits, and lowered IQ (SCAMQD 2005; EPA 2012). The MDAB is designated in attainment of the California and National AAQS for lead (CARB 2013). Because emissions of lead are found only in projects that are permitted by MDAQMD, lead is not an air quality of concern for the proposed project.

[2] $PM_{2.5}$ is the main cause of reduced visibility (haze) in parts of the United States.

[3] Particulate matter can be carried over long distances by wind and then settle on ground or water. The effects of this settling include: making lakes and streams acidic; changing the nutrient balance in coastal waters and large river basins; depleting the nutrients in soil; damaging sensitive forests and farm crops; and affecting the diversity of ecosystems.

[4] Particulate matter can stain and damage stone and other materials, including culturally important objects such as statues and monuments.

***Toxic Air Contaminants***

The public's exposure to air pollutants classified as toxic air contaminants is a significant environmental health issue in California. In 1983, the California Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health. The California Health and Safety Code define a TAC as "an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health." A substance that is listed as a hazardous air pollutant (HAP) pursuant to Section 112(b) of the federal Clean Air Act (42 United States Code § 7412[b]) is a toxic air contaminant. Under state law, the California Environmental Protection Agency (Cal/EPA), acting through CARB, is authorized to identify a substance as a TAC if it determines that the substance is an air pollutant that may cause or contribute to an increase in mortality or to an increase in serious illness, or may pose a present or potential hazard to human health.

California regulates TACs primarily through Assembly Bill (AB) 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics "Hot Spot" Information and Assessment Act of 1987). The Tanner Air Toxics Act sets forth a formal procedure for CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an "airborne toxics control measure" for sources that emit designated TACs. If there is a safe threshold for a substance (i.e., a point below which there is no toxic effect), the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology to minimize emissions. To date, CARB has established formal control measures for 11 TACs, all of which are identified as having no safe threshold.

Air toxics from stationary sources are also regulated in California under the Air Toxics "Hot Spot" Information and Assessment Act of 1987. Under AB 2588, toxic air contaminant emissions from individual facilities are quantified and prioritized by the air quality management district or air pollution control district. High priority facilities are required to perform a health risk assessment, and if specific thresholds are exceeded, are required to communicate the results to the public in the form of notices and public meetings.

By the last update to the TAC list in December 1999, CARB had designated 244 compounds as TACs (CARB 1999). Additionally, CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. The majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines.

In 1998, CARB identified particulate emissions from diesel-fueled engines as a TAC. Previously, the individual chemical compounds in diesel exhaust were considered TACs. Almost all diesel exhaust particle mass is 10 microns or less in diameter. Because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lung.

### Mojave Desert Air Quality Management District

MDAQMD is the agency responsible for assuring that the National and California AAQS are attained and maintained in the MDAB. MDAQMD is responsible for:

- Adopting and enforcing rules and regulations concerning air pollutant sources.
- Issuing permits for stationary sources of air pollutants.
- Inspecting stationary sources of air pollutants.
- Responding to citizen complaints.
- Monitoring ambient air quality and meteorological conditions.
- Awarding grants to reduce motor vehicle emissions.
- Conducting public education campaigns.

***Air Quality Management Planning***

The MDAQMD is the agency responsible for preparing the air quality management plans (AQMP) for the MDAB. The Town of Yucca Valley is in the Western Mojave Desert Planning Area of the MDAB. MDAQMD has adopted the following attainment plans for nonattainment pollutants that are applicable within the project area (MDAQMD 2011):

*Ozone Attainment Plans*

- 2008 –Federal 8-Hour Ozone Attainment Plan (Western Mojave Desert Nonattainment Area).
- 2004 –2004 Ozone Attainment Plan (State and Federal).
- 1996 –Triennial Revision to the 1991 Air Quality Attainment Plan.
- 1994 –Reasonable Further Progress Rate-of-Progress Plan.
- 1994 –Post 1996 Attainment Demonstration and Reasonable Further Progress Plan.
- 1991 –1991 Air Quality Attainment Plan.

*Particulate Matter Attainment Plans*

- 1995 –Mojave Desert Planning Area Federal Particulate Matter Attainment Plan.

*Area Designations*

The AQMP provides the framework for air quality basins to achieve attainment of the state and federal ambient air quality standards through the State Implementation Plan (SIP). Areas are classified attainment or nonattainment areas for particular pollutants, depending on whether they meet ambient air quality standards. Severity classifications for ozone nonattainment range in magnitude from marginal, moderate, and serious to severe and extreme. The attainment status for the MDAB is shown in Table 5.2-2.

***Table 5.2-2***
***Attainment Status of Criteria Pollutants in the Mojave Desert Air Basin***

| *Pollutant* | *State* | *Federal* |
|---|---|---|
| Ozone – 1-hour[1] | Nonattainment (Severe 17) | No Federal Standard |
| Ozone – 8-hour[1] | Nonattainment (Severe 17) | Nonattainment (Severe 17) |
| $PM_{10}$ | Nonattainment | Nonattainment |
| $PM_{2.5}$ | Nonattainment | Unclassified/Attainment |
| CO | Attainment | Attainment |
| $NO_2$ | Attainment/Unclassified | Attainment/Unclassified |
| $SO_2$ | Attainment/Unclassified | Attainment/Unclassified |
| Lead | Attainment | Attainment |
| All others | Attainment/Unclassified | Attainment/Unclassified |

Source: CARB 2013a.

[1] Because the Western Mojave Desert Planning Area will not attain the 8-hour ozone standard by 2010 (Moderate), MDAQMD has requested redesignation to a Severe-17 nonattainment area, requiring attainment of the federal 8-hour ozone standard 2021 deadline.

### 5.2.1.2 *Existing Setting*

#### Mojave Desert Air Basin

The project site lies within the MDAB. The MDAQMD has jurisdiction over the desert portion of San Bernardino County and the far eastern end of Riverside County. This region includes the incorporated communities of Adelanto, Apple Valley, Barstow, Blythe, Hesperia, Needles, Twentynine Palms, Victorville, and Yucca Valley. This region also includes the National Training Center at Fort Irwin, the Marine Corps Air Ground Combat Center, the Marine Corps Logistics Base, the eastern portion of Edwards Air Force Base, and a portion of the China Lake Naval Air Weapons Station.

***Topography and Climate***

The MDAB is an assemblage of mountain ranges interspersed with long broad valleys that often contain dry lakes. Many of the lower mountains that dot the vast terrain rise from 1,000 to 4,000 feet above the valley floor. Prevailing winds in the MDAB are out of the west and southwest. These prevailing winds are due to the proximity of the MDAB to coastal and central regions and the blocking nature of the Sierra Nevada to the north; air masses pushed onshore in southern California by differential heating are channeled through the MDAB.

The MDAB is separated from the southern California coastal and central California valley regions by mountains (highest elevation approximately 10,000 feet), whose passes form the main channels for these air masses. Antelope Valley is bordered in the northwest by the Tehachapi Mountains, separated from the Sierra Nevada in the north by the Tehachapi Pass (3,800 ft elevation). Antelope Valley is bordered in the south by the San Gabriel Mountains, bisected by Soledad Canyon (3,300 ft). The Mojave Desert is bordered in the southwest by the San Bernardino Mountains, separated from the San Gabriels by the Cajon Pass (4,200 ft). A lesser channel lies between the San Bernardino Mountains and the Little San Bernardino Mountains (Morongo Valley).

The Palo Verde Valley portion of the Mojave Desert lies in the low desert, at the eastern end of a series of valleys (notably the Coachella Valley), whose primary channel is the San Gorgonio Pass (2,300 ft) between the San Bernardino and San Jacinto Mountains. During the summer the MDAB is generally influenced by a Pacific subtropical high cell that sits off the coast, inhibiting cloud formation and encouraging daytime solar heating. The MDAB is rarely influenced by cold air masses moving south from Canada and Alaska, because these frontal systems are weak and diffuse by the time they reach the desert. Most desert moisture arrives from infrequent warm, moist, and unstable air masses from the south.

The MDAB averages between three and seven inches of precipitation per year (from 16 to 30 days with at least 0.01 inches of precipitation). The MDAB is classified a dry-hot desert climate, with portions classified as dry-very hot desert, to indicate at least three months have maximum average temperatures over 100.4° F (MDAQMD 2011).

The climatological station nearest to the project site is the Joshua Tree Monitoring Station (ID 044405). The average low is reported at 35.8°F in December while the average high is 101.1°F in July. Rainfall averages 4.69 inches per year in the project area (WRCC 2013).

#### Existing Ambient Air Quality

Existing levels of ambient air quality and historical trends and projections in the vicinity of the project site and project area are best documented by measurements made by MDAQMD. The air quality monitoring station closest to the project is the Joshua Tree National Monument Monitoring Station. Because this station only monitors $O_3$, data from the Victorville Monitoring Station was obtained. Data from these stations are summarized in Table 5.2-3. The data show that the area regularly exceeds the state and federal eight-hour and one hour $O_3$ standards. The state $PM_{10}$ standard is regularly exceeded. The CO, $SO_2$, $NO_2$, and $PM_{2.5}$ standards have not been exceeded in the last five years in the project vicinity.

***Table 5.2-3***
***Ambient Air Quality Monitoring Summary***

| Pollutant/Standard | Number of Days Threshold Were Exceeded and Maximum Levels during Such Violations | | | | |
|---|---|---|---|---|---|
| | 2007 | 2008 | 2009 | 2010 | 2011 |
| **Ozone ($O_3$)[1]** | | | | | |
| State 1-Hour ≥ 0.09 ppm | 37 | 36 | 24 | 19 | 21 |
| State 8-hour ≥ 0.07 ppm | 108 | 108 | 90 | 90 | 90 |
| Federal 8-Hour > 0.075 ppm | 81 | 72 | 59 | 53 | 56 |
| Max. 1-Hour Conc. (ppm) | 0.129 | 0.140 | 0.121 | 0.119 | 0.121 |
| Max. 8-Hour Conc. (ppm) | 0.107 | 0.110 | 0.104 | 0.106 | 0.105 |
| **Carbon Monoxide (CO)[2]** | | | | | |
| State 8-Hour > 9.0 ppm | 0 | 0 | 0 | 0 | 0 |
| Federal 8-Hour ≥ 9.0 ppm | 0 | 0 | 0 | 0 | 0 |
| Max. 8-Hour Conc. (ppm) | 1.61 | 1.04 | 1.14 | 5.17 | 1.51 |
| **Nitrogen Dioxide ($NO_2$)[2]** | | | | | |
| State 1-Hour ≥ 0.18 ppm | 0 | 0 | 0 | 0 | 0 |
| Max. 1-Hour Conc. (ppm) | 0.071 | 0.074 | 0.064 | 0.137 | 0.075 |
| **Sulfur Dioxide ($SO_2$)[2]** | | | | | |
| State 1-Hour ≥ 0.04 ppm | 0 | 0 | 0 | 0 | 0 |
| Max. 1-Hour Conc. (ppm) | 0.005 | 0.002 | 0.005 | 0.007 | 0.007 |
| **Coarse Particulates ($PM_{10}$)[2]** | | | | | |
| State 24-Hour > 50 µg/m$^3$ | 4 | 2 | 1 | 0 | 0 |
| Federal 24-Hour > 150 µg/m$^3$ | 1 | 2 | 1 | 0 | 0 |
| Max. 24-Hour Conc. (µg/m$^3$) | 358.0[3] | 285.5[3] | 307.2[3] | 49.0 | 110.2 |
| **Fine Particulates ($PM_{2.5}$)[2]** | | | | | |
| Federal 24-Hour > 35 µg/m$^3$ | 0 | 0 | 0 | 0 | 0 |
| Max. 24-Hour Conc. (µg/m$^3$) | 28.0 | 19.0 | 20.0 | 20.0 | 16.0 |

Source: CARB 2013b.
ppm: parts per million; $\mu g/m^3$: or micrograms per cubic meter.
[1] Data obtained from the Joshua Tree National Monument Monitoring Station.
[2] Data obtained from the Victorville Monitoring Station.
[3] Data may include an exceptional event (e.g., wildfire).

### Existing Criteria Air Pollutant Emissions Inventory

An existing emissions inventory of the Town of Yucca Valley was conducted based on the existing land uses and is shown in Table 5.2-4. The existing criteria air pollutant emissions were calculated using OFFROAD2007, EMFAC2011, and data from SoCalGas.

***Table 5.2-4***
***Existing Town of Yucca Valley Criteria Air Pollutant Emissions Inventory***

| Sector | Existing, 2012, Criteria Air Pollutants (tons/year) | | | | | |
|---|---|---|---|---|---|---|
| | VOC | $NO_X$ | CO | $SO_2$ | $PM_{10}$ | $PM_{2.5}$ |
| Transportation[1] | 97 | 421 | 1,425 | 2 | 34 | 19 |
| Area – Landscaping[2] | 2 | 1 | 30 | <1 | <1 | <1 |
| Area – Construction[2] | 2 | 13 | 9 | <1 | 1 | 1 |
| Energy[3] | 2 | 16 | 9 | <1 | 1 | 1 |
| Existing Land Uses Total | 103 | 452 | 1,472 | 2 | 36 | 21 |

[1] EMFAC2011 based on daily VMT provided by Fehr and Peers based on 2012 emission rates. Transportation sector includes the full trip length for external-internal trips. VMT per year based on a conversion of VMT x 347 days per year to account for less travel on weekend, consistent with CARB statewide GHG emissions inventory methodology (CARB 2008).

[2] OFFROAD2007. Estimated based on population (Landscaping) and employment (Light Commercial Equipment) for Yucca Valley as a percentage of San Bernardino County. Estimated based on housing permit data for San Bernardino and Yucca Valley from the US Census. Daily offroad construction emissions multiplied by 347 days/year to account for reduced/limited construction activity on weekends and holidays. Excludes fugitive emissions from construction sites and wood-burning fireplaces. Various industrial and commercial processes (e.g., manufacturing, dry cleaning) allowed under the proposed Land Use Plan of the General Plan Update would require permitting and would be subject to further study pursuant to MDAQMD Regulation XIII, New Source Review. Because the nature of those emissions cannot be determined at this time and they are subject to further regulation and permitting, they will not be included in the table because they would be speculative.

[3] Based on a three-year average (2009–2011) provided by SoCal Gas. Nonresidential includes direct access customers, county facilities, and other district facilities within the Town boundaries.

### Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardiorespiratory diseases.

Residential areas are also considered sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Other sensitive receptors include retirement facilities, hospitals, and schools. Recreational land uses are considered moderately sensitive to air pollution, although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial, commercial, retail, and office areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent, since the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the public.

## 5.2.2 Thresholds of Significance

### CEQA Appendix G Thresholds

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

AQ-1 Conflict with or obstruct implementation of the applicable air quality plan.

AQ-2 Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

AQ-3 Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

AQ-4 Expose sensitive receptors to substantial pollutant concentrations.

AQ-5 Create objectionable odors affecting a substantial number of people.

### Mojave Desert Air Quality Management District Thresholds

The analysis of the proposed project's air quality impacts follows the guidance and methodologies recommended in MDAQMD's *CEQA and Federal Conformity Guidelines* (2011). CEQA allows the significance criteria established by the applicable air quality management or air pollution control district to be used to assess impacts of a project on air quality. MDAQMD has established thresholds of significance for regional air quality emissions for construction activities and project operation.

#### *Consistency with Air Quality Management Plans*

MDAPCD requires a consistency evaluation with adopted federal and state AQMPs. If a project is deemed consistent with the existing land use plan, it is considered consistent with the AQMPs. Zoning changes, specific plans, general plan amendments, and similar land use plan changes that do not increase dwelling unit density, do not increase vehicle trips, and do not increase vehicle miles traveled are also deemed to not exceed this threshold (MDAQMD 2011).

#### *Regional Significance Thresholds*

MDAPCD's significance criteria are shown in Table 5.2-5. The thresholds in this table are applied to both construction and operational phases of the project regardless of whether they are stationary or mobile sources, resulting in a conservative estimate of air quality impacts of the project. Projects with phases shorter than one year (e.g., construction activities) should be compared to the daily value.

***Table 5.2-5***
***MDAQMD Regional Significance Thresholds***

| *Air Pollutant* | *Annual* | *Daily* |
|---|---|---|
| Reactive Organic Gases (ROGs)/ Volatile Organic Compounds (VOCs) | 25 tons/year | 137 lbs/day |
| Carbon Monoxide (CO) | 100 tons/year | 548 lbs/day |
| Nitrogen Oxides ($NO_x$) | 25 tons/year | 137 lbs/day |
| Sulfur Oxides ($SO_x$) | 25 tons/year | 137 lbs/day |
| Coarse Inhalable Particulates ($PM_{10}$) | 15 tons/year | 82 lbs/day |
| Fine Inhalable Particulates ($PM_{2.5}$) | 15 tons/year | 82 lbs/day |

Source: MDAQMD 2011.
Notes:
Lead and hydrogen sulfide are not air quality pollutants of concern for most projects and are typically generated by industrial (MDAQMD permitted) projects only.
Project with phases shorter than one year, including construction activities, can be compared to the daily value.

***Localized Significance Thresholds***

MDAPCD also considers projects that cause or contribute to an exceedance of the California or National AAQS to result in significant impacts. Emissions that do not exceed the daily or annual emission in Table 5.2-4 are considered to result in less than significant localized impacts.

***Health Risk***

Whenever a project would require use of chemical compounds that have been identified in MDAQMD Regulation XIII, New Source Review, placed on CARB's air toxics list pursuant to Assembly Bill 1807 (AB 1807), Air Contaminant Identification and Control Act (1983); or placed on the EPA's National Emissions Standards for Hazardous Air Pollutants, a health risk assessment (HRA) is required by MDAQMD. In addition, the MDAQMD identified the following project types must be evaluated using significance threshold criteria in Table 5.2-6 when located within the specified distance to an existing or planned (zoned) sensitive receptor land use:

- Industrial projects within 1000 feet;
- Distribution centers (40 or more trucks per day) within 1000 feet;
- Major transportation projects (50,000 or more vehicles per day) within 1000 feet;
- Dry cleaners using perchloroethylene within 500 feet;
- Gasoline dispensing facilities within 300 feet. (MDAQMD 2011)

Conversely, sensitive receptors within these specified distances should also be evaluated for air quality compatibility.

***Table 5.2-6***
***MDAQMD Toxic Air Contaminants Incremental Risk Thresholds***

| | |
|---|---|
| Maximum Individual Cancer Risk | ≥ 10 in 1 million |
| Hazard Index (project increment) | ≥ 1.0 |

Source: MDAQMD 2011.

## 5.2.3 Environmental Impacts

### Methodology

This air quality evaluation was prepared in accordance with the requirements of CEQA to determine if significant air quality impacts are likely to occur in conjunction with future development that would be accommodated by the General Plan Update. MDAQMD has published the *CEQA and Federal Conformity Guidelines* that are intended to provide local governments with guidance for analyzing and mitigating air quality impacts, which were used in this analysis. The Town's criteria air pollutant emissions inventory includes the following sectors:

**Transportation:** Transportation emissions forecasts were modeled using CARB's EMFAC2011. Model runs were based on daily per capita VMT data provided by Fehr and Peers using the SBTAM regional transportation demand model and 2012 (existing) and 2035 emission rates. The VMT provided in the model includes the full trip length for land uses in the Town (origin-destination approach) and does not include a 50 percent reduction in VMT for external-internal/internal-external trips. Fugitive dust from travel on unpaved roads is based on the EPA's AP 42 emission factors based on travel on unpaved roads provided by Fehr and Peers.

**Energy:** Natural gas use for residential and non-residential land uses in the Town were modeled using data provided by SoCalGas. Natural gas use is based on a three-year average (2011, 2010, and 2009) to account for fluctuation in annual natural use as a result of natural variations in climate. Forecasts are adjusted for increases in population and employment in the Town.

**Area Sources:** OFFROAD2007 was used to estimate GHG emissions from landscaping equipment, light commercial equipment, and construction equipment in the Town. OFFROAD2007 is a database of equipment use and associated emissions for each county compiled by CARB. Annual emissions were compiled using OFFROAD2007 for the County of San Bernardino for year 2012. In order to determine the percentage of emissions attributable to the Town of Yucca Valley, landscaping and light commercial equipment is estimated based on population (Landscaping) and employment (Light Commercial Equipment) for the Town of Yucca Valley as a percentage of San Bernardino County, while construction equipment use is estimated based on building permit data for the Town of Yucca Valley and County of San Bernardino from data compiled by the U.S. Census. Daily off-road construction emissions are multiplied by 347 days per year to account for reduced/limited construction activity on weekends and holidays. Forecasts are adjusted for increases in population and employment in the Town. Area sources exclude emissions from fireplaces and consumer products in the Town.

The following impact analysis addresses thresholds of significance for which the Initial Study disclosed potentially significant impacts. The applicable thresholds are identified in brackets after the impact statement.

***IMPACT 5.2-1:*** ***THE GENERAL PLAN UPDATE WOULD BE CONSISTENT WITH THE REGIONAL CONTROL MEASURES, BUT DEVELOPMENT ASSOCIATED WITH THE BUILDOUT OF THE GENERAL PLAN UPDATE WOULD GENERATE MORE GROWTH THAN THE CURRENT GENERAL PLAN. THEREFORE, THE PROJECT WOULD BE INCONSISTENT WITH THE MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT'S AIR QUALITY MANAGEMENT PLANS. [THRESHOLD AQ-1]***

***Impact Analysis:*** CEQA requires that general plans be evaluated for consistency with the AQMP. A consistency determination plays an important role in local agency project review by linking local planning and individual projects to the AQMP. It fulfills the CEQA goal of informing decision makers of the environmental efforts of the project under consideration early enough to ensure that air quality concerns are fully addressed. It also provides the local agency with ongoing information as to whether they are contributing to clean air goals in the AQMP. Only new or amended general plan elements, specific plans, and major projects need to undergo a consistency review. This is because the AQMP strategy is based on projections from local general plans.

MDAQM considers a project consistent with the AQMPs if it is consistent with the existing land use plan. Zoning changes, specific plans, general plan amendments and similar land use plan changes that do not increase dwelling unit density, vehicle trips, or increase vehicle miles traveled are also deemed to not exceed this threshold (MDAQMD 2011). Table 5.2-7 compares the population, employment, and daily VMT generation of the General Plan Update compared to the population, employment, and daily VMT generation of the current land use plan.

***Table 5.2-7***
***Comparison of the Proposed General Plan Update to the Current General Plan Population, Employment, and Daily VMT***

| *Scenario* | *Current General Plan (Post 2035)* | *General Plan Update (Post 2035)* | *Change from Current General Plan* | *Percent Change from the Current General Plan* |
|---|---|---|---|---|
| Population | 62,223 | 64,565 | 2,828 | 4% |
| Employment | 27,370 | 34,926 | 7,556 | 28% |
| Daily VMT[1] | 2,361,433 | 2,622,318 | 260,885 | 11% |

VMT: Vehicle Miles Traveled
[1] VMT per service population for the Current General Plan is assumed to be the same as the General Plan Update as identified for 2035 in the SBTAM.

Although individual development projects would be consistent with the control measures/regulations identified in MDAQMD's AQMP, Table 5.2-7shows that the General Plan Update would generate substantially more growth for the Town than the current general plan. It should be noted that the General Plan Update assumes full theoretical buildout of the Town post-2035, since there is no schedule for when this development would occur. In contrast, the growth projections that are integrated in the AQMPs are based on SCAG's RTP/SCS. Full buildout associated with the General Plan Update is not currently included in the emissions inventory for the MDAB. As identified in Table 5.2-7, the proposed project would not be consistent with the AQMP because buildout of the Town of Yucca Valley under the proposed General Plan Update would exceed the forecasts in the current general plan. Consequently, the General Plan Update would cumulatively contribute to the existing nonattainment designations in the MDAB because these emissions are not included in the current regional emissions inventory for the MDAB. The proposed project would be considered inconsistent with the MDAQMD's AQMPs, resulting in a significant impact in this regard.

***IMPACT 5.2-2:*** ***CONSTRUCTION ACTIVITIES ASSOCIATED WITH THE BUILDOUT OF THE GENERAL PLAN UPDATE WOULD GENERATE CRITERIA AIR POLLUTANT EMISSIONS THAT EXCEED MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT'S REGIONAL SIGNIFICANCE THRESHOLDS AND WOULD CONTRIBUTE TO THE OZONE AND PARTICULATE MATTER NONATTAINMENT DESIGNATIONS OF THE MOJAVE DESERT AIR BASIN. [THRESHOLDS AQ-2 AND AQ-3]***

***Impact Analysis:*** Construction activities associated with development that would be accommodated by the General Plan Update would occur over the buildout horizon (post-2035) of the General Plan Update and cause short-term emissions of criteria air pollutants. The primary source of $NO_x$, CO, and $SO_x$ emissions is the operation of construction equipment. The primary sources of particulate matter ($PM_{10}$ and $PM_{2.5}$) emissions are activities that disturb the soil, such as grading and excavation road construction, and building demolition and construction. The primary source of VOC emissions is the application of architectural coating and off-gas emissions associated with asphalt paving. A discussion of health impacts associated with air pollutant emissions generated by construction activities is included under "Air Pollutants of Concern" in section 5.2-1, *Environmental Setting*.

Information regarding specific development projects, soil types, and the locations of receptors would be needed in order to quantify the level of impact associated with construction activity. Due to the scale of development activity associated with theoretical buildout of the General Plan Update, emissions would likely exceed the MDAQMD regional significance thresholds and therefore, in accordance with the MDAQMD methodology, would cumulatively contribute to the nonattainment designations of the MDAB. The MDAB is currently designated nonattainment for $O_3$ and particulate matter ($PM_{10}$ and $PM_{2.5}$). Emissions of VOC and $NO_x$ are precursors to the formation of $O_3$. In addition, $NO_x$ is a precursor to the formation of particulate matter ($PM_{10}$ and $PM_{2.5}$). Therefore, the proposed project would cumulatively contribute to the existing nonattainment designations of the MDAB for $O_3$, and particulate matter ($PM_{10}$ and $PM_{2.5}$).

Air quality emissions related to construction must be addressed on a project-by-project basis. For this broad-based General Plan Update, it is not possible to determine whether the scale and phasing of individual projects would result in the exceedance of MDAQMD's short-term regional or localized construction emissions thresholds. An estimate of construction emissions is included in the operational phase regional criteria air pollutant emissions inventory in Impact 5.2-3 below. In addition to regulatory measures (e.g., MDAQMD Regulation XIII for new source review; Regulation II, which includes Rule 201 for a permit to construct and Rule 203 for a permit to operate; Regulation IV, which includes Rules 403 and Rule 403.2 for fugitive dust control, and CARB's airborne toxic control measures), mitigation may include extension of construction schedules and/or use of special equipment. Nevertheless, because of the likely scale and extent of construction activities pursuant to the future development that would be accommodated by the General Plan Update, at least some projects would likely continue to exceed the relevant MDAQMD thresholds. Consequently, construction-related air quality impacts associated with development in accordance with the General Plan Update are deemed significant.

***IMPACT 5.2-3:*** ***BUILDOUT OF THE PROPOSED LAND USE PLAN WOULD GENERATE ADDITIONAL VEHICLE TRIPS AND AREA SOURCES OF CRITERIA AIR POLLUTANT EMISSIONS THAT EXCEED MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT'S REGIONAL SIGNIFICANCE THRESHOLDS AND WOULD CONTRIBUTE TO THE OZONE AND PARTICULATE MATTER NONATTAINMENT DESIGNATIONS OF THE MOJAVE DESERT AIR BASIN. [THRESHOLDS AQ-2 AND AQ-3]***

***Impact Analysis:*** For the purpose of the following analysis, it is important to note that, based on the requirements of CEQA, this analysis is based on a comparison of the General Plan update land use map to existing land uses and not to the current General Plan land use map, from which there is little variation (see Chapter 7, *Alternatives to the Proposed Project*).

It is also important to note that the General Plan Update is a regulatory document that sets up the framework for future growth and development and does not directly result in development in and of itself. Before any development can occur in the Town, all such development is required to be analyzed for conformance with the General Plan, zoning requirements, and other applicable local and state requirements; comply with the requirements of CEQA; and obtain all necessary clearances and permits.

The General Plan Update guides growth and development within the Town of Yucca Valley by designating land uses in the proposed land use plan and through implementation of the goals and policies of the General Plan Update. New development would increase air pollutant emissions in the Town and contribute to the overall emissions inventory in the MDAB. A discussion of health impacts associated with air pollutant emissions generated by operational activities is included in the Air Pollutants of Concern discussion in section 5.2-1, *Environmental Setting*.

The proposed project sets the direction for the development of residential and non-residential land uses within developed and undeveloped portions of the Town. Theoretical buildout of the General Plan Update would result in an increase in land use intensity in the Town, as shown in Table 3-2.

### Town of Yucca Valley Emissions Inventory Forecasts

The increase in criteria air pollutant emissions is based on the difference between existing land uses (see Table 4-1, *Existing Land Use Summary*) and land uses associated with buildout of the General Plan Update (see Table 3-2, *Proposed General Plan Land Use Designations and Buildout Projections*) as well as an estimate of population and employment within the Town at 2035 based on SCAG forecasts (SCAG 2012).[5]

[5] SCAG forecasts in 2035 identify less employment that identified in Table 4-1. Therefore, the SCAG forecast for employment was adjusted based on the relative increase in employment from 2008 to 2035. The increase in employment between 2008 to

As shown in Table 5.2-8, theoretical buildout of the General Plan Update would generate long-term emissions that exceed the daily MDAQMD thresholds for all criteria pollutants except $SO_x$. Emissions of VOC and $NO_x$ are precursors to the formation of $O_3$. In addition, $NO_x$ is a precursor to the formation of particulate matter ($PM_{10}$ and $PM_{2.5}$). Consequently, emissions of VOC and $NO_x$ that exceed the MDAQMD regional significance thresholds would contribute to the $O_3$ nonattainment designation of the MDAB, while emissions of $NO_x$, $PM_{10}$, and $PM_{2.5}$ that exceed the MDAQMD regional significance thresholds would contribute to the particulate matter ($PM_{10}$ and $PM_{2.5}$) nonattainment designation of the MDAB.

Implementation of the General Plan policies and implementation actions would reduce impacts to the extent feasible. For example, Policy C1-20 would require future development to pave roadways that would serve 500 or more daily trips unless paving of that facility is considered infeasible by the Town, there is no funding for the improvement, or when the majority of the residents on that facility desire it to be unpaved. In addition, Policy C1-21 identifies that it is a policy of the Town to pursue funding to pave unpaved roadways where the traffic volume exceeds 500 daily trips. Nonetheless, operational-related air quality impacts associated with future development that would be accommodated by the General Plan Update are significant.

2035 identified by SCAG was added to the baseline employment identified in Table 4-1.

***Table 5.2-8***
***Yucca Valley Criteria Air Pollutant Emissions Inventory Forecast***

| Sector | Existing Land Uses in 2035 Criteria Air Pollutants (tons/year) | | | | | |
|---|---|---|---|---|---|---|
| | VOC | $NO_X$ | CO | $SO_2$ | $PM_{10}$ | $PM_{2.5}$ |
| Transportation[1] | 32 | 115 | 437 | 2 | 24 | 10 |
| Area – Landscaping[2] | 2 | 1 | 30 | <1 | <1 | <1 |
| Area – Construction[2] | 2 | 13 | 9 | <1 | 1 | 1 |
| Energy[3] | 2 | 16 | 9 | <1 | 1 | 1 |
| Existing Land Uses in 2035 | 37 | 146 | 485 | 2 | 26 | 12 |
| **Sector** | **Forecast Year 2035 Criteria Air Pollutants (tons/year)** | | | | | |
| | VOC | $NO_X$ | CO | $SO_2$ | $PM_{10}$ | $PM_{2.5}$ |
| Transportation[1] | 35 | 126 | 479 | 2 | 26 | 11 |
| Area – Landscaping[2] | 2 | 1 | 35 | <1 | <1 | <1 |
| Area – Construction[2] | 2 | 13 | 9 | <1 | 1 | 1 |
| Energy[3] | 2 | 19 | 10 | <1 | 2 | 2 |
| 2035 Land Uses | 41 | 160 | 533 | 2 | 29 | 13 |
| Increase from Existing in 2035 | 4 | 14 | 49 | 2 | 29 | 13 |
| MDAQMD Threshold | 25 | 25 | 100 | 25 | 15 | 15 |
| Exceeds MDAQMD Threshold | No | No | No | No | No | No |
| **Sector** | **General Plan Buildout (Post-2035) Criteria Air Pollutants (tons/year)** | | | | | |
| | VOC | $NO_X$ | CO | $SO_2$ | $PM_{10}$ | $PM_{2.5}$ |
| Transportation[1] | 99 | 358 | 1,358 | 5 | 94 | 32 |
| Area – Landscaping[2] | 6 | 5 | 104 | <1 | 1 | 1 |
| Area – Construction[2] | 2 | 13 | 9 | <1 | 1 | 1 |
| Energy[3] | 6 | 54 | 31 | <1 | 4 | 4 |
| General Plan Buildout Land Uses | 113 | 431 | 1,502 | 6 | 99 | 38 |
| Increase from Existing in 2035 | 76 | 285 | 1,017 | 4 | 73 | 26 |
| MDAQMD Threshold | 25 | 25 | 100 | 25 | 15 | 15 |
| Exceeds MDAQMD Threshold | Yes | Yes | Yes | No | Yes | Yes |

Source: Emissions forecasts estimated based on changes in population (residential energy), employment (nonresidential energy), or service population (transportation).

[1] EMFAC2011 based on daily VMT provided by Fehr and Peers. Transportation sector includes the full trip length for external-internal trips. VMT per year based on a conversion of VMT x 347 days per year to account for less travel on weekend, consistent with CARB statewide GHG emissions inventory methodology (CARB 2008). Includes fugitive dust from travel on updated roads using EPA's AP 42.

[2] OFFROAD2007. Estimated based on population (Landscaping) and employment (Light Commercial Equipment) for Yucca Valley as a percentage of San Bernardino County. Estimated based on housing permit data for San Bernardino and Yucca Valley from the US Census. Daily offroad construction emissions multiplied by 347 days/year to account for reduced/limited construction activity on weekends and holidays. Excludes fugitive emissions from construction sites and wood-burning fireplaces. Various industrial and commercial processes (e.g., manufacturing, dry cleaning) allowed under the proposed land use plan of the General Plan Update would require permitting and would be subject to further study pursuant to MDAQMD Regulation XIII, New Source Review. Because the nature of those emissions cannot be determined at this time and they are subject to further regulation and permitting, they will not be included in the table because they would be speculative.

[3] Based on a three-year average (2009–2011) provided by SoCal Gas. Nonresidential includes direct access customers, county facilities, and other district facilities within the Town boundaries.

***IMPACT 5.2-4:*** ***BUILDOUT OF THE YUCCA VALLEY GENERAL PLAN COULD RESULT IN NEW SOURCES OF CRITERIA AIR POLLUTANT EMISSIONS AND/OR TOXIC AIR CONTAMINANTS PROXIMATE TO EXISTING OR PLANNED SENSITIVE RECEPTORS. [THRESHOLD AQ-4]***

***Impact Analysis:*** Operation of new land uses, consistent with the land use plan of the General Plan Update, would generate new sources of criteria air pollutants and TACs.

### Localized Significance Thresholds

MDAQMD considers projects that cause or contribute to an exceedance of the California or National AAQS to result in significant impacts. Information regarding specific development projects, soil types, and the locations of receptors would be needed in order to quantify the level of impact associated with future development projects. Due to the scale of development activity associated with theoretical buildout of the General Plan Update, emissions could exceed the MDAQMD regional significance thresholds and therefore, in accordance with the MDAQMD methodology, may result in significant localized impacts. Air quality emissions would be addressed on a project-by-project basis. For this broad-based General Plan Update, it is not possible to determine whether the scale and phasing of individual projects would result in the exceedance of MDAQMD's localized emissions thresholds. Nevertheless, because of the likely scale of future development that would be accommodated by the General Plan Update, at least some projects would likely exceed the relevant MDAQMD thresholds.

### Toxic Air Contaminants

Operation of new land uses, consistent with the General Plan Update, could also generate new sources TACs within the Town from various industrial and commercial processes (e.g., manufacturing, dry cleaning). Land uses that have the potential to generate substantial stationary sources of emissions that would require a permit from MDAQMD include industrial land uses, such as chemical processing facilities, dry cleaners, and gasoline-dispensing facilities. In addition to stationary/area sources of TACs, warehousing operations could generate a substantial amount of diesel particulate matter emissions from off-road equipment use and truck idling. New land uses in the Town that generate trucks trips (including trucks with transport refrigeration units) could generate an increase in DPM that would contribute to cancer and noncancer health risk in the MDAB. These new land uses could be near existing sensitive receptors within the Town. Stationary sources of emissions would be controlled by MDAQMD through permitting and would be subject to further study and health risk assessment prior to the issuance of any necessary air quality permits under MDAQMD Regulation XIII, New Source Review. Because the nature of those emissions cannot be determined at this time and they are subject to further regulation and permitting, they will not be addressed further in this analysis but are considered a potentially significant impact of the General Plan Update. MDAQMD identifies the following project types (and associated buffer distance) that would require further evaluation to ensure that sensitive receptors would not be exposed to substantial pollutant concentrations:

- Industrial projects within 1000 feet;
- Distribution centers (40 or more trucks per day) within 1000 feet;
- Major transportation projects (50,000 or more vehicles per day) within 1000 feet;
- Dry cleaners using perchloroethylene within 500 feet;
- Gasoline dispensing facilities within 300 feet. (MDAQMD 2011)

Implementation of the following General Plan implementation actions would ensure that review of air quality compatibility would be conducted when siting receptors near major sources.

OSC 41 Amend the Development Code to identify land use sources of toxic air contaminants and adopt standards for the regulation of location and protection of sensitive receptors from excessive and hazardous emissions.

OSC 44 Require all projects that have the potential to generate significant levels of air pollution to provide detailed impact analyses and design mitigation that incorporates the most advanced technological methods available. Prior to the issuance of construction permits, the Town shall review and determine the effectiveness of proposed mitigation measures and set additional measures as needed.

LU 5 Amend the development code to create standards addressing appropriate treatments to buffer industrial and commercial uses from residential and other sensitive uses.

However, operation of new sources of emissions near existing or planned sensitive receptors is considered a potentially significant impact of the project.

***IMPACT 5.2-5: PLACEMENT OF NEW SENSITIVE RECEPTORS NEAR MAJOR SOURCES OF TOXIC AIR CONTAMINANTS IN THE TOWN OF YUCCA VALLEY COULD EXPOSE PEOPLE TO SUBSTANTIAL POLLUTANT CONCENTRATIONS. [THRESHOLD AQ-4]***

***Impact Analysis:*** Because placement of sensitive land uses falls outside CARB jurisdiction, CARB developed and approved the *Air Quality and Land Use Handbook: A Community Health Perspective* (2005) to address the siting of sensitive land uses in the vicinity of freeways, distribution centers, rail yards, ports, refineries, chrome-plating facilities, dry cleaners, and gasoline-dispensing facilities. This guidance document was developed to assess compatibility and associated health risks when placing sensitive receptors near existing pollution sources.

CARB's recommendations on the siting of new sensitive land uses were based on a compilation of recent studies that evaluated data on the adverse health effects ensuing from proximity to air pollution sources. The key observation in these studies is that proximity to air pollution sources substantially increases both exposure and the potential for adverse health effects. There are three carcinogenic toxic air contaminants that constitute the majority of the known health risks from motor vehicle traffic: DPM from trucks and benzene and 1,3 butadiene from passenger vehicles. CARB recommendations for siting new sensitive land uses are based on data that show that localized air pollution exposures can be reduced by as much as 80 percent by following CARB minimum distance separations.

Potential sources of TAC within the Town of Yucca Valley include stationary sources permitted by MDAQMD and roadways with more than 50,000 average daily traffic volumes. The highest forecast volumes on SR-62 at buildout of the General Plan (post-2035) would be 70,440 vehicles per day. No other roadways in the Town at buildout would generate 50,000 vehicles per day or more. The majority of currently permitted sources are minor sources of emissions (e.g., emergency diesel generators, auto body repair and refinishing facilities, gas stations, dry cleaners). Because of the lack of major stationary sources of emission, the potential to expose sensitive receptors to substantial pollutant concentrations from these sources in the Town is low.

MDAQMD identifies the following project types (and associated buffer distance) that would require further evaluation to ensure that sensitive receptors would not be exposed to substantial pollutant concentrations

- Industrial projects within 1000 feet;
- Distribution centers (40 or more trucks per day) within 1,000 feet;
- Major transportation projects (50,000 or more vehicles per day) within 1,000 feet;
- Dry cleaners using perchloroethylene within 500 feet;
- Gasoline dispensing facilities within 300 feet. (MDAQMD 2011)

Implementation of the following General Plan implementation actions would ensure that review of air quality compatibility would be conducted when siting receptors near major sources.

OSC 41 Amend the Development Code to identify land use sources of toxic air contaminants and adopt standards for the regulation of location and protection of sensitive receptors from excessive and hazardous emissions.

LU 5 Amend the development code to create standards addressing appropriate treatments to buffer industrial and commercial uses from residential and other sensitive uses.

However, placement of sensitive receptors proximate to the sources above is considered a potentially significant impact of the project.

***IMPACT 5.2-6: BUILDOUT OF THE TOWN OF YUCCA VALLEY WOULD NOT EXPOSE A SUBSTANTIAL NUMBER OF PEOPLE TO OBJECTIONABLE ODORS. [THRESHOLD AQ-5]***

***Impact Analysis:*** Growth within the Town of Yucca Valley could generate new sources of odors and place sensitive receptors near existing sources of odors. Nuisance odors from land uses in the MDAB are regulated under MDAQMD Rule 402, Nuisance. Major sources of odors include wastewater treatment plants, chemical manufacturing facilities, food processing facilities, agricultural operations, and waste facilities (e.g., landfills, transfer stations, compost facilities).

There are two types of odor impacts: 1) siting sensitive receptors near nuisance odors, and 2) siting new sources of nuisance odors near sensitive receptors. Due to the low-density residential/commercial character of the Town, proposed land uses under the General Plan have a low potential to generate nuisance odors that affect a substantial number of people. The exception to this is the planned HDWD's wastewater treatment plant. As identified in the environmental analysis conducted by the HDWD, the wastewater treatment plan is not forecast to create significant objectionable odors as a result of installation of odor control facilities (HDWD and BOR 2009) Furthermore, the Town's land use plan designates residential areas and industrial areas of the Town to prevent potential mixing of incompatible land use types. Future development would involve minor odor-generating activities, such as lawn mower exhaust and application of exterior paints for building improvement. It should be noted that while restaurants can generate odors, these sources are not typically identified as nuisance odors since they typically do not generate significant odors that affect a substantial number people. Construction activity would require the operation of equipment that may generate exhaust from either gasoline or diesel fuel. Construction and development would also require the application of paints and the paving of roads, which could generate odors. These types and concentrations of odors are typical of developments and are not considered significant air quality impacts.

Furthermore, MDAQMD Rule 402, Nuisance, requires abatement of any nuisance generated by an odor complaint. Because existing sources of odors are required to comply with MDAQMD Rule 402, impacts to siting of new sensitive land uses would be less then significant. Future environmental review for major sources of odors are required to ensure that sensitive land uses are not exposed to nuisance odors. MDAAQMD 402 requires abatement of any nuisance generating an odor complaint.[6] Consequently, odor impacts associated with the buildout of the General Plan Update would be less than significant.

### 5.2.4 Relevant General Plan Policies and Implementation Actions

#### Open Space and Conservation

***Open Space and Conservation Element***

Policy OSC 6-3 Require low water use, drought resistant landscape planting to reduce water demand.

Policy OSC 6-4 Require new development to incorporate Best Management Practices (BMPs) for water use and efficiency and demonstrate specific water conservation measures.

[6] Typical abatement includes passing air through a drying agent followed by two successive beds of activated carbon to generate odor-free air.

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| Policy OSC 9-1 | Develop, promote, and implement long-term energy efficiency and demand management policies and standards for Town facilities, vehicles, and new development. |
| Policy OSC 9-2 | Support the development of renewable energy generation within the Town, provided that significant adverse environmental impacts associated with such development can be successfully mitigated. |
| Policy OSC 9-3 | Encourage the use of clean and/or renewable alternative energy sources for transportation, heating, and cooling and construction. |
| Policy OSC 9-4 | Encourage the reduction and recycling of household and business waste. |
| Policy OSC 9-5 | Ensure that any planned construction, demolition, addition, alteration, repair, remodel, landscaping, or grading projects divert all reusable, salvageable, and recyclable debris from landfill disposal. |
| Policy OSC 9-6 | Promote use of ride-sharing and mass transit as means of reducing transportation-related energy demand. |
| Policy OSC 9-7 | Encourage development proposals to participate in state, federal, and/or regional solar rebate and incentive programs. |
| Policy OSC 9-8 | Encourage new construction provided for in whole or in part with Town funds, to incorporate passive solar design features, such as daylighting and passive solar heating, where feasible. |
| Policy OSC 9-9 | Promote building design and construction that integrates alternative energy systems, including but not limited to solar, thermal, photovoltaics and other clean energy systems. |
| Policy OSC 10-1 | Participate in the monitoring of all air pollutants of regional concern on a continuous basis. |
| Policy OSC 10-2 | Coordinate air quality planning efforts with other local, regional, and federal agencies. |
| Policy OSC 10-3 | Promote the safe and efficient movement of people and materials into and through the Town as a means of reducing the impact of automobiles on local air quality. |
| Policy OSC 10-4 | Coordinate land use planning efforts to assure that sensitive receptors are reasonably separated from polluting point sources. |
| Policy OSC 10-5 | Provide consistent and effective code enforcement for construction and grading activities to assure ground disturbances do not contribute to blowing sand and fugitive dust emissions. |
| Policy OSC 11-1 | Continue to participate in and support the provisions of the San Bernardino Regional Greenhouse Gas Reduction Plan. |
| Policy OSC 11-2 | Encourage new development to be designed to take advantage of the desert climate through solar orientation, shading patterns, and other green building practices and technologies. |
| Policy OSC 11-3 | Maintain General Plan Land Use, Housing, and Transportation goals and policies to be aligned with, support, and enhance SCAG's Regional Transportation Plan and Sustainable Communities Strategy to achieve reductions in GHG emissions. |

***Open Space and Conservation Implementation Actions***

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| OSC 26 | Update water efficient-landscape guidelines, which address the use of drought-tolerant plant materials and irrigation standards in the Development Code in accordance with State law. |
| OSC 36 | Participate in the regional energy management and conservation efforts and encourage the expanded use of energy efficient and alternative fuels, buses with bike racks, and other system improvements including infrastructure for alternative energy vehicles that enhance overall energy efficiency and conservation. |
| OSC 37 | Coordinate with the County to review land use applications proposing to develop solar or windfarms to protect view sheds and scenic resources of the community. |
| OSC 38 | Continue the Town's efforts on community participation in reducing, reusing, and recycling household and business waste. |
| OSC 39 | Provide informational materials and non-Town incentive program information to residents regarding available alternative energy and energy efficiency programs and rebates. |
| OSC 40 | Evaluate the Town's ability to create a program to waive or reduce the permit fees on solar installation projects and promote state, federal, and private rebate programs. |
| OSC 41 | Amend the Development Code to identify land use sources of toxic air contaminants and adopt standards for the regulation of location and protection of sensitive receptors from excessive and hazardous emissions. |
| OSC 42 | Actively promote and pursue expansion of an air quality monitoring station within Yucca Valley that monitors all criteria pollutants ($O_3$, $NO_x$, $SO_x$, CO, and $PM_{2.5}$ and $PM_{10}$). |
| OSC 43 | Continue to proactively work with the MDAQMD in conjunction with other local and regional agencies in the development and application of air quality regulations. |
| OSC 44 | Require all projects that have the potential to generate significant levels of air pollution to provide detailed impact analyses and design mitigation that incorporates the most advanced technological methods available. Prior to the issuance of construction permits, the Town shall review and determine the effectiveness of proposed mitigation measures and set additional measures as needed. |
| OSC 45 | Establish a goal for solar installations on new and existing homes as well as new commercial/industrial development to be achieved before 2020. |
| OSC 46 | Pursue partnerships with other governmental entities and with private companies and Southern California Edison to establish incentive programs for renewable energy. |

## Land Use

***Land Use Element***

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| Policy LU 1-1 | Encourage infill development to maximize the efficiency of existing and planned public services, facilities, and infrastructure. |

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| Policy LU 1-2 | Require that adjacent land uses and development types complement one another. |
| Policy LU 1-9 | Encourage infill residential development around public facilities and with pedestrian linkages to encourage walkable residential neighborhoods. |
| Policy LU 1-19 | Encourage the relocation of industrial operations that are not compatible with adjacent uses to areas that are conducive to such operations. |
| Policy LU 1-22 | Attract and retain non-polluting, clean industrial development that expands the economic opportunities in the Town. |

***Land Use Implementation Actions***

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| LU 5 | Amend the development code to create standards addressing appropriate treatments to buffer industrial and commercial uses from residential and other sensitive uses. |
| LU 13 | Coordinate with the Southern California Association of Governments and the Governor's Office of Planning and Research to stay informed of legislation and documentation of the nexus between land use, housing, transportation, and sustainability. |

## Circulation

***Circulation Element***

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| Policy C 1-7 | Encourage development designs that integrate multiple modes of access including pedestrian, bicycle, and public transportation. |
| Policy C 1-9 | Require sidewalk improvements concurrent with new development where commercial and school uses are planned and where residential densities exceed two units per acre, or as required by the Planning Commission. |
| Policy C 1-10 | Encourage MBTA to provide enhanced bus service to employment areas outside of the Town, such as the Coachella Valley or other nearby areas in the County of San Bernardino. |
| Policy C 1-11 | Encourage MBTA to work with area religious facilities or other sites where underutilized parking or hours of operation could provide opportunities for implementing shared park-and-ride facilities. |
| Policy C 1-12 | Encourage MBTA to implement regional transportation solutions that reduce vehicle miles traveled and greenhouse gas emissions. |
| Policy C 1-13 | Work with new development to implement MBTA's Transit Guidelines in Project Development (MBTA, 2005) as appropriate. |
| Policy C 1-14 | Encourage employers to support Transportation Demand Management techniques, such as bus transit passes or other measures that reduce the reliance of the single occupant vehicle. |
| Policy C 1-19 | Require traffic calming techniques in residential neighborhoods and in Special Policy Areas to slow and manage traffic volumes as deemed appropriate by the Town Engineer. |

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| Policy C 1-20 | Require future development to pave roadways that will serve 500 or more daily trips as noted in [the Yucca Valley General Plan] Table 4-1 unless paving of that facility is considered infeasible by the Town, there is no funding for the improvement, or when the majority of the residents on that facility desire it to be unpaved. |
| Policy C 1-21 | Pursue funding to pave unpaved roadways where the traffic volume exceeds 500 daily trips unless paving of that facility is infeasible or when the majority of the residents on that facility desire it to be unpaved. |
| Policy C 1-22 | Minimize dust emissions on existing and new unpaved roads where traffic volumes exceed 500 daily trips. |

***Circulation Implementation Actions***

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| C 2 | Review and revise the street and traffic impact mitigation fee program. |
| C 5 | Provide signs and improve trails, bicycle, equestrian, and pedestrian connections consistent with the Town Trails Master Plan and Park and Recreation Master Plan based on available funding. |
| C 6 | Close gaps in the existing sidewalk network and provide sidewalks adjacent to schools consistent with the Future Sidewalks Map (Figure 4-3 of the 2013 Transportation Study). |
| C 7 | Update the Park and Recreation Master Plan to include bicycle and pedestrian facilities that are complementary to the connectivity and trails planning identified in the Town's Trails Master Plan. |
| C 8 | Apply for funding opportunities to improve pedestrian facilities near schools (such as Safe-Routes-To-School (SR2S) funding). |
| C 9 | Work with MBTA to plan and provide enhanced bus service to employment areas outside of the Town. |
| C 10 | Coordinate with MBTA and religious facilities to discuss expanding opportunities for implementing park-and-ride facilities. |
| C 11 | Consult with MBTA for bus stop placement and design. |
| C 12 | Consult with MBTA on street design to ensure the street accommodates access for a variety of transit options. |
| C 13 | Work with MBTA to create a program to expand ridership in Yucca Valley. |
| C 14 | Establish right-of-way landscaping, signage, and lighting requirements and guidelines to provide an attractive, user-friendly, and safe environment for all users. |
| C 18 | Work with CalTrans to pursue funding for and implement low-cost transportation improvements such as traffic signal coordination where applicable. |
| C 19 | Pursue funding to pave unpaved roadways where the traffic volume exceeds 500 daily trips. |

C 20 Update the development code to require the application of non-toxic soil binder annually to minimize dust emissions on existing and new unpaved roads where traffic volumes exceed 500 daily trips if paving is not feasible.

C 21 Establish a timeframe and parameters for paving unpaved roadways, consistent with implementation action C 19.

C 25 Evaluate and prioritize public infrastructure improvements for inclusion in the Town's Capital Improvement Program.

### 5.2.5 Existing Regulations and Standard Conditions

- MDAQMD Rule 201: Permit to Construct
- MDAQMD Rule 203: Permit to Operate
- MDAQMD Rule 402: Nuisances
- MDAAQMD Rule 403 and 403.2: Fugitive Dust Control
- MDAQMD Regulation XIII, New Source Review
- CARB Airborne Toxics Control Measure (CCR 2840)
- Building Energy Efficiency Standards (Title 24)
- Appliance Energy Efficiency Standards (Title 20)
- Motor Vehicle Standards (AB 1493)

### 5.2.6 Level of Significance Before Mitigation

Upon implementation of regulatory requirements and standard conditions of approval, the following impacts would be less than significant: 5.2-6.

Without mitigation, the following impacts would be **potentially significant**:

- Impact 5.2-1 Buildout of the General Plan Update would generate more growth than the current general plan; and therefore, the project would be inconsistent with MDAQMD's Air Quality Management Plans.

- Impact 5.2-2 Construction activities associated with the buildout of the General Plan Update would generate criteria air pollutant emissions that would exceed MDAQMD's regional significance thresholds and would contribute to the ozone and particulate matter nonattainment designations of the MDAB.

- Impact 5.2-3 Buildout of the proposed land use plan would generate additional vehicle trips and area sources of criteria air pollutant emissions that exceed MDAQMD's regional significance thresholds and would contribute to the ozone and particulate matter nonattainment designations of the MDAB.

- Impact 5.2-4 Buildout of the Yucca Valley General Plan could result in new sources of criteria air pollutant emissions and/or toxic air contaminants near existing or planned sensitive receptors.

- Impact 5.2-5 Placement of new sensitive receptors within the Town of Yucca Valley near major sources of toxic air contaminants could expose people to substantial pollutant concentrations.

### 5.2.7 Mitigation Measures

#### Impact 5.2-1

Mitigation measures incorporated into future development projects and adherence to the General Plan Update policies and implementation actions for operation and construction phases described under Impacts 5.2-2 and 5.2-3 below would reduce criteria air pollutant emissions associated with buildout of the General Plan Update. Goals and policies in the General Plan Update would facilitate continued Town participation/cooperation with MDAQMD and SCAG to achieve regional air quality improvement goals, promotion of energy conservation design and development techniques, encouragement of alternative transportation modes, and implementation of transportation demand management strategies. However, no mitigation measures are available that would reduce impacts associated with inconsistency with the AQMP due to the magnitude of growth and associated emissions that would be generated by the buildout of the Town in accordance with the General Plan Update.

#### Impact 5.2-2

2-1 If, during subsequent project-level environmental review, construction-related criteria air pollutants are determined to have the potential to exceed the Mojave Desert Air Quality Management District (MDAQMD) adopted thresholds of significance, the Town of Yucca Valley Planning Department shall require that applicants for new development projects incorporate mitigation measures as identified in the CEQA document prepared for the project to reduce air pollutant emissions during construction activities. Mitigation measures that may be identified during the environmental review include but are not limited to:

- Using construction equipment rated by the United States Environmental Protection Agency as having Tier 3 (model year 2006 or newer) or Tier 4 (model year 2008 or newer) emission limits, applicable for engines between 50 and 750 horsepower.
- Ensuring construction equipment is properly serviced and maintained to the manufacturer's standards.
- Limiting nonessential idling of construction equipment to no more than five consecutive minutes.
- Water all active construction areas at least three times daily, or as often as needed to control dust emissions. Watering should be sufficient to prevent airborne dust from leaving the site. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour. Reclaimed water should be used whenever possible.
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).
- Pave, apply water three times daily or as often as necessary to control dust, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.
- Sweep daily (with water sweepers using reclaimed water if possible), or as often as needed, all paved access roads, parking areas, and staging areas at the construction site to control dust.

- Sweep public streets daily (with water sweepers using reclaimed water if possible) in the vicinity of the project site, or as often as needed, to keep streets free of visible soil material.
- Hydroseed or apply non-toxic soil stabilizers to inactive construction areas.
- Enclose, cover, water three times daily, or apply non-toxic soil binders to exposed stockpiles (dirt, sand, etc.).

### Impact 5.2-3

Goals and policies are included in the General Plan Update that would reduce air pollutant emissions. However, due to the magnitude of emissions generated by the buildout of residential, office, commercial, industrial, and warehousing land uses in the Town, no mitigation measures are available that would reduce impacts below MDAQMD's thresholds.

### Impact 5.2-4

2-2 New industrial or warehousing land uses that: 1) have the potential to generate 40 or more diesel trucks per day and 2) are located within 1,000 feet of a sensitive land use (e.g., residential, schools, hospitals, nursing homes), as measured from the property line of the project to the property line of the nearest sensitive use, shall submit a health risk assessment (HRA) to the Town of Yucca Valley Planning Department prior to future discretionary project approval. The HRA shall be prepared in accordance with policies and procedures of the state Office of Environmental Health Hazard Assessment and the Mojave Desert Air Quality Management District. If the HRA shows that the incremental cancer risk exceeds ten in one million (I0E-06)or the appropriate noncancer hazard index exceeds 1.0, the applicant will be required to identify and demonstrate that best available control technologies for toxics (T-BACTs) are capable of reducing potential cancer and noncancer risks to an acceptable level, including appropriate enforcement mechanisms. T-BACTs may include, but are not limited to, restricting idling onsite or electrifying warehousing docks to reduce diesel particulate matter, or requiring use of newer equipment and/or vehicles. T-BACTs identified in the HRA shall be identified as mitigation measures in the environmental document and/or incorporated into the site development plan as a component of the proposed project.

### Impact 5.2-5

2-3 Applicants for sensitive land uses within the following distances as measured from the property line of the project to the property line of the source/edge of the nearest travel lane, from these facilities:

- Industrial facilities within 1000 feet
- Distribution centers (40 or more trucks per day) within 1,000 feet
- Major transportation projects (50,000 or more vehicles per day) within 1,000 feet
- Dry cleaners using perchloroethylene within 500 feet
- Gasoline dispensing facilities within 300 feet

shall submit a health risk assessment (HRA) to the Town of Yucca Valley prior to future discretionary project approval. The HRA shall be prepared in accordance with policies and procedures of the state Office of Environmental Health Hazard Assessment (OEHHA) and the Mojave Desert Air Quality Management District. The latest OEHHA guidelines shall be used for the analysis, including age sensitivity factors, breathing rates, and body weights appropriate for children age 0 to 6 years. If the HRA shows that the incremental cancer risk exceeds ten in one million (10E-06) or the appropriate

noncancer hazard index exceeds 1.0, the applicant will be required to identify and demonstrate that mitigation measures are capable of reducing potential cancer and non-cancer risks to an acceptable level (i.e., below ten in one million or a hazard index of 1.0), including appropriate enforcement mechanisms. Measures to reduce risk may include but are not limited to:

- Air intakes located away from high volume roadways and/or truck loading zones.
- Heating, ventilation, and air conditioning systems of the buildings provided with appropriately sized maximum efficiency rating value (MERV) filters.

Mitigation measures identified in the HRA shall be identified as mitigation measures in the environmental document and/or incorporated into the site development plan as a component of the proposed project. The air intake design and MERV filter requirements shall be noted and/or reflected on all building plans submitted to the Town and shall be verified by the Town's Planning Department.

### 5.2.8 Level of Significance After Mitigation

#### Impact 5.2-1

Buildout of the General Plan Update would generate more population and employment growth than the current general plan; therefore, the project would be inconsistent with MDAQMD's Air Quality Management Plans. Mitigation measures incorporated into future development projects and adherence to the General Plan Update policies and implementation actions for operation and construction phases described in Impacts 5.2-2 and 5.2-3 above would reduce criteria air pollutant emissions associated with buildout of the General Plan Update. Goals and policies included in the General Plan Update would facilitate continued Town participation/cooperation with MDAQMD and SCAG to achieve regional air quality improvement goals, promotion of energy conservation design and development techniques, encouragement of alternative transportation modes, and implementation of transportation demand management strategies. However, no mitigation measures are available that would reduce impacts associated with inconsistency with the AQMP due to the magnitude of growth and associated emissions that would be generated by the buildout of the Town in accordance with the General Plan Update. Impact 5.2-1 would remain **Significant and Unavoidable**.

#### Impact 5.2-2

Construction activities associated with the buildout of the General Plan Update would generate criteria air pollutant emissions that would exceed MDAQMD's regional significance thresholds and would contribute to the ozone and particulate matter nonattainment designations of the MDAB. Goals and policies are included in the General Plan Update that would reduce air pollutant emissions. However, due to the magnitude of emissions generated by future construction activities associated with the buildout of the General Plan Update, no mitigation measures are available that would reduce impacts below MDAQMD's thresholds. Impact 5.2-2 would remain **Significant and Unavoidable**.

#### Impact 5.2-3

Buildout of the proposed land use plan would generate additional vehicle trips and area sources of criteria air pollutant emissions that exceed MDAQMD's regional significance thresholds and would contribute to the ozone and particulate matter nonattainment designations of the MDAB. Goals and policies are included in the General Plan Update that would reduce air pollutant emissions. However, due to the magnitude of emissions generated by the buildout of residential, office, commercial, industrial, and warehousing land uses in the Town, no mitigation measures are available that would reduce impacts below MDAQMD's thresholds. Impact 5.2-3 would remain **Significant and Unavoidable**.

### Impact 5.2-4

Buildout of the Yucca Valley General Plan could result in new sources of criteria air pollutant emissions and/or toxic air contaminants near existing or planned sensitive receptors. Goals and policies are included in the General Plan Update that would reduce concentrations of criteria air pollutant emissions and TACs generated by new development.

Review of projects by MDAQMD for permitted sources of air toxics (e.g., industrial facilities, dry cleaners, and gasoline dispensing facilities) would ensure health risks are minimized. Mitigation Measure 2-2 would ensure mobile sources of TACs not covered under MDAQMD permits are considered during subsequent project-level environmental review. Development of individual projects would be required to achieve the incremental risk thresholds established by MDAQMD, and TACs would be less than significant.

However, localized emissions of criteria air pollutants could exceed the MDAQMD regional significance thresholds because of the scale of development activity associated with theoretical buildout of the General Plan Update. For this broad-based General Plan Update, it is not possible to determine whether the scale and phasing of individual projects would result in the exceedance of MDAQMD's localized emissions thresholds. Therefore, in accordance with the MDAQMD methodology, Impact 5.2-4 would remain **Significant and Unavoidable**.

### Impact 5.2-5

Placement of new sensitive receptors within the Town of Yucca Valley near major sources of TACs could expose people to substantial pollutant concentrations. Goals and policies are included in the General Plan Update that would reduce concentrations of criteria air pollutant emissions and air toxics generated by new development. Mitigation Measure 2-3 would ensure that placement of sensitive receptors near major sources of air pollution would achieve the incremental risk thresholds established by MDAQMD and Impact 5.2-5 would be less than significant.

## 5.2.9 References

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## 5.3 BIOLOGICAL RESOURCES

The analysis in this section is based in part on the following technical report:

- *Biological Technical Report for the Town of Yucca Valley General Plan Update*, Alden Environmental, Inc., January 22, 2013.

A complete copy of this study is included as Appendix D to this Draft EIR.

Preparation of the biological technical report for the Town of Yucca Valley General Plan Update included a review of existing literature and databases including current federal, state, and local regulations; historical and current aerial photographs; U.S. Geological Survey (USGS) topographic maps; U.S. Department of Agriculture soil survey maps; historical weather information for the Town, literature from peer-reviewed journals; and reputable online resources that provide data for the region.

The California Natural Diversity Database (CNDDB) was reviewed to identify known sensitive biological resources in the vicinity of the Town. The CNDDB, administered by the California Department of Fish and Wildlife (CDFW), is an inventory of vegetation communities, plant species, and wildlife species that are considered sensitive by state and federal resource agencies, academic institutions, and other conservation groups.

### 5.3.1 Environmental Setting

#### *5.3.1.1 Regulatory Setting*

#### Federal Endangered Species Act

The Federal Endangered Species Act of 1973 (FESA; United States Code, Title 16, Sections 1531 et seq.), as amended, was enacted to protect and conserve any species of plant or animal that is endangered or threatened with extinction and the habitats in which these species are found. "Take" of endangered species is prohibited under Section 9 of the FESA. "Take" means to "harass, harm, pursue, hunt, wound, kill, trap, capture, collect, or attempt to engage in any such conduct." Section 7 of the FESA requires federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) on proposed federal actions that may affect any endangered, threatened, or proposed (for listing) species or critical habitat that may support the species. Section 4(a) of the FESA requires that critical habitat be designated by the USFWS "to the maximum extent prudent and determinable, at the time a species is determined to be endangered or threatened." Critical habitat is formally designated by USFWS to provide guidance for planners/managers and biologists with an indication of where suitable habitat may occur and where high priority of preservation for a particular species should be given. Section 10 of the FESA provides the regulatory mechanism that allows the incidental take of a listed species by private interests and nonfederal government agencies during lawful activities. Habitat conservation plans (HCPs) for the impacted species must be developed in support of incidental take permits for nonfederal projects to minimize impacts to the species and develop viable mitigation measures to offset the unavoidable impacts.

#### Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 (MBTA; United States Code, Title 16, Sections 703–712) is the domestic law that affirms or implements the United States' commitment to four international conventions with Canada, Japan, Mexico, and Russia for the protection of shared migratory bird resources. The MBTA governs the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests. It prohibits the take, possession, import, export, transport, sale, purchase, barter, or offering of these activities, except under a valid permit or as permitted in the implementing regulations. USFWS administers permits to take migratory birds in accordance with the regulations of the MBTA.

### Clean Water Act, Section 404

The United States Army Corps of Engineers (Corps) regulates discharges of dredged or fill material into "waters of the U.S."[1] (including wetlands and nonwetland bodies of water that meet specific criteria) according to Section 404 of the federal Clean Water Act (CWA; United States Code, Title 33, Sections 1251 et seq.). A permit is required for any filling or dredging within waters of the U.S. The permit review process entails an assessment of potential adverse impacts to Corps wetlands and jurisdictional waters, wherein the Corps may require mitigation measures. Where a federally listed species may be affected, a Section 7 consultation with USFWS may be required. If there is potential for cultural resources to be present, Section 106 review may be required. Also, where a Section 404 permit is required, a Section 401 Water Quality Certification would also be required from the Regional Water Quality Control Board (RWQCB).

### Clean Water Act, Section 401and 402

Section 401(a)(1) of the CWA specifies that any applicant for a federal license or permit to conduct any activity that may result in any discharge into navigable waters shall provide the federal permitting agency a certification, issued by the state in which the discharge originates, that any such discharge will comply with the applicable provisions of the CWA. In California, the applicable RWQCB must certify that the project will comply with water quality standards. Permits requiring Section 401 certification include Corps Section 404 permits and National Pollutant Discharge Elimination System (NPDES) permits issued by the Environmental Protection Agency (EPA) under Section 402 of the CWA. NPDES permits are issued by the applicable RWQCB. The Town of Yucca Valley is within the jurisdiction of the Colorado River Basin RWQCB (CRBRWQCB, Region 7).

### California Fish and Game Code, Section 1600

Section 1600 of the California Fish and Game Code requires that a project proponent notify CDFW of any proposed alteration of streambeds, rivers, and lakes. The intent is to protect habitats that are important to fish and wildlife. CDFW may review a project and place conditions on the project as part of a streambed alteration agreement (SAA). The conditions are intended to address potentially significant adverse impacts within CDFW's jurisdictional limits.

### California Endangered Species Act

The California Endangered Species Act (CESA; California Fish and Game Code, Section 2080) generally parallels the main provisions of the FESA and is administered by CDFW. Its intent is to prohibit take and protect state-listed endangered and threatened species of fish, wildlife, and plants. Unlike its federal counterpart, CESA also applies the take prohibitions to species petitioned for listing (state candidates). Candidate species may be afforded temporary protection as though they were already listed as threatened or endangered at the discretion of the Fish and Wildlife Commission. Unlike the FESA, CESA does not include listing provisions for invertebrate species. Under certain conditions, CESA has provisions for take through a 2081 permit or memorandum of understanding. In addition, some sensitive mammals and birds are protected by the state as Fully Protected Species. California Species of Special Concern are species designated vulnerable to extinction due to declining population levels, limited ranges, and/or continuing threats. This list is primarily a working document for the CDFW's CNDDB project, which maintains a database of known and recorded occurrences of sensitive species. Informally listed taxa are not protected per se, but warrant consideration in the preparation of biological resources assessments.

[1] "Waters of the United States," as it applies to the jurisdictional limits of the authority of the Corps of Engineers under the Clean Water Act, includes: all waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; all interstate waters including interstate wetlands; all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce; water impoundments; tributaries of waters; territorial seas; wetlands adjacent to waters. The terminology used by Section 404 of the Clean Water Act includes "navigable waters" which is defined at Section 502(7) of the Act as "waters of the United States including the territorial seas."

### California Desert Native Plants Act

The California Desert Native Plants Act (California Food and Agriculture Code Sections 80001 et seq.) was passed in 1981 and is administered by the CDFW.

This act provides protection for nonlisted California desert native plants from unlawful harvesting on both public and private lands within Imperial Inyo, Kern, Los Angeles, Mono, Riverside, San Bernardino, and San Diego counties. The California Desert Native Plants Act prohibits a person from harvesting, transporting, selling, or possessing specific native desert plants unless that person has a valid permit or wood receipt and the required tags and seals.

This act does not apply to the clearing or removal of native plants from a canal, lateral ditch, survey line, building site, or road or other right-of-way by the landowner or his or her agent, if the native plants are not to be transported from the land or offered for sale. Additionally, this act does not apply to a public agency or to a publicly or privately owned public utility when acting in the performance of its obligation to provide service to the public.

### California Natural Community Conservation Planning Program

The California Natural Community Conservation Plan (NCCP) program was authorized in 1991 under California Fish and Game Code Sections 2800 et. seq. and is administered by CDFW. It is a cooperative effort by the CDFW and numerous public and private partners that takes a broad scale, ecosystem approach to planning for the protection and perpetuation of biological diversity throughout California by protecting both habitats and the species within these habitats while also accommodating compatible land use.

An NCCP identifies and provides for the regional protection of plants, wildlife, and their habitats, while allowing compatible and appropriate economic activity in the region. By including key interests in the process and by working with landowners, environmental organizations, and other interested parties, an NCCP provides the framework for a local agency to oversee the numerous activities that compose the development of a conservation plan. The CDFW and USFWS provide the necessary support, direction, and guidance to NCCP participants during the NCCP development and implementation. Within California, there are currently 23 active NCCPs covering more than 11 million acres, and several draft NCCPs—including the draft West Mojave Plan and the draft Desert Renewable Energy Conservation Plan, which are discussed in detail below—are pending approval.

### Town of Yucca Valley Ordinance

#### *Plant Protection and Management Ordinance*

The Town established the Plant Protection and Management Ordinance (Ordinance No. 140; DCA-06-01) to protect its abundant and diverse plant resources. This Ordinance, which is still under review by the Town, provides regulations and guidelines for the management of the plant resources in the Town with the intent to preserve native plants that are unique to the Town. The Plant Protection and Management Ordinance regulates the removal and/or relocation of several native plant species, including Joshua trees (*Yucca brevefolia*), California juniper (*Juniperus californica*), desert willow (*Chilopsis linearis*), single-leaf pinyon pine (*Pinus monophylla*), all species of palo verde (*Cercidium spp*.), all species of manzanita (*Arctostaphylos spp*.), all species of mesquite (*Prosopis spp*.) with stems 2 inches or greater in diameter or 6 feet or greater in height, all species of yucca (e.g., Mohave yucca [*Yucca schidigera*] and our Lord's candle [*Yucca whipplei*]), all creosote (*Larrea tridentata*) rings measuring 10 feet or greater in diameter, and all plants protected or regulated by the California Desert Native Plants Act.

## *5.3.1.2 Existing Conditions*

Yucca Valley is in a biologically rich environment. This section describes the existing environmental setting, climate, vegetation communities, land cover types, and general flora and fauna within and adjacent to the Town General Plan Update area.

The Town of Yucca Valley is along the southern edge of the Mojave Desert and just north of the Sonoran Desert. It is in a transition area between the two deserts and shows characteristics of both.

### Topography

The topography within the approximately 39-square-mile Town varies greatly. The northeastern portion of the Town is in the Morongo Basin, an east–west desert valley, the west end of the Town is in the southeastern foothills of the San Bernardino Mountains, and the south end of the Town is in the Little San Bernardino Mountains. Elevations range from approximately 3,090 feet above mean sea level (amsl) on the floor of the Morongo Basin in the eastern portion of the Town to approximately 4,603 feet amsl in the Little San Bernardino Mountains in the southern portion of the Town.

### Climate

The Town is in an arid, desert region in southern California. In general, these deserts have hot summers, with temperatures over 100 degrees Fahrenheit, and low annual precipitation, typically fewer than 5 inches each year. The Town, however, has a milder climate. Temperatures in the Town during the summer (June to August) average highs between 94 and 98 degrees Fahrenheit and lows between 61 and 75 degrees Fahrenheit, and temperatures during the winter (December to February) average highs between 57 and 62 degrees Fahrenheit and lows between 36 and 40 degrees Fahrenheit. The spring (March to May) and fall (September to November) typically have warm days and cool nights.

Total annual rainfall in the Town averages just over five inches, occurring mostly in September, November, and December. The Town also averages approximately three inches of snowfall each year, with all the snowfall in January. In addition, the Town typically experiences windy conditions year-round, with wind speeds ranging from 8 to 39 miles per hour (mph) and a monthly average of 20 mph.

### Regional Conservation Management Areas

An integral component for the protection of biological resources is the conservation of the natural communities that support sensitive species. Several conservation areas and preserves are adjacent to or near the Town.

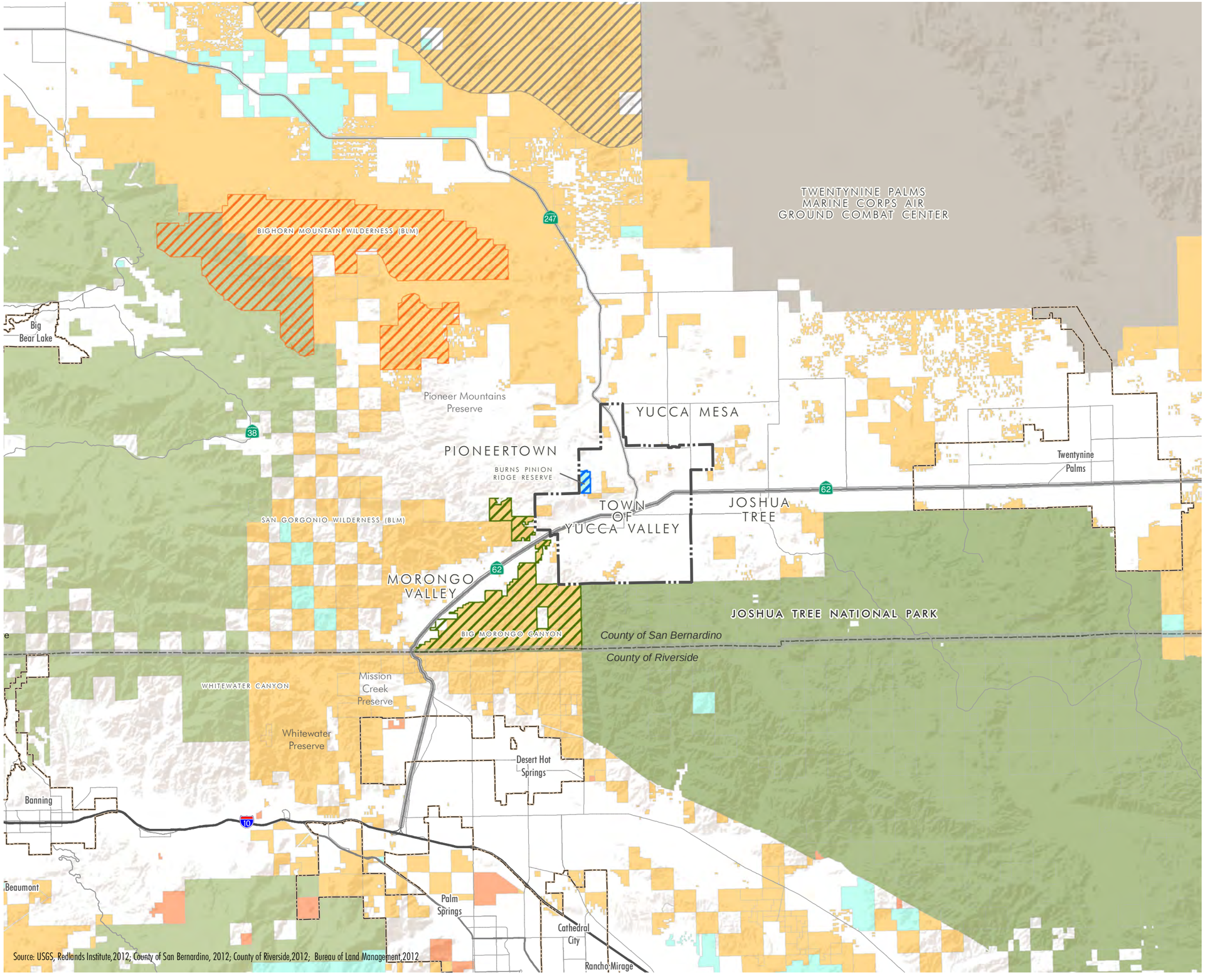
- Joshua Tree National Park
- Big Morongo Canyon Preserve
- Burns Piñon Ridge Reserve
- San Gorgonio Wilderness
- Pioneertown Mountains Preserve
- Bighorn Mountain Wilderness
- Proposed Sand to Snow National Monument
- West Mojave Plan

Figure 5.3-1, *Conservation Areas*, identifies the existing conservation management areas.[2]

[2] The proposed Sand to Snow National Monument is proposed and not adopted, and therefore not included in this figure.

# 5.3 - BIOLOGICAL RESOURCES

## Figure 5.3-1
## CONSERVATION AREAS




### Land Ownership
- Bureau of Land Management
- Local Government
- State
- US Forest Service
- National Park Service
- Military

### Conservation Areas
- Burns Pinion Ridge Reserve
- Big Morongo Canyon
- Bighorn Mountain Wilderness
- Johnson Valley Off Highway

- Town Yucca Valley Limits
- City Boundary
- County Boundary

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***Joshua Tree National Park***

Joshua Tree National Park, which abuts the southern Town boundary, is in San Bernardino and Riverside counties and covers approximately 791,000 acres south and southeast of the Town. The park protects portions of three ecosystems: the Colorado Desert, the Mojave Desert, and the pinyon and juniper woodlands in the Little San Bernardino Mountains. A large part of Joshua Tree National Park (approximately 430,000 acres) has been designated a wilderness area and is managed by the National Park Service in accordance with the Wilderness Act.

***Big Morongo Canyon Preserve***

Big Morongo Canyon Preserve, about three miles southwest of the Town, is in the Little San Bernardino Mountains and covers approximately 31,000 acres, with elevations ranging from approximately 600 to 3,000 feet amsl. Because of its ecological importance to the region, the Big Morongo Canyon Preserve was designated an Area of Critical Environment Concern by the Bureau of Land Management (BLM) in 1982. This preserve protects one of the 10 largest cottonwood and willow riparian habitats[3] in California as well as a variety of other ecosystems. Big Morongo Canyon Preserve is managed by BLM, and a small portion—approximately 147 acres—is managed under a cooperative agreement with San Bernardino County to protect rare and endangered wildlife, enhance sensitive riparian zones, promote the growth and restoration of a wide variety of plants, and offer educational opportunities.

***Burns Piñon Ridge Reserve***

The approximately 300-acre Burns Piñon Ridge Reserve, part of the University of California Natural Land and Water Reserves System, is just north of the Town. It is in the Big Morongo Basin and is characterized by a rugged, boulder-strewn landscape composed of a series of shallow canyons and steep, rocky ridges. The reserve shows little evidence of disturbance from human activities or grazing—has a diverse mixture of flora and fauna that is characteristic of its unique location as a transition between the lower desert, the upper desert, and the mountains as well as between three floristic regions—the Transverse Range, Sonoran Desert, and Mojave Desert. Habitats protected on the Reserve include pinyon and juniper woodland with elements of Joshua tree woodland and montane chaparral, desert wash, and freshwater seep.

***San Gorgonio Wilderness***

The San Gorgonio Wilderness is west of the Town boundary and covers approximately 95,000 acres in Riverside and San Bernardino counties. The topography changes rapidly from canyons and low, rolling foothills to steep rugged mountain. Elevations range from approximately 2,300 feet to approximately 11,500 feet amsl. With its diverse landscape and large elevation range, the San Gorgonio Wilderness is a unique transition zone between the desert, mountain, and coastal ecosystems. It is managed jointly by the BLM and the United States Forest Service (USFS).

***Pioneertown Mountains Preserve***

The Pioneertown Mountains Preserve is northwest of the Town and covers approximately 25,500 acres from the San Bernardino Mountains down into the Pioneertown Valley in the Mojave Desert. Elevations within the Pioneertown Mountains Preserve range from approximately 4,000 feet in the Pioneertown Valley to approximately 7,800 feet in the San Bernardino Mountains. The preserve supports year-round riparian corridors through Pipes Canyon and Little Morongo Canyon and provides important wildlife corridors between Joshua Tree National Park to the south and the Bighorn Mountains Wilderness to the north. The Pioneertown Mountain Preserve is owned and operated by the Wildlands Conservancy.

[3] Riparian habitats occur along the banks of rivers and streams.

### *Bighorn Mountain Wilderness*

The Bighorn Mountain Wilderness is northwest of the Town and protects 38,500 acres along the eastern slopes of the San Bernardino Mountains down into the Mojave Desert. The rugged Bighorn Mountains, which are foothills of the San Bernardino Mountains, occupy the north-central portion of this wilderness. Elevations change dramatically, with distinct changes in vegetation from Joshua tree woodland on the desert floor to stands of Jeffrey Pine at higher elevations up to 7,500 feet amsl. The Bighorn Mountain Wilderness is managed jointly by the BLM and the USFS.

### *Proposed Sand to Snow National Monument*

The proposed Sand to Snow National Monument would be west of the Town and would include approximately 134,000 acres of federal land between Joshua Tree National Park and the San Bernardino National Forest, including the San Gorgonio Wilderness and the Big Morongo Canyon Preserve, which were discussed earlier in this section. The proposed Sand to Snow National Monument would rise from approximately 1,400 feet amsl at the Mojave Desert floor up to approximately 11,503 feet amsl at San Gorgonio Mountain. The proposed monument would include one of California's most diverse landscapes and would also protect wildlife corridors between the San Bernardino Mountains, San Jacinto Mountains, and Joshua Tree National Park. The proposed Sand to Snow National Monument would be managed jointly by the BLM and the USFS.

## Conservation Plans

The NCCP program of the CDFW is a cooperative effort by the state and numerous private and public partners that takes a broad-based ecosystem approach to planning for the protection and perpetuation of biological diversity. Rather than identify and protect individual species that have already declined in number significantly, an NCCP provides for the regional or area-wide protection of plants, animals, and habitats at the ecosystem scale, while accommodating compatible and appropriate land use. One regional conservation plan, the West Mojave Plan, has been developed to protect and conserve lands within the larger area; and a second such plan, the Draft Desert Renewable Energy Conservation Plan, is in development. The following is a description of the existing and proposed HCP and NCCP programs and conservation areas that, upon adoption, would be applicable to the Town of Yucca Valley.

### *West Mojave Plan*

The West Mojave Plan (WMP) covers approximately 9.3 million acres of the western portion of the Mojave Desert in California, including parts of Inyo, Los Angeles, Kern, and San Bernardino counties. The WMP is an interagency HCP that was prepared by the BLM in collaboration with federal and state agencies. The Town is in the draft WMP area but is not currently a participating agency.

The purpose of the WMP is to conserve and protect the desert tortoise (Gopherus agassizii) and nearly 100 other sensitive plant and wildlife species as well as the habitats on which these species depend, while providing developers of public and private projects with a streamlined program for compliance with FESA and CESA by reducing delays and expenses, eliminating uncertainty, and applying the costs of compensation and mitigation equitably to all agencies and parties. The WMP allows incidental take of covered species and is consistent with the resource management plans adopted by each of the region's five military bases as well as with the Desert Tortoise Recovery Plan. The term of the WMP is 30 years.

The WMP was adopted by BLM in 2006; the US Fish and Wildlife Service (USFWS) issued an amended Biological Opinion to the WMP in 2007. In 2009 the US District Court for Northern California issued a summary judgment remanding the off-highway-vehicle route designations made in the WMP. New route designations must be made by March 2014 (BLM 2013).

***Draft Desert Renewable Energy Conservation Plan***

The draft Desert Renewable Energy Conservation Plan (DRECP) covers approximately 22.5 million acres of federal and nonfederal lands in the California deserts and adjacent lands in Imperial, Inyo, Kern, Los Angeles, Riverside, San Bernardino, and San Diego counties. It is a collaboration between state (e.g., California Energy Commission, CDFW) and federal (e.g., BLM, USFWS) agencies, with input from local governments, environmental organizations, industry, and other interested parties to provide effective protection, conservation, and management of desert ecosystems while allowing for appropriate development and timely permitting of renewable energy projects.

Once approved, the DRECP would result in an efficient and effective biological mitigation and conservation program providing renewable energy project developers with binding, long-term endangered species permit assurances while facilitating the review and approval of solar thermal, utility-scale solar photovoltaic, wind, and other forms of renewable energy and associated infrastructure, such as electric transmission lines necessary for renewable energy development within the Mojave and Colorado desert regions of California.

### Local Conservation Management Areas

The Town General Plan identifies two existing natural open space areas in Yucca Valley on BLM land— North Park and South Park—totaling approximately 120 acres. North Park is in the foothills of the San Bernardino Mountains near the west end of the Town, and South Park is in the Little San Bernardino Mountains near the south Town boundary. Figure 5.3-1 also identifies these existing conservation management areas within the Town.

### Vegetation Communities and Land Cover Types

Land cover mapping provided by CNDDB provides generalized vegetation community mapping for the General Plan update area (see Figure 5.3-2, *CNDDB Land Cover and Sensitive Species*). The land cover categories include non-native grassland, blackbush scrub, Mojave creosote bush scrub, Mojave mixed woody scrub, Mojavean pinyon and juniper woodlands, semidesert chaparral, and urban land. Although these land cover categories are useful in identifying overall vegetation, they are not specific enough to identify sensitive vegetation communities for individual projects. Two additional vegetation communities—desert wash scrub and Joshua tree woodland—are known in the area but not shown on the CNDDB land cover map.

In total, 10 vegetation communities and land cover types have been identified as potentially present within the General Plan Update area. Each of the vegetation communities is described in detail below. A detailed description of disturbed lands and urban/developed lands is also provided.

In addition to these vegetation communities and land cover types, there are several wetland and riparian habitats that have been identified within the Town General Plan Update area in the USFWS National Wetlands Inventory. However, because a current wetland evaluation and/or wetland delineation of these areas is not available, these areas are discussed in general in Section 3.3.5, *Wetlands and Riparian Resources*.

***Blackbush Scrub***

Blackbush scrub is characterized by low-growing, often intricately branched shrubs that measure approximately 1.5 to 3.5 feet tall. Within this vegetation community, the crowns of the shrubs typically do not touch, and there is often bare ground between plants. Dominant plant species typically include blackbrush (*Coleogyne ramosissima*) along with Joshua tree, singleleaf pinyon (*Pinus monophylla*), and Utah juniper (*Juniperus osteosperma*). Most growth and flowering occurs in late spring, and most species found within blackbush scrub are dormant in the winter from the cold temperatures and in the summer and fall from lack of rainfall. Blackbush scrub is found at elevations between 4,000 and 7,000 feet amsl on dry, well-drained slopes and flats with shallow, often chalky soils with low water-holding capacity.

***Creosote Bush Scrub***

Creosote bush scrub is characterized by shrubs that measure approximately 1.5 to 10 feet tall. Shrubs are often widely spaced within this vegetation community, and there is often bare ground between the plants. Dominant plant species typically include creosote bush and burrobush (*Ambrosia dumosa*). Most growth within this vegetation community occurs during spring if rainfall is sufficient, and many species of annuals may flower in late March and April, occasionally after thunderstorms in late summer or fall. However, most of the species found within creosote bush scrub are dormant in the winter from the cold temperatures and in the summer and fall from lack of rainfall. Creosote bush scrub is found at elevations below 4,000 feet amsl on well-drained secondary soils with very low available water-holding capacity on slopes and fans and within valleys.

***Desert Wash Scrub***

Desert wash scrub is a low-growing, scrubby vegetation community with a diversity of species, often including catclaw (*Acacia greggii*), desert willow, ephedra (*Ephedra californica*), desert olive (*Forestiera neomexicana*), red-fruited mahonia (*Berberis haematocarpa*), and smoke tree (*Psorothamnus spinosus*). Desert wash scrub is found in in the Mojave Desert in sandy arroyos, washes, springs, and alluvial slopes, usually below about 5,000 feet amsl.

***Joshua Tree Woodland***

Joshua tree woodland is an open woodland community. The Joshua tree is usually the only tree species, growing up to approximately 40 feet high, while the numerous shrub species—including yucca (*Yucca* spp.), juniper (*Juniperus* spp.), semideciduous shrubs (*Eriogonum*, *Tetradymia*), semisucculents (*Lycium* spp.), and succulents (*Opuntia* spp.)—usually grow to between about 3 and 13 feet high. While there is typically little to no understory, ephemeral herbs[4] may germinate following sufficient late fall or winter rains and flower in mid-spring. Most of the growth within this vegetation community occurs during the spring; however, growth is limited in the winter from the cold temperatures and in the summer and fall from lack of rainfall. Joshua tree woodland is found on sandy, loamy, or gravelly, well-drained gentle alluvial slopes at elevations between 2,500 and 5,000 feet amsl.

***Mojave Mixed Woody Scrub***

Mojave mixed woody scrub is a complex scrub community that is open enough to be passable. Dominant plant species typically include Joshua tree, Eastern Mojave buckwheat (*Eriogonum fasciculatum var. polifolium*), and bladderpod (*Isomeris arborea*). Mojave mixed woody scrub is found at elevations between 2,000 and 5,000 feet amsl on rolling to steeply sloping terrain with very shallow, overly-drained soils often formed from granitic parent material.[5] These soils typically have extremely low water-holding capacity, mild alkalinity, and are not very saline.

***Mojavean Pinyon and Juniper Woodland***

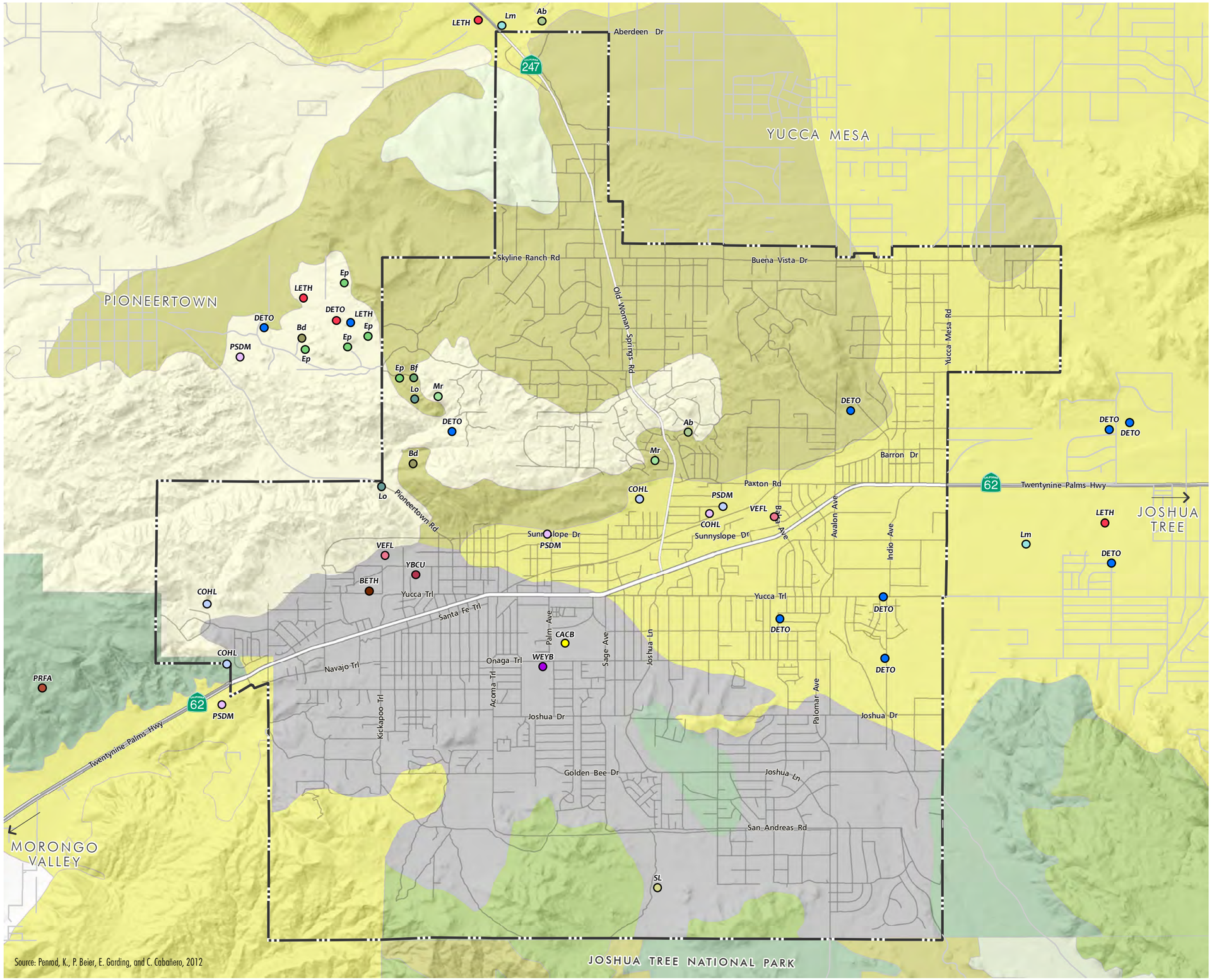
Mojavean pinyon and juniper woodland is an open woodland that either is dominated by singleleaf pinyon with an open shrubby understory of species commonly found in adjacent nonforested stands or is dominated by California juniper with understory of typical Mojave mixed scrub and steppe species. The understory is more diverse than in most pinyon-juniper vegetation communities, and many of the understory species exceed the tree cover. Additional dominant shrubs found within Mojavean pinyon and juniper woodland include big-basin sagebrush (*Artemisia tridentata*) and desert mountain mahogany (*Cercocarpus ledifolius*). This vegetation community often intergrades with Joshua tree woodland and/or creosote bush scrub.

[4] Herbs are flowering plants without woody stems. Ephemeral plants are short lived.

[5] Granitic soils are derived from granite or other similar igneous rocks, which solidify very slowly deep underground.

# 5.3 - BIOLOGICAL RESOURCES

## Figure 5.3-2
## CNDDB LAND COVER AND SENSITIVE SPECIES




Source: Penrod, K., P. Beier, E. Garding, and C. Cabañero, 2012

### Known Sensitive Species Locations

Sensitive Plants
- Bf Fremont's barberry (Berberis fremontii)
- SL Latimer's woodland-gilia (Saltugilia latimeri)
- Lm Little San Bernardino Mountains linanthus (Linanthus maculatus)
- Lo Orcutt's linanthus (Linanthus orcuttii)
- Ep Parish's daisy (Erigeron parishii)
- Bd Pinyon rock-cress (Boechera dispar)
- Mr Robison's monardella (Monardella robisonii)
- Ab San Bernardino milk-vetch (Astragalus bernardinus)

Birds
- BETH Bendire's thrasher (Toxostoma bendirei)
- LETH LeConte's thrasher (Toxostoma lecontei)
- PRFA Prairie falcon (Falco mexicanus)
- VEFL Vermilion flycatcher (Pyrocephalus rubinus)
- YBCU Western yellow-billed cuckoo (Coccyzus americanus occidentalis)

Mammals
- PSDM Pallid San Diego pocket mouse (Chaetodipus fallax pallidus)
- WEYB Western yellow bat (Lasiurus xanthinus)

Reptiles
- COHL Coast horned lizard (Phrynosoma blainvillii)
- DETO Desert tortoise (Gopherus agassizii)

Insects
- CACB California cuckoo bee (Paranomada californica)

### California Natural Diversity Database Land Cover

- Blackbush Scrub
- Mojave Creosote Bush Scrub
- Mojave Mixed Steppe
- Mojave Mixed Woody Scrub
- Mojavean Pinyon and Juniper Woodlands
- Non-Native Grassland
- Semi-Desert Chaparral
- Urban or Built-up Land

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Pinyon-dominated Mojavean pinyon and juniper woodland typically is found on steeper, very dry slopes, and the juniper-dominated Mojavean pinyon and juniper woodland typically is found on gentle slopes or the pinyon-dominated Mojavean pinyon and juniper woodland. This vegetation community typically is found between 4,000 and 8,000 feet amsl in the desert mountain ranges.

***Nonnative Grassland***

Nonnative grassland is characterized by annual grasses that range from 8 to 20 inches high. Though nonnative grassland is usually dominated by nonnative species, numerous native annual forbs[6] may occur in this vegetation community in years with sufficient rainfall. Germination within non-native grassland typically is associated with late fall rains, and most of the growth, flowering, and seed-set occur from winter through spring; most of the plant species within this vegetation community are dead through the summer and fall dry season, persisting only as seeds until the next germination cycle begins.

Non-native grassland is found on fine-textured, often clay soils, that are moist or saturated during the rainy season but very dry during the summer and fall. This vegetation community typically is found below 3,000 feet amsl, but occasionally reaches up to 4,000 feet in some southern California mountains.

***Semidesert Chaparral***

Semidesert chaparral is more open than other chaparral communities and is characterized by shrubs that typically are less than 10 feet tall with little or no understory. Dominant species include a variety of broad-leaved shrubs along with juniper, buckwheat (*Eriogonum spp.),* and cactus (*Opuntia spp.*). Most of the growth and flowering occurs in late spring, and most of the species found within semidesert chaparral are dormant in the winter from the cold temperatures and in the summer and fall from lack of rainfall. Semidesert chaparral typically is found between 2,000 and 5,000 feet amsl on north-facing, dry, rocky slopes.

***Disturbed Lands***

Disturbed lands have been modified from their natural conditions so that they provide little or no habitat value to wildlife. Disturbed lands typically consist of vegetation that has been graded or otherwise disturbed so that there is less than 50 percent cover, often dominated by weedy, nonnative species.

***Urban/Developed Lands***

Urban/developed lands include buildings, paved roads, parking lots, parks, and residential areas that are either unvegetated or are dominated by exotic, ornamental plant species.

## Vegetation

In addition to the vegetation described above, the Mojave Desert has a diversity of desert plant species that have adapted to survive the extreme seasonal temperatures and extreme drought conditions. Annual desert plant species survive as seeds that lie dormant in the soil, sometimes for many years, until sufficient rainfall and favorable temperatures trigger germination.

The plant species found in and near the Town include species that are widespread throughout the Mojave Desert, as well as endemic species known only from a few occurrences in a few locations. Some of the most common plant species include creosote bush, teddy bear cholla (*Cylindropuntia bigelovii*), palo verde, Joshua tree, brittlebush

[6] Forbs are flowering plants without woody stems other than grasses.

(*Encelia farinosa*), alkali saltbush (*Atriplex polycarpa*), Mojave aster (*Xylorhiza tortifolia*), desert fan palm (*Washingtonia filifera*), and triangle-leaf bursage (*Ambrosia deltoidea*).

### Animals

A variety of resident and migratory wildlife species occupy the Town and the adjacent open space, parks, and preserves in the Mojave Desert and nearby mountain ranges. Many of the resident desert species have special adaptations that allow them to tolerate the high desert temperatures and limited availability of water. Many desert animals are physiologically adapted to require little or no water in addition to the water they get from the foods that they eat. However, the springs and seeps in the desert and nearby mountains are necessary for the survival of many of the wildlife species found in the area, such as Nelson's bighorn sheep (*Ovis canadensis nelsoni*), mule deer (*Odocoileus hemionus*), and coyote (*Canis latrans*).

Some desert species—such as birds, lizards, and ground squirrels—are active during the da. Many other species—such as insects, frogs, toads, snakes, bats, bighorn sheep, kangaroo rats, coyotes, and black-tailed jackrabbits—are active at twilight or at night to avoid the excessive daytime temperatures. Reptiles and small mammals tend to take refuge from the heat by retreating into underground burrows during extreme temperatures, and these species often hibernate during the winter. The winter, however, has the greatest concentrations of bird species, because many of the bird species that are found in the area are migratory species. Species found in and near the Town include a variety of common insects, amphibians, reptiles, birds, and mammals such as the yucca moth (*Tegeticula paradoxa*), which is responsible for pollinating the Joshua tree; the tarantula (*Aphonopelma chalcodes*); green darner (*Anax junius*); giant desert scorpion (*Hadrurus arizonensis*), which can grow to be more than 4 inches long; California tree frog (*Hyla cadaverina*); spotted toad (*Bufo punctatus*); golden eagle (*Aquila chrysaetos*), greater roadrunner (*Geococcyx californianus*), Gambel's quail (*Callipepla gambelii*), and a variety of bat species.

### Sensitive Biological Resources

Sensitive biological resources include sensitive vegetation communities, special status plant species, special status wildlife species, wildlife movement corridors and nursery sites, and wetland resources. In general, the principal reason that a species, subspecies, or variety is considered sensitive is the documented or perceived decline or limitation of its population size and/or distribution, usually due to habitat loss. Wildlife movement corridors or linkages also are considered sensitive by local, state, and federal resource and conservation agencies because these corridors allow wildlife to move between adjoining open space areas that are becoming increasingly isolated as open space becomes increasingly fragmented from urbanization, rugged terrain, or changes in vegetation. In addition, wetland resources are considered sensitive because of their limited distribution and high wildlife value.

Many sensitive biological resources are known to occur or have the potential to occur within or near the Town based on historical data for the region identified on the CNDDB (see Figure 5.3-2, *CNNDB Land Cover and Sensitive Species*), the presence of suitable habitat within the Town, and/or presence of other needed environmental components within the Town. The following section describes the sensitive biological resources within and near the Town.

#### *Sensitive Vegetation Communities*

Sensitive vegetation communities are vegetation assemblages, associations, or subassociations that have cumulative losses throughout the region; have relatively limited distribution; support or potentially support sensitive plant or wildlife species; or have particular value to other wildlife. Typically, sensitive vegetation communities are considered sensitive whether or not they have been disturbed. Sensitive vegetation communities are regulated by various local, state, and federal resource agencies. The CNDDB provides an inventory of vegetation communities that are considered sensitive by state and federal resource agencies, academic institutions, and conservation groups such as the California Native Plant Society (CNPS). Determination of the level of sensitivity is based on the Nature Conservancy Heritage Program Status Ranks that rank both species and plant communities on a global and

statewide basis according to the number and size of remaining occurrences as well as recognized threats such as proposed development, habitat degradation, and invasion by nonnative species.

No sensitive vegetation communities were identified within the Town; however, vegetation communities that provide habitat for special status plant and/or wildlife species would be considered sensitive.

Potential jurisdictional wetland and riparian resources may occur within the Town General Plan Update area based on the information provided in the USGS National Hydrography Dataset (NHD; USGS 2012). The USGS NHD provides data on surface water systems, such as lakes, ponds, streams, rivers, canals, dams, and stream gages. Several of these features have been identified within the Town (Figure 5.3-3, *Potential Wetland and Riparian Resources*); however, a wetland evaluation or formal wetland delineation was not conducted to provide jurisdictional data for this document. Given the limited water availability within the region, all wetland and riparian habitats would be protected according to federal, state, and local regulations, as discussed in Section 3.3.5 of this document. According to the CRBRWQCB, Yucca Wash is classified an intermittent desert stream, and the Corps has determined that it is not a jurisdictional water of the U.S (see Appendix G).[7]

***Special Status Plant Species***

Special status plant species are those that are:

(1) listed or proposed for listing by federal or state agencies as threatened or endangered;

(2) on List 1B (considered endangered throughout its range) or List 2 (considered endangered in California but more common elsewhere) of the CNPS's *Inventory of Rare and Endangered Vascular Plants of California* (Inventory);

(3) considered rare, endangered, or threatened by the CDFW (CDFW 2011a) or other local conservation organizations or specialists.

Noteworthy plant species are considered to be those on List 3 (more information about the plant distribution and rarity needed) and List 4 (plants of limited distribution) of the CNPS Inventory. The CNPS is a statewide resource conservation organization that has developed an inventory of California's sensitive plant species. The CNPS listing is sanctioned by the CDFW and essentially serves as an early warning list of potential candidate species for threatened or endangered status.

According to USFWS, a federally endangered species is defined as a species facing extinction throughout all or a significant portion of its geographic range, and a federally threatened species is a species that is likely to become endangered within the foreseeable future throughout all or a significant part of its range. CDFW defines an endangered species as one whose prospects of survival and reproduction are in immediate jeopardy, a threatened species as one present in such small numbers throughout its range that it is likely to become an endangered species in the near future in the absence of special protection or management, and a rare species as one present in such small numbers throughout its range that it may become endangered if its present environment worsens.

Species that are federally or state-listed threatened or endangered species and/or are designated as CNPS List 1B or 2 species are afforded a degree of protection that entails a permitting process, including specific mitigation measures to compensate for impacts to the species. Species that are proposed to be listed by the USFWS are treated similarly to listed species by that agency. Recommendations of the USFWS, however, are advisory rather than mandatory in the case of proposed species. Although plant species that are classified as List 3 or 4 species by CNPS are not provided legal protection, this designation is used to identify declining plant species that are considered sensitive by

[7] Although not jurisdictional to the Corps, Yucca Valley Creek may be jurisdictional to the CDFW.

the CNPS but not considered threatened or endangered.

Eleven special status plant species are known to occur within the vicinity of the Town. These species are discussed in detail in this section and are summarized in Table 5.3-1, below. No critical habitat for any of these or other special status plant species has been designated within or adjacent to the Town.

***Table 5.3-1***
***Special Status Plant Species in and near Yucca Valley***

| *Scientific Name* | *Common Name* | *Status* | *Habitat Description; Known Occurrences in/near Town* |
|---|---|---|---|
| *Astragalus bernardinus* | San Bernardino milk-vetch | List 1B.2 | Blooms April to June. Granitic or carbonate soils. Joshua tree woodland and pinyon-juniper woodland. Elevations from 2,950 to 6,565 feet. Known to occur near Town. |
| *Astragalus tricarinatus* | triple-ribbed milk-vetch | FE<br>List 1B.2 | Blooms February to May. Sandy or gravelly soils. Joshua tree woodland, creosote bush scrub, and Sonoran Desert scrub. Elevations from 1,475 to 3,905 feet. Known to occur near Town. |
| *Berberis fremontii* | Fremont barberry | List 3 | Blooms April to June. Rocky soils. Joshua tree woodland, pinyon-juniper woodland, and chaparral. Elevations from 2,755 to 6,070 feet. Known to occur in and near Town. |
| *Boechera dispar* | pinyon rockcress | List 2.3 | Blooms March to June. Granitic or gravelly soils. Joshua tree woodland, Mojavean desert scrub, and pinyon-juniper woodland. Elevations from 3,935 to 8,335 feet. Known to occur near Town. |
| *Erigeron parishii* | Parish's daisy | FT<br>List 1B.1 | Blooms May to August. Carbonate soils and sometimes on granitic soils. Pinyon-juniper woodland, creosote bush scrub, and Mojavean desert scrub. Elevations from 2,625 to 6,565 feet. Known to occur in and near the Town. |
| *Grusonia parishii* | Parish's club-cholla | List 2.2 | Blooms May to June and sometimes into July. Sandy and/or rocky soils. Joshua tree woodland, creosote bush scrub, Mojavean desert scrub, and Sonoran desert scrub. Elevations from 980 to 5,000 feet. Known to occur near Town. |
| *Linanthus killipii* | Baldwin Lake linanthus | List 1B.2 | Blooms May to July. Meadows, seeps, and pebble-plain. Joshua tree woodland and pinyon-juniper woodland. Elevations from 5,575to 7,875 feet. Known to occur near Town. |
| *Linanthus maculatus* | Little San Bernardino Mountains linanthus | List 1B.2 | Blooms March to May. Sandy soils. Desert dunes, Joshua tree woodland, Mojavean desert scrub, and Sonoran desert scrub. Elevations from 640 to 6,810 feet. Known to occur near Town. |
| *Linanthus orcuttii* | Orcutt's linanthus | List1B.3 | Blooms May to June. Openings in chaparral, lower montane coniferous forest, and pinyon-juniper woodland. Elevations from 3,000 to 7,040 feet. Known to occur near Town. |

**Table 5.3-1**
**Special Status Plant Species in and near Yucca Valley**

| Scientific Name | Common Name | Status | Habitat Description; Known Occurrences in/near Town |
|---|---|---|---|
| *Monardella robisonii* | Robison's monardella | List 1B.3 | Blooms April to September but can bloom as early as February and as late as October. Pinyon-juniper woodland. Elevations from 2,000 to 4,925 feet. Known to occur in and near the Town. |
| *Saltugilia latimeri* | Latimer's woodland-gilia | List 1B.2 | Blooms March to June. Rocky or sandy, often granitic, soils and sometimes in washes. Chaparral, Mojavean desert scrub, and pinyon-juniper woodland. Elevations from 1,310 to 6,235 feet. Known to occur near Town. |

FE: Federally endangered
FT: Federally threatened
CNPS Rare Plant Ranks:
1B.1: Rare, threatened, or endangered in California and elsewhere; Seriously threatened in California
1B.2: Rare, threatened, or endangered in California and elsewhere; Fairly threatened in California
1B.3: Rare, threatened, or endangered in California and elsewhere; Not very threatened in California
2.2: Rare, threatened, or endangered in California but common elsewhere; Fairly threatened in California
2.3: Rare, threatened, or endangered in California but common elsewhere; Not very threatened in California
3: Plants About Which We Need More Information - A Review List

*San Bernardino Milk-Vetch*

San Bernardino milk-vetch (*Astragalus bernardinus*) is a CNPS List 1B.2 species, which means it is rare, threatened, or endangered in California and elsewhere. It is a perennial herb that typically blooms from April to June. This species is often found on granitic or carbonate soils and is associated with Joshua tree woodland and pinyon-juniper woodland. San Bernardino milk-vetch is endemic to California and is known in Riverside and San Bernardino counties at elevations between 2,950 and 6,565 feet amsl. The San Bernardino milk-vetch is threatened by mining, development, grazing, and recreational activities. The San Bernardino milk-vetch is known to occur next to the Town.

*Triple-Ribbed Milk-Vetch*

The triple-ribbed milk-vetch (*Astragalus tricarinatus*) is a federally endangered species and a CNPS List 1B.2 species, which means it is rare, threatened, or endangered in California and elsewhere. It is a perennial herb that typically blooms from February to May. This species is found on sandy or gravelly soils and is associated with Joshua tree woodland, creosote bush scrub, and Sonoran Desert scrub. Triple-ribbed milk-vetch is endemic to California and is known in fewer than 20 occurrences in Riverside and San Bernardino counties at elevations between 1,475 and 3,905 feet amsl. This species is potentially threatened by pipeline maintenance and vehicles. The triple-ribbed milk-vetch is known to occur near the Town.

*Fremont Barberry*

The Fremont barberry (*Berberis fremontii*), a CNPS List 3 (review list) species, is an evergreen shrub that typically blooms from April to June. This species is found on rocky soils and is associated with Joshua tree woodland, pinyon-juniper woodland, and chaparral. The Fremont barberry is occurs California, Arizona, Colorado, New Mexico, and Utah as well as Baja California and Sonora, Mexico. In southern California, it occurs in San Bernardino and San Diego counties at elevations between 2,755 and 6,070 feet amsl. The primary threats to this species are not known but probably include loss of habitat resulting from development. The Fremont barberry is known to occur within and near the Town.

*Pinyon Rockcress*

The pinyon rockcress (*Boechera dispar*) is a CNPS List 2.3 species—rare, threatened, or endangered in California but common elsewhere—and a perennial herb that typically blooms from March to June. This species is found in granitic or gravelly soils and is associated with Joshua tree woodland, Mojavean desert scrub, and pinyon-juniper woodland. Pinyon rockcress grows in Nevada as well as Inyo, Kern, Los Angeles, Mono, San Bernardino, and Tulare counties in California at elevations between 3,935 and 8,335 feet amsl. Threats to this species include mining, nonnative plants, recreational activities, road construction, and vehicles. The pinyon rockcress is known to occur near the Town.

*Parish's Daisy*

Parish's daisy (*Erigeron parishii*) is a federally threatened and CNPS List 1B.1 species, which means it is rare, threatened, or endangered in California and elsewhere. It is a perennial herb that typically blooms from May to August. This species usually is found on carbonate soils and sometimes on granitic soils and is associated with pinyon-juniper woodland, creosote bush scrub, and Mojavean desert scrub. Parish's daisy grows in Riverside and San Bernardino counties at elevations between 2,625 and 6,565 feet amsl. Threats to this species include carbonate mining, vehicles, road construction, and residential development. Parish's daisy is known to occur within and near the Town.

*Parish's Club-Cholla*

Parish's club-cholla (*Grusonia parishii*) is a CNPS List 2.2 species, which means it is rare, threatened, or endangered in California but common elsewhere. It is a succulent shrub that typically blooms from May to June and sometimes into July. This species is found in sandy and/or rocky soils and is associated with Joshua tree woodland, creosote bush scrub, Mojavean desert scrub, and Sonoran desert scrub. Parish's club-cholla occurs in Imperial, Riverside, and San Bernardino counties at elevations between 980 and 5,000 feet amsl. The main threat to this species is solar energy development. Parish's club-cholla is known to occur near the Town.

*Baldwin Lake Linanthus*

The Baldwin Lake linanthus (*Linanthus killipii*) is a CNPS List 1B.2 species, which means it is rare, threatened, or endangered in California and elsewhere. It is an annual herb that typically blooms from May to July. This species is found in meadows, seeps, and pebble-plain associated with Joshua tree woodland and pinyon-juniper woodland. The Baldwin Lake linanthus grows only in San Bernardino County at elevations between 5,575 and 7,875 feet amsl. Threats to this species include urbanization, vegetation/fuel management, recreational activities, and vehicles (CNPS 2012). The Baldwin Lake linanthus is known to occur near the Town.

*Little San Bernardino Mountains Linanthus*

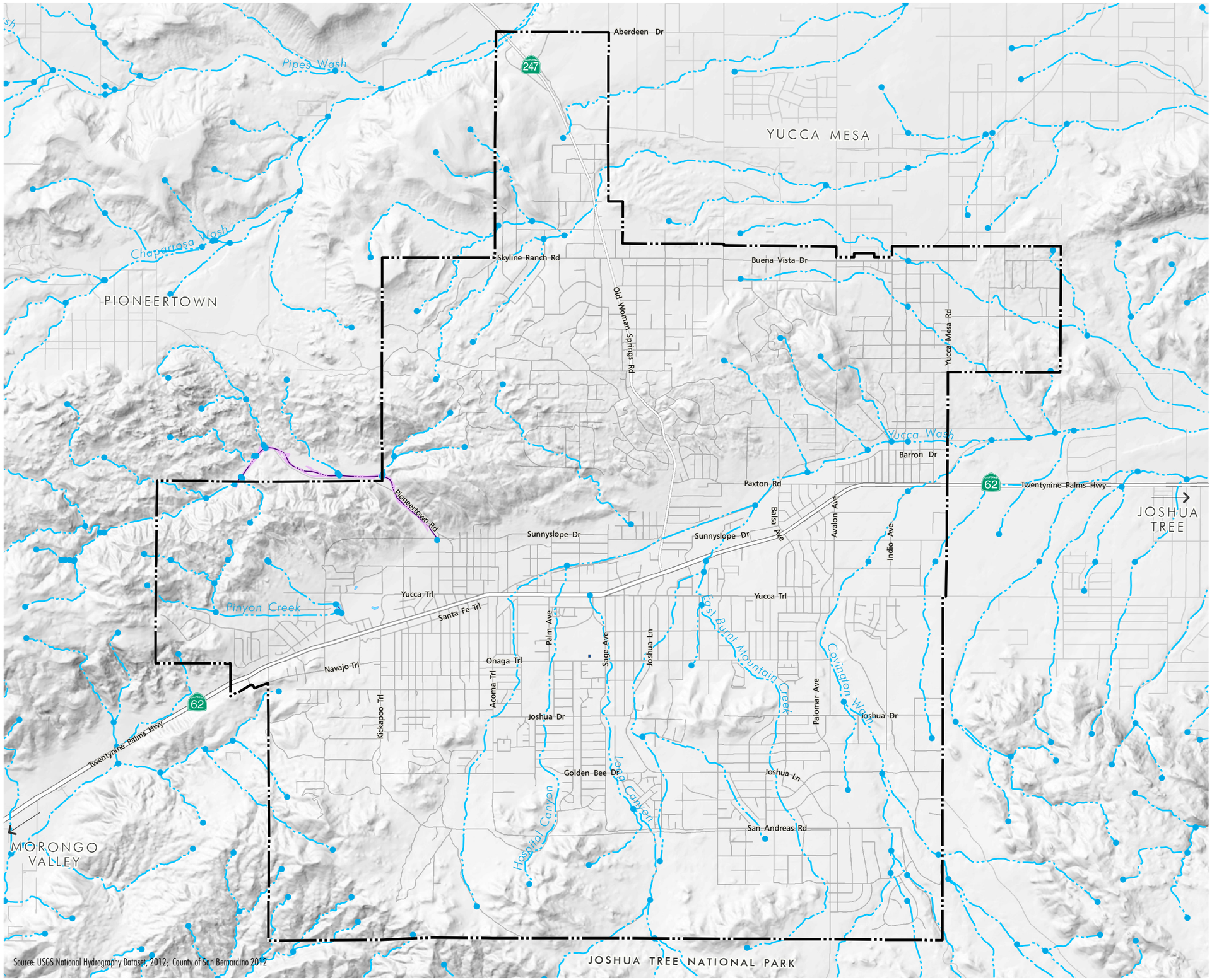
The Little San Bernardino Mountains linanthus (*Linanthus maculatus*) is a CNPS List 1B.2 species, which means it is rare, threatened, or endangered in California and elsewhere. It is an annual herb that typically blooms from March to May. This species is found in sandy soils and is associated with desert dunes, Joshua tree woodland, Mojavean desert scrub, and Sonoran desert scrub. The Little San Bernardino Mountains linanthus occurs in Imperial, Riverside, San Bernardino, and San Diego counties at elevations between 640 and 6,810 feet amsl. Threats to this species include development, vehicles, and dumping. The Little San Bernardino Mountains linanthus is known to occur in and near the Town.

*Orcutt's Linanthus*

Orcutt's linanthus (*Linanthus orcuttii*) is a CNPS List 1B.3 species—rare, threatened, or endangered in California and elsewhere—and an annual herb that typically blooms from May to June. This species is found in openings in chaparral, lower montane coniferous forest, and pinyon-juniper woodland. Orcutt's linanthus is known occurs in Riverside, San Bernardino, and San Diego counties as well as in Baja California, Mexico, at elevations between 3,000 and 7,040 feet amsl. Threats to this species include foot traffic and recreational activities. Orcutt's linanthus is known to occur near the Town.

# 5.3 - BIOLOGICAL RESOURCES

## Figure 5.3-3
## POTENTIAL WETLAND AND RIPARIAN RESOURCES




Source: USGS National Hydrography Dataset, 2012; County of San Bernardino 2012

- Hydrographic Junction
- Stream / River
- Artificial Path
- Wash
- Lake / Pond
- Reservoir
- Town Limits

YUCCA VALLEY GENERAL PLAN
DRAFT EIR

TYV-01 8.26.13

0 1,500 3,000 6,000 Feet

THE PLANNING CENTER DC&E

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*Robison's Monardella*

Robison's monardella (*Monardella robisonii*) is a CNPS List 1B.3 species— rare, threatened, or endangered in California and elsewhere—and a perennial herb that typically blooms from April to September but can bloom as early as February and as late as October depending on conditions. This species is found in pinyon-juniper woodland. Robison's monardella is known to occur in Riverside and San Bernardino counties at elevations between 2,000 and 4,925 feet amsl. The primary threats to this species include rock climbing and other recreational activities; invasive, nonnative species; burning; and habitat loss resulting from development. Robison's monardella is known to occur in and near the Town.

*Latimer's Woodland-gilia*

Latimer's woodland-gilia (*Saltugilia latimeri*) is a CNPS List 1B.2 species—rare, threatened, or endangered in California and elsewhere—and an annual herb that typically blooms from March to June. This species is found on rocky or sandy, often granitic, soils and sometimes in washes. It is associated with chaparral, Mojavean desert scrub, and pinyon-juniper woodland. Latimer's woodland-gilia is known from fewer than 20 occurrences in Inyo, Kern, Riverside, and San Bernardino counties at elevations between 1,310 and 6,235 feet amsl. The primary threats to this species are not known but probably include habitat loss from development. Latimer's woodland-gilia is known to occur near the Town.

***Special Status Wildlife Species***

For purposes of this report, special status wildlife species include those that are (1) listed or proposed for listing as threatened or endangered by the USFWS or the CDFW; and/or (2) designated as California Fully Protected by the CDFW. In addition, raptors (birds of prey) and active raptor nests are protected by the California Fish and Game Code 3503.5, which states that it is "unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird" unless authorized. The federal MBTA, which restricts the killing, taking, collecting, selling, or purchasing of native bird species or their parts, nests, or eggs, also provides legal protection for almost all breeding bird species in the U.S. Noteworthy wildlife species are those given the informal designation of California Species of Concern by the CDFW. This designation applies to animals not listed under FESA or CESA but which nonetheless (1) are declining at a rate that could result in listing, or (2) historically occurred in low numbers and known threats to their persistence currently exist.

According to the USFWS, a federally endangered species is a species facing extinction throughout all or a significant portion of its geographic range, and a federally threatened species is a species that is likely to become endangered within the foreseeable future throughout all or a significant part of its range. The CDFW defines an endangered species as one whose prospects of survival and reproduction are in immediate jeopardy, a threatened species as one present in such small numbers throughout its range that it is likely to become an endangered species in the near future in the absence of special protection or management, a fully protected species as one that is rare or faces possible extinction, and a California Species of Concern as one that is declining in numbers.

Species that are federally or state-listed threatened or endangered are afforded a degree of protection that entails a permitting process, including specific mitigation measures to compensate for impacts to the species. Species that are proposed to be listed by the USFWS are treated similarly to listed species by that agency. Recommendations of the USFWS, however, are advisory rather than mandatory in the case of proposed species. As regulated by the CDFW, fully protected species may not be taken or possessed at any time, and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock. Wildlife species classified California Species of Concern by the CDFW are not typically provided legal protection; however, there are exceptions for some species, such as the burrowing owl.

Twenty-one special status wildlife species are known to occur within the vicinity of the Town based on historical data for the region (CDFW 2012a, Town 1995). In addition, two other species were identified within the region—the

California cuckoo bee and Nelson's bighorn sheep, which do not have a special status ranking but are of special interest. All of these species are discussed in detail in this section and summarized in Table 5.3-2. No critical habitat for any of these or other special status wildlife species has been designated in or near the Town.

***Table 5.3-2***
***Sensitive Wildlife Species within the Vicinity of the Town of Yucca Valley***

| *Scientific Name* | *Common Name* | *Status* | *Habitat Description; Occurrence In/Near Town* |
|---|---|---|---|
| **Insects** | | | |
| *Paranomada californica* | California cuckoo bee | None | No habitat data available. Known to occur near the Town based only on historical data. |
| **Reptiles** | | | |
| *Gopherus agassizii* | desert tortoise | FT<br>ST | Desert scrub, washes, dunes, and rocky slopes with firm but not hard pan soils. Elevations from sea level to approximately 5,200 feet. Known to occur in and near Town. |
| *Phrynosoma blainvillii* | coast horned lizard | CSC | Scrubland, grassland, coniferous woods, and broadleaf woodlands, especially in areas with sandy soils, scattered shrubs, and ant colonies, such as along the edges of arroyo bottoms or dirt roads. Elevations from sea level to approximately 6,000 feet. Known to occur in and near Town. |
| *Uma scoparia* | Mojave fringe-toed lizard | CSC | Habitats with sparse vegetation and windblown sands, such as dune systems and washes. Elevations from below sea level to approximately 3,280 feet. Known to occur near Town. |
| *Crotalus ruber* | red-diamond rattlesnake | CSC | Coastal sage scrub, desert scrub, thornscrub, open chaparral, woodland, grassland, and cultivated areas. Elevations from sea level to approximately 4,900 feet but typically below 3,200 feet. Known to occur near Town. |
| **Birds** | | | |
| *Falco mexicanus* | prairie falcon | -- | Perennial grasslands, savannahs, rangeland, agricultural fields, desert scrub, annual grasslands, and alpine meadows. Nests on cliff ledges and occasionally in rock crevices. Known to occur near Town. |
| *Coccyzus americanus occidentalis* | western yellow-billed cuckoo | FC<br>SE | Valley foothill and desert riparian habitats, usually with dense, mature riparian woodlands with large stands of cottonwood-willow riparian forest. Known to occur in Town. |
| *Athene cunicularia* | burrowing owl | CSC | Dry, open areas with low-growing vegetation in grasslands, deserts, prairies, and agricultural lands often associated with burrowing mammals. Known to occur near Town. |
| *Pyrocephalus rubinus* | vermilion flycatcher | CSC | Cottonwood, willow, mesquite, and other vegetation in desert riparian and desert wash habitats as well as savannahs and arid scrub, often associated with surface water. Known to occur in Town. |
| *Lanius ludovicianus* | loggerhead shrike | CSC | Open-canopied valley foothill hardwood, valley foothill hardwood-conifer, valley foothill riparian, pinyon-juniper, juniper, desert riparian, and Joshua tree woodland habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. Known to occur near Town. |

***Table 5.3-2***
***Sensitive Wildlife Species within the Vicinity of the Town of Yucca Valley***

| *Scientific Name* | *Common Name* | *Status* | *Habitat Description; Occurrence In/Near Town* |
|---|---|---|---|
| *Vireo bellii pusillus* | least Bell's vireo | FE<br>SE | Willow-dominated woodland or scrub, Baccharis scrub, mixed oak/willow woodland, mesquite woodland, and elderberry scrub in riparian habitat. Nests and forages in vegetation along streams and rivers that measures approximately 3 to 6 feet in height and has a dense, stratified canopy providing both foraging habitat and song perches for territorial advertisement. Known to occur near Town. |
| *Toxostoma bendirei* | Bendire's thrasher | CSC | Variety of desert habitats with Joshua tree, Mojave yucca, cactus, and open ground. Known to occur near Town. |
| *Toxostoma lecontei* | Le Conte's thrasher | CSC | Sparsely vegetated desert flats, dunes, alluvial fans, or gently rolling hills that usually have multiple species of saltbush and/or cholla cactus and undisturbed substrates with accumulated leaf litter beneath desert shrubs for foraging. Known to occur in and near the Town. |
| *Dendroica petechia brewsteri* | yellow warbler | CSC | Variety of riparian habitats varying by biogeographic region but usually in close proximity to water along streams and meadows. Known to occur near Town. |
| *Piranga rubra* | summer tanager | CSC | Desert riparian habitats, usually in older, dense stands along rivers and streams with cottonwoods and willows. Known to occur in Town. |
| **Mammals** | | | |
| *Antrozous pallidus* | pallid bat | CSC | Open desert scrub, grasslands, shrub lands, woodlands, and forests. Roosts in a variety of areas, including rock crevices, caves, mines, tree hollows, and abandoned and occupied buildings. Known to occur near Town. |
| *Euderma maculatum* | spotted bat | CSC | Arid desert, scrub, and open forest habitats, particularly in areas with vertical cliffs or canyons near water. Specific roosting characteristics are poorly understood but known to roost on rock-faced cliffs. Known to occur near Town. |
| *Lasiurus xanthinus* | western yellow bat | CSC | Valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. Roosts in palm trees and forages for flying insects over water and among trees in palm oases and riparian habitat. Known to occur near Town. |
| *Nyctinomops femorosaccus* | pocketed free-tailed bat | CSC | Pinyon-juniper woodlands, desert scrub, desert succulent scrub, desert riparian, Joshua tree woodland, and palm oasis. Roosts in areas with rugged cliffs, high rocky outcrops, and steep slopes as well as old buildings, mines and caves, and under roof tiles. Known to occur in and near the Town. |
| *Nyctinomops macrotis* | big free-tailed bat | CSC | Desert scrub, woodlands and evergreen forests with roost sites, such as rock outcrops, steep canyon walls, cliffs, buildings, caves, and tree cavities. Known to occur near Town. |
| *Chaetodipus fallax pallidus* | pallid San Diego pocket mouse | CSC | Coastal scrub, chamise-redshank chaparral, mixed chaparral, sagebrush, desert wash, desert scrub, desert succulent shrub, pinyon-juniper woodland, and annual grassland with sandy, rocky, or gravelly soils. Known to occur near Town. |

***Table 5.3-2***
***Sensitive Wildlife Species within the Vicinity of the Town of Yucca Valley***

| *Scientific Name* | *Common Name* | *Status* | *Habitat Description; Occurrence In/Near Town* |
|---|---|---|---|
| *Ovis canadensis nelsoni* | Nelson's bighorn sheep | -- | Alpine dwarf-shrub, low sage, sagebrush, bitterbrush, pinyon-juniper woodland, palm oasis, desert riparian, desert succulent shrub, desert scrub, subalpine conifer, perennial grassland, montane chaparral, and montane riparian. Known to occur near Town. |
| *Taxidea taxus* | American badger | CSC | Drier, open stages of shrub steppes, agricultural fields, open woodland forests, and large grass and sagebrush meadows and valleys with friable soils. Known to occur near Town. |

FE: Federally endangered
FC: Federal candidate for listing
SE: State endangered
CSC: California Species of Concern

*California Cuckoo Bee*

The California cuckoo bee (*Paranomada californica*) currently has no special status ranking. This is a nest parasite of other solitary ground-nesting bees. Based on the few observations of the California cuckoo bee, it is likely that *Exomalopsis verbesinae* (no common name), a pollen-collecting bee species, is a host, since the California cuckoo bee was observed flying in the immediate vicinity of this species. However, not much is known about the habitat preferences, life history, or behavior of the California cuckoo bee, and it has only been documented in two locations—both in San Bernardino County—one near the Town and one approximately 9.5 miles northwest of Pioneertown. The California cuckoo bee is known to occur near the Town based only on historical data.

*Desert Tortoise*

The desert tortoise is a federally and state-listed threatened species. It is found typically in desert scrub, washes, dunes, and rocky slopes with firm but not hard pan soils where it feeds on annual grasses, herbs, desert flowers, and cacti. This species is active primarily in spring and fall but will remain inactive in its burrow during the warmest times of the year and will also hibernate in its burrow during the cooler fall and winter months. The desert tortoise is found in the Mojave Desert and the Colorado/Sonoran deserts of California, Arizona, southern Nevada, and southwestern Utah, as well as northern Mexico from sea level to approximately 5,200 feet amsl. The most significant threats to the desert tortoise include urbanization, disease, habitat destruction and fragmentation, illegal collection and vandalism by humans, and habitat conversion from native to invasive plant species. The desert tortoise is known to occur within and near the Town.

*Coast Horned Lizard*

The coast horned lizard (*Phrynosoma blainvillii*) is a state species of special concern. This species is found in a variety of habitats, including scrubland, grassland, coniferous woods, and broadleaf woodlands, especially in areas with sandy soils, scattered shrubs, and ant colonies, such as along the edges of arroyo bottoms or dirt roads. It retreats underground and is inactive during extreme heat and during cold weather. The coast horned lizard is found in the Sierra Nevada foothills from Butte County south to Kern County as well as throughout the central and southern California coast, at elevations ranging from sea level to approximately 4,000 feet amsl in the Sierra Nevada foothills and up to approximately 6000 feet amsl in the mountains of southern California. This species is absent from much of its former southern California range due to urbanization, agricultural development, overcollecting, and displacement of native ant species by nonnative Argentine ants. The coast horned lizard is known to occur within and near the Town.

*Mojave Fringe-Toed Lizard*

The Mojave fringe-toed lizard (*Uma scoparia*) is a state species of special concern. This species is found in habitats with sparse vegetation and windblown sands, such as dune systems and washes, where it feeds on insects, spiders, seeds, and flowers. This species is active during the day but will burrow in the sand during extreme temperatures. In fall, it also will burrow in the sand and emerge in late winter. The Mojave fringe-toed lizard ranges from the Mojave Desert to the southern end of Death Valley National Park, and east to south of Parker in Yuma County, Arizona, at elevations from below sea level to approximately 3,280 feet amsl. Threats to this species are associated with off-road vehicle activity and the creation of windbreaks, which alter deposition of windblown sand. The Mojave fringe-toed lizard is known to occur near the Town.

*Red-Diamond Rattlesnake*

The red-diamond rattlesnake (*Crotalus ruber*) is a state species of special concern. This species is found in a variety of habitats, including coastal sage scrub, desert scrub, thornscrub, open chaparral, woodland, grassland, and cultivated areas. Its diet mainly consists of ground squirrels, rabbits, lizards, and carrion. The red-diamond rattlesnake is found from southwestern California—from near Pioneertown and Morongo Valley in San Bernardino County and southeastern Los Angeles County—south through Baja California, Mexico, including several islands in the Gulf of California and off the Pacific coast of Baja California. It is found at elevations ranging from sea level to approximately 4,900 feet amsl, but typically below 3,200 feet amsl. Threats to this species are associated with habitat loss, particularly within the coastal regions of its range. The red-diamond rattlesnake is known to occur near the Town.

*Prairie Falcon*

The prairie falcon (*Falco mexicanus*) currently has no special status ranking. This species is associated primarily with perennial grasslands, savannahs, rangeland, agricultural fields, and desert scrub areas but has also been observed using annual grasslands and alpine meadows. It nests on cliff ledges and occasionally in rock crevices.

Endemic to North America, the prairie falcon ranges across the western United States, parts of Canada, and into northern Mexico. In California, it is a rare breeding resident throughout many arid regions of the state. The relatively small breeding population in California makes the prairie falcon vulnerable to impact. Shooting is the most common cause of death for this species; however, intermittent human disturbance near nest sites, especially rock climbing, is probably the greatest threat to this species. The prairie falcon is known to occur near the Town.

*Western Yellow-Billed Cuckoo*

The western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) is a state-listed endangered species and a candidate for federal listing. This species is found in valley foothill and desert riparian habitats, usually with dense, mature riparian woodlands with large stands of cottonwood-willow riparian forest. It forages on large insects, caterpillars, and some fruit.

Endemic to the Americas, the western yellow-billed cuckoo is found throughout the western United States, south into Baja California and mainland Mexico, south through Central America, and likely into South America. In California, this species is an uncommon to rare summer resident that is found in scattered locations throughout the state. Although the western yellow-billed cuckoo was once a common breeder throughout much of lowland California, it has declined drastically due to habitat loss. The western yellow-billed cuckoo is known to occur within the Town.

*Burrowing Owl*

The burrowing owl (*Athene cunicularia*) is a state species of special concern and a federal bird of conservation concern. Habitat for the western burrowing owl includes dry, open areas with low-growing vegetation in grasslands, deserts, prairies, and agricultural lands; it is often associated with burrowing mammals.

Endemic to the Americas, the bulk of the population resides in western North America, but this species can be found in suitable habitat north into southern Canada, south through Central and South America to Tierra del Fuego, and in separate populations on coastal islands off of Florida and in the Caribbean. In California, although this species is declining in much of the state, it remains fairly common in the Imperial Valley, which is home to nearly 70 percent of the California population. The northernmost populations of this species are almost completely migratory; however, the individuals found in southern California are only partially migratory, as evidenced by reduced population sizes in winter, with some birds remaining in their territories throughout the year. Population declines have been attributed to loss of suitable habitat though urban expansion, pesticide use, vehicle collisions, and reduction of the mammals that supply the owl with burrows. Further, its propensity for nesting and foraging near roadsides and agricultural drains make it particularly vulnerable to roadside shooting, collisions with vehicles, road maintenance, and general harassment. The burrowing owl is known to occur near the Town.

*Vermilion Flycatcher*

The vermilion flycatcher (*Pyrocephalus rubinus*) is a state species of special concern. This species inhabits cottonwood, willow, mesquite, and other vegetation in desert riparian and desert wash habitats as well as savannahs and arid scrub, often associated with surface water. It feeds on flying insects, especially bees, as well as insects from ground.

The vermilion flycatcher ranges from the southwestern United States through Mexico, Central America, and well south into Argentina, including the Galapagos. In California, this species is a rare, localized, year-long resident along the Colorado River, but small local populations exist in scattered areas across southern California. Formerly a more common and widespread breeder in California, this species suffered greatly from riparian habitat loss in the last century, especially in the Colorado River, Imperial, and Coachella valleys, where it was historically reported as a fairly common breeder. However, despite these declines, over the past 60 years, the vermilion flycatcher has expanded its range westward from its stronghold along the Colorado River through the Mojave Desert and along the southern coast, where rare localized populations are now known. The vermilion flycatcher is known to occur within the Town.

*Loggerhead Shrike*

The loggerhead shrike (*Lanius ludovicianus*) is a state species of special concern. This species is found in open-canopied valley foothill hardwood, valley foothill hardwood-conifer, valley foothill riparian, pinyon-juniper, juniper, desert riparian, and Joshua tree woodland habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. It feeds primarily on large insects, other invertebrates, small birds, lizards, frogs, and rodents and sometimes scavenges. The loggerhead shrike ranges from central and southern Canada throughout the United States, throughout Baja and mainland Mexico, and into northern Central America. In California, it is a common resident and winter visitor in lowlands and foothills throughout the state. Though widely distributed, the loggerhead shrike is one of the few North American passerines whose populations have declined nearly continent-wide in recent decades. This species retreats from urbanization, and major factors contributing to its decline include changes in human land-use practices, pesticide use, and competition with species that are more tolerant of development. The loggerhead shrike is known to occur near the Town.

*Least Bell's Vireo*

The least Bell's vireo (*Vireo bellii pusillus*) is a federally and state-listed endangered species and a federal bird of conservation concern. This species prefers willow-dominated woodland or scrub, mule fat (*Baccharis salicifolia*) scrub, mixed oak/willow woodland, mesquite woodland, and elderberry scrub in riparian habitat. This species typically nests and forages in vegetation along streams and rivers that is three to six feet high and has a dense, stratified canopy providing both foraging habitat and song perches for territorial advertisement. Endemic to California and Baja California, Mexico, this highly migratory species arrives in California in mid-March and departs by late September to wintering grounds near the tip of Baja California. This species formally bred in lowland riparian habitat ranging from coastal southern California through the Sacramento and San Joaquin Valleys as far north as Red Bluff,

and other scattered locations east of the Sierra Nevada; however, by the time the species was listed by CDFW in 1984, it had been extirpated from much of its former range and was restricted to eight central and southern California counties, with just 300 pairs statewide. Population declines were caused by widespread clearing of riparian habitat combined with brood parasitism by the brown-headed cowbird (*Molothrus ater*), whose increase in California was as dramatic as the least Bell's vireo's decline. Currently, with restriction of habitat destruction, extensive cowbird trapping, and protection from both FESA and CESA, populations of the least Bell's vireo have recovered in some areas of coastal southern California, and populations are expanding into former ranges. The least Bell's vireo is known to occur near the Town.

*Bendire's Thrasher*

Bendire's thrasher (*Toxostoma bendirei*) is a state species of special concern. This species is found in a variety of desert habitats with Joshua tree, Mojave yucca, cactus, and open ground and feeds on insects and arthropods, such as caterpillars, beetles, grasshoppers, ants, and termites. It is found only in the southwestern United States and the northwestern coast of mainland Mexico. In California, it is a very local spring and summer resident and breeder that occurs primarily in San Bernardino County and western Kern County. The main threats to Bendire's thrasher are the loss of habitat, such as the clearing of desert scrub habitats and habitats supporting large desert cacti and yucca. Bendire's thrasher is known to occur near the Town.

*LeConte's Thrasher*

The LeConte's thrasher (*Toxostoma lecontei*) is a state species of special concern in its San Joaquin valley population, and other populations are on the state watch list. This species is found typically in sparsely vegetated desert flats, dunes, alluvial fans, or gently rolling hills that usually have multiple species of saltbush and/or cholla cactus and undisturbed soils with accumulated leaf litter beneath desert shrubs for foraging. The LeConte's thrasher is rare throughout its restricted range, which extends from the southwestern United States, portions of Baja California, Mexico, and the extreme northwestern portion of mainland Mexico. In California, this species occurs locally in the Antelope and Owens valleys south to the southwestern corner of the San Joaquin Valley (including the Carrizo Plains) and southeast into isolated pockets throughout the Mojave and Colorado deserts.

The LeConte's thrasher's limited breeding distribution, specialized habitat use, and small population size make it susceptible to changing land use practices. Habitat loss and degradation have been and continue to be the major population-level threats to this species. Though agriculture and urban development have eliminated considerable former habitat, any destruction of substrate, litter, or shrubs affects habitat suitability for the LeConte's thrasher. One factor contributing to habitat loss has been extensive off-road vehicle activity, which eliminates or seriously degrades habitat by crushing vegetation, destroying underlying litter and soil surface, and precluding heavily used sites from further use by this species. The LeConte's thrasher is known to occur within and near the Town.

*Yellow Warbler*

The yellow warbler (*Dendroica petechia*) is a state species of special concern. This species inhabits a variety of riparian habitats and feeds on a variety of small arthropods (i.e., insects, spiders, and crustaceans. The yellow warbler has a broad distribution in the Americas, where it breeds from Alaska, throughout Canada and the northern United States, and into both mainland and Baja California, Mexico. In California, this species breeds throughout much of the state, including coastal areas along the length of the state, inland in extreme northern California, throughout the Central Valley, and along the east and west slopes of the Sierra Nevada Mountains, and it winters in southeastern California in the Imperial Valley and along the Colorado River.

Like many other riparian songbirds, the yellow warbler population collapsed in the late 1900s as a result of habitat destruction and cowbird parasitism. The yellow warbler is known throughout its range as the most frequent host of the brown-headed cowbird. Following widespread trapping of cowbirds after the least Bell's vireo was federally listed as endangered in 1986, the yellow warbler was among the species whose populations surged and has now

reoccupied much of its former breeding range, except in the Central Valley, where it is close to extirpation. The yellow warbler is known to occur near the Town.

*Summer Tanager*

The summer tanager (*Piranga rubra*) is a state species of special concern. This species is found in desert riparian habitats, usually in older, dense stands along rivers and streams with cottonwoods and willows. It eats insects, spiders, and small fruits. The summer tanager is found from the southern United States, south through Mexico and Central America, and into northern South America. In California, the summer tanager is an uncommon summer resident and breeder in the desert riparian habitat along the lower Colorado River and also occurs very locally in other portions of the southern California deserts. This species has declined primarily from loss of native habitat. The summer tanager is known to occur within the Town.

*Pallid Bat*

The pallid bat (*Antrozous pallidus*) is a state species of special concern. This species is found in a variety of habitats, including open desert scrub, grasslands, shrub lands, woodlands, and forests, and prefers open, dry environments and rocky areas for roosting. The pallid bat roosts in a variety of areas, including rock crevices, caves, mines, tree hollows, and abandoned and occupied buildings. It forages low over open ground and consumes large, hard-shelled prey items such as beetles, grasshoppers, cicadas, spiders, scorpions, and Jerusalem crickets. This species ranges from central Mexico, throughout the western United States, and north to western Canada, with an isolated population in Cuba. In California, the pallid bat is a common year-round resident throughout most of California below 6,000 feet amsl but has been documented as high as 10,000 feet amsl. Pallid bats are very sensitive to roost disturbance, as these roosts are crucial for metabolic economy and juvenile development. Threats to pallid bat are generally attributable to loss of roosting sites from human intrusion and physical alteration. The pallid bat is known to occur near the Town.

*Spotted Bat*

The spotted bat (*Euderma maculatum*) is a state species of special concern. This species is found in arid desert, scrub, and open forest habitats, particularly in areas with vertical cliffs or canyons near water. Though specific roosting characteristics are poorly understood, the spotted bat is known to roost on rock-faced cliffs. Its diet consists almost exclusively of moths, captured using echolocation loud enough to be audible to the human ear. The spotted bat ranges from southwestern British Columbia, south through the western United States, and into northern Mexico. Though it has a large range, the spotted bat distribution is patchy because of its specific roosting requirements. Because the spotted bat roosts in high cliffs and rock faces, threats to this species are believed to be minimal. However, the increase in recreational rock climbing may represent a threat to this poorly understood bat species. The spotted bat is known to occur near the Town.

*Western Yellow Bat*

The western yellow bat (*Lasiurus xanthinus*) is a state species of special concern. This species is found in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. It roosts in palm trees and forages for flying insects over water and among trees in palm oases and riparian habitat. The western yellow bat is known from the southwestern United States south into mainland and Baja California, Mexico. In California, this species is an uncommon, year-round resident that has been documented below approximately 2,000 feet amsl only in Los Angeles and San Bernardino counties. Threats to the western yellow bat are generally associated with the loss of roosting sites resulting from human intrusion and physical alteration. The western yellow bat is known to occur near the Town.

*Pocketed Free-tailed Bat*

The pocketed free-tailed bat (*Nyctinomops femorosaccus*) is a state species of special concern. This species is found in pinyon-juniper woodlands, desert scrub, desert succulent scrub, desert riparian, Joshua tree, and palm oases. It roosts in areas with rugged cliffs, high rocky outcrops, and steep slopes and may also roost in old buildings, mines and caves, and under roof tiles. The pocketed free-tailed bat forages for flying insects mainly over ponds, streams, and arid desert habitats. This species is found in the arid lowlands of southern California, southern Arizona, the extreme southwest of New Mexico and Texas, into Baja California, Mexico, as well as into central and western mainland Mexico at elevations from sea level to approximately 7,300 feet amsl. In California, this species is a rare, year-round resident that has been reported from Riverside, San Diego, and Imperial counties but may occur in other areas. The pocketed free-tailed bat is known to occur in and near the Town.

*Big Free-Tailed Bat*

The big free-tailed bat (*Nyctinomops macrotis*) is a state species of special concern. This species is found in desert scrub, woodlands, and evergreen forests where roost sites (rock outcrops, steep canyon walls, cliffs, buildings, caves, and tree cavities) are available. It feeds primarily on large moths but also eats crickets, grasshoppers, flying ants, stinkbugs, froghoppers, leafhoppers, and other insects. The big free-tailed bat ranges from the southwestern United States, including southern California, Arizona, New Mexico, and Texas; south through Central America; the Caribbean Islands; and throughout northern South America, at elevations up to 8,000 feet amsl. In California, this species is a rare, year-round resident that is known from urban areas of San Diego County and more rugged, rocky terrain in other parts of its range. Threats to the big free-tailed bat are generally associated with the loss of roosting sites resulting from human intrusion and physical alteration. The big free-tailed bat is known to occur near the Town.

*Pallid San Diego Pocket Mouse*

The pallid San Diego pocket mouse (*Chaetodipus fallax pallidus*) is a state species of special concern. While data is limited on this subspecies, it is likely similar to the San Diego pocket mouse, which is a common resident in coastal scrub, chamise-redshank chaparral, mixed chaparral, sagebrush, desert wash, desert scrub, desert succulent shrub, pinyon-juniper woodland, and annual grassland with sandy, rocky, or gravelly soils where it forages on seeds of forbs, grasses, and shrubs. The pallid San Diego pocket mouse is found only in southwestern California and northwestern Baja California, Mexico. It has been documented in Los Angeles, Imperial, Riverside, San Bernardino, and San Diego counties at elevations from sea level up to 4,500 feet amsl in the Santa Rosa Mountains in Riverside County and up to 6,000 feet amsl on the northern slope of the San Bernardino Mountains. The pallid San Diego pocket mouse is known to occur near the Town.

*Nelson's Bighorn Sheep*

The Nelson's bighorn sheep currently has no special status ranking. This species occurs in a variety of habitats, including alpine dwarf-shrub, low sage, sagebrush, bitterbrush, pinyon-juniper woodland, palm oasis, desert riparian, desert succulent shrub, desert scrub, subalpine conifer, perennial grassland, montane chaparral, and montane riparian that have suitable escape terrain, such as cliffs or talus slopes. Nelson's bighorn sheep mainly feeds on grasses and forbs but also grazes on shrubs. The bighorn sheep is found from southwestern Canada south through the western portion of the United States and into portions of Baja California and mainland Mexico. In California, the Nelson's bighorn sheep is one of three subspecies and occurs in the desert mountain ranges, from the White Mountains in Mono and Inyo counties south into the San Bernardino Mountains and to the United States/Mexico border. An isolated population also occurs in the San Gabriel Mountains. Threats to this species include habitat changes resulting from fire suppression, interactions with feral and domestic livestock, and human encroachment. The Nelson's bighorn sheep is known to occur near the Town.

*American Badger*

The American badger (*Taxidea taxus*) is a state species of special concern. This species is found in drier, open stages of shrub steppes, agricultural fields, open woodland forests, and large grass and sagebrush meadows and valleys with friable, that is, easily crumbled, soils. It eats of a variety of rodents, scorpions, insects, snakes, lizards, birds, and carrion. The American badger is found throughout southern Canada south through the central and western United States and south into Baja California and mainland Mexico. In California, it is an uncommon, permanent resident that is found throughout the state, except in the extreme north coast area. Threats to this species are associated mainly with human activities, such as habitat destruction, trapping, hunting, vehicular deaths, and poisoning. The American badger is known to occur near the Town.

### Wildlife Movement Corridors

Wildlife corridors are essential to maintain populations of healthy and genetically diverse plant and wildlife species. At a minimum, wildlife corridors promote colonization of habitat and genetic variability for both plant and wildlife species by connecting fragments of habitat that are separated by otherwise foreign or inhospitable habitats.

Wildlife corridors are considered sensitive by local, state, and federal resource and conservation agencies because they allow wildlife to move between adjoining open space areas that are becoming increasingly isolated as open space becomes fragmented from urbanization, rugged terrain, and/or changes in vegetation. In southern California, habitat fragmentation is one of the main concerns for the maintenance of healthy wildlife populations because natural areas are often scarce and maintaining connectivity between these habitats is perhaps one of the best feasible options for preventing localized extinctions and enhancing biodiversity. In addition, roadway mortality must be considered when evaluating the importance of maintaining habitat connectivity and providing well-designed wildlife crossings. If animals are inclined to move between habitat patches, a narrow road or even a wider highway isn't an absolute barrier. However, if these animals choose to cross these roadways, the likelihood of mortality increases, which could depress regional species' populations.

Wildlife corridors can be classified either regional corridors or local corridors. Regional corridors link two or more large areas of natural open space, and local corridors allow resident animals to access critical resources (e.g., food, cover, water) in a smaller area that might otherwise be isolated by some form of urban development (e.g., roads, housing tracts). Both regional and local wildlife corridors reduce the effects of habitat fragmentation by (1) allowing wildlife to move between remaining habitat fragments, thereby permitting depleted populations to be replenished and promoting genetic exchange; (2) providing escape routes from fire, predators, and human disturbances, thus reducing the risk of catastrophic events (such as fire or disease) on a population that may cause local species extinction; and (3) serving as travel routes for individual animals as they move within their home ranges in search of food, water, mates, and other needs.

Within these wildlife corridors, wildlife movement activities typically fall into one of three movement categories: (1) dispersal (i.e., juvenile animals from birth areas or individuals extending range distributions), (2) seasonal migration, and (3) movement related to home range activities (e.g., foraging for food or water, defending territories, searching for mates). A number of terms used in various wildlife movement studies are defined as follows:

- **Travel Route.** A travel route is a landscape feature—such as a ridgeline, drainage, canyon, or riparian strip—within a larger natural habitat area that is used frequently by animals to facilitate movement and provide access to needed resources. The travel route is generally preferred because it provides the least amount of topographic resistance in moving from one area to another. It contains adequate food, water, and/or cover for wildlife moving between habitat areas and provides a relatively direct link between suitable habitat areas.

- **Wildlife Corridor.** A wildlife corridor is an area of habitat, usually linear in nature, that connects two or more habitat patches that would otherwise be fragmented or isolated from one another. Wildlife corridors are often bounded by urban land uses or other areas that are unsuitable for wildlife. A corridor generally contains suitable cover, food, and/or water to support species and facilitate movement while in the corridor. Larger, landscape-level corridors (often referred to as habitat or landscape linkages) can provide both transitory and resident habitat for a variety of species.

- **Wildlife Crossing.** A wildlife crossing is a small, narrow area, relatively short in length and generally constricted in nature, that allows wildlife to pass under, over, or through an obstacle or barrier that otherwise hinders or prevents movement. Crossings typically are manmade and include culverts, underpasses, overpasses, drainage pipes, and tunnels that provide access across or under roads, highways, pipelines, or other physical obstacles.

As discussed above, wildlife corridors provide routes for migration and dispersal. In addition, several studies have demonstrated the importance of corridors in preventing extinctions and increasing species diversity. Wildlife corridors also play a very important role in linking reserves and reducing the negative effects of fragmentation. While corridors are not reserves themselves, they can be viewed as a means to effectively increase reserve size. To some wide-ranging animals such as bobcat (*Felis rufus*), coyote, and mountain lion (*Felis concolor*), even a relatively large isolated reserve may not be capable of sustaining populations. However, allowing these and other species to disperse to and move between reserves via wildlife corridor gives them more space to utilize and they are more likely to maintain stable populations.

Near the Town, vast natural landscapes have been set aside as public and private conservation lands to protect their ecological values and the species that rely on them. These conserved lands have become important refuges for many native plant and wildlife species; however, the long-term conservation of the desert ecosystems requires maintaining connectivity across and between the diversity of desert habitats. Several comprehensive wildlife corridor analyses have been conducted within the vicinity of the Town, including "A Linkage Design for the San Bernardino-Little San Bernardino Connection," "A Linkage Design for the Joshua Tree-Twentynine Palms Connection," the California Essential Habitat Connectivity Project, and the California Desert Connectivity Project. The Morongo Basin Open Space Group also has adopted these corridor designs in their overall open space strategy for the Morongo Basin area.

Two of these wildlife connectivity studies, "A Linkage Design for the San Bernardino-Little San Bernardino Connection" and "A Linkage Design for the Joshua Tree-Twentynine Palms Connection," focused on areas that are within and next to the Town. These studies resulted in the identification of the Joshua Tree-29 Palms linkage design and the San Bernardino-Little San Bernardino linkage design, both of which pass through the Town. The same two linkages were also identified by two more recent studies, the California Essential Habitat Connectivity Project and the California Desert Connectivity Project, conducted at a regional level and described further in the Biological Technical Report (Appendix D).

Collectively, these linkages are referred to as Wildlife Corridor Evaluation Areas (WCEA) by the Town and are identified in Figure 5.3-4, *Wildlife Corridor Evaluation Areas (WCEA)*. The WCEAs provide dispersal, seasonal migration, and movement opportunities for more wide-ranging species—such as mule deer, coyote, and bighorn sheep—to access the resources available in the desert, riparian, and mountain habitats in the region. In addition, these corridors provide dispersal, seasonal migration, and movement opportunities for more localized, resident species—such as the desert tortoise, coast horned lizard, and pallid San Diego pocket mouse—to access resources required for survival.

- **Joshua Tree-29 Palms Linkage:** The Joshua Tree-29 Palms linkage crosses the northern "pan handle" portion of the Town as well as a portion of the Town on its eastern border (see Figure 5.3-4). This linkage is somewhat constrained in the northern part of the Town as it passes through a developed industrial area. While constrained, it still provides east–west connectivity between larger open space areas. The area within

this linkage on the eastern border of the Town is on a hilly area and supports mostly undisturbed native habitat.

- **San Bernardino-Little San Bernardino Linkage:** The San Bernardino-Little San Bernardino linkage passes through mostly undeveloped, hilly terrain in the southwestern corner of the Town. This area supports high quality native habitat and provides connectivity between Joshua Tree National Park, Big Morongo Canyon, and open space areas to the west.

Within the Town, the goals of the WCEAs are to:

- Conserve habitat for rare and endangered species found in the region;
- Maintain these areas for aesthetic and low-impact recreational uses;
- Utilize major recreation and open-space reservations, including trails and scenic highway corridors;
- Preserve the scenic character of the Town;
- Maintain areas for wildlife movement corridors between regional open space areas.

### Open Space Resource Areas

The Town has identified three open space resource areas (OSRAs), as shown in Figure 5.3-5, *Open Space Resource Areas (OSRA)*, with the intent of providing open space for the protection of sensitive biological resources within and near the Town. These areas were identified based on several characteristics, including presence of sensitive vegetation communities, presence of sensitive plant and animal species, limited development, low-density zoning, presence of wildlife linkages, scenic value, and adjacency to existing open space areas. The areas also generally correspond with other limitations to development including federal land, steep hillside zones, and established parks and preserve areas. The overall goals of the OSRSs are the same as for the WCEAs, plus an additional goal of providing an additional buffer between development and the WCEAs.

The OSRA in the western portion of the Town, north of Highway 62, would provide added connectivity between the Sawtooth Mountains to the west and BLM and open space areas within the Town limits (e.g., North Park). This OSRA also enhances north–south connectivity between the San Bernardino-Little San Bernardino and Joshua Tree-29 Palms linkages. Most of this OSRA is undeveloped with proposed low density land uses.

The OSRA south of Highway 62 would enhance the San Bernardino-Little San Bernardino linkage and provide a buffer between the Town and Joshua Tree National Park. This OSRA also would provide additional connectivity between open space areas within the Town limits (e.g., BLM land and South Park), Joshua Tree National Park, and the Big Morongo Canyon preserve.

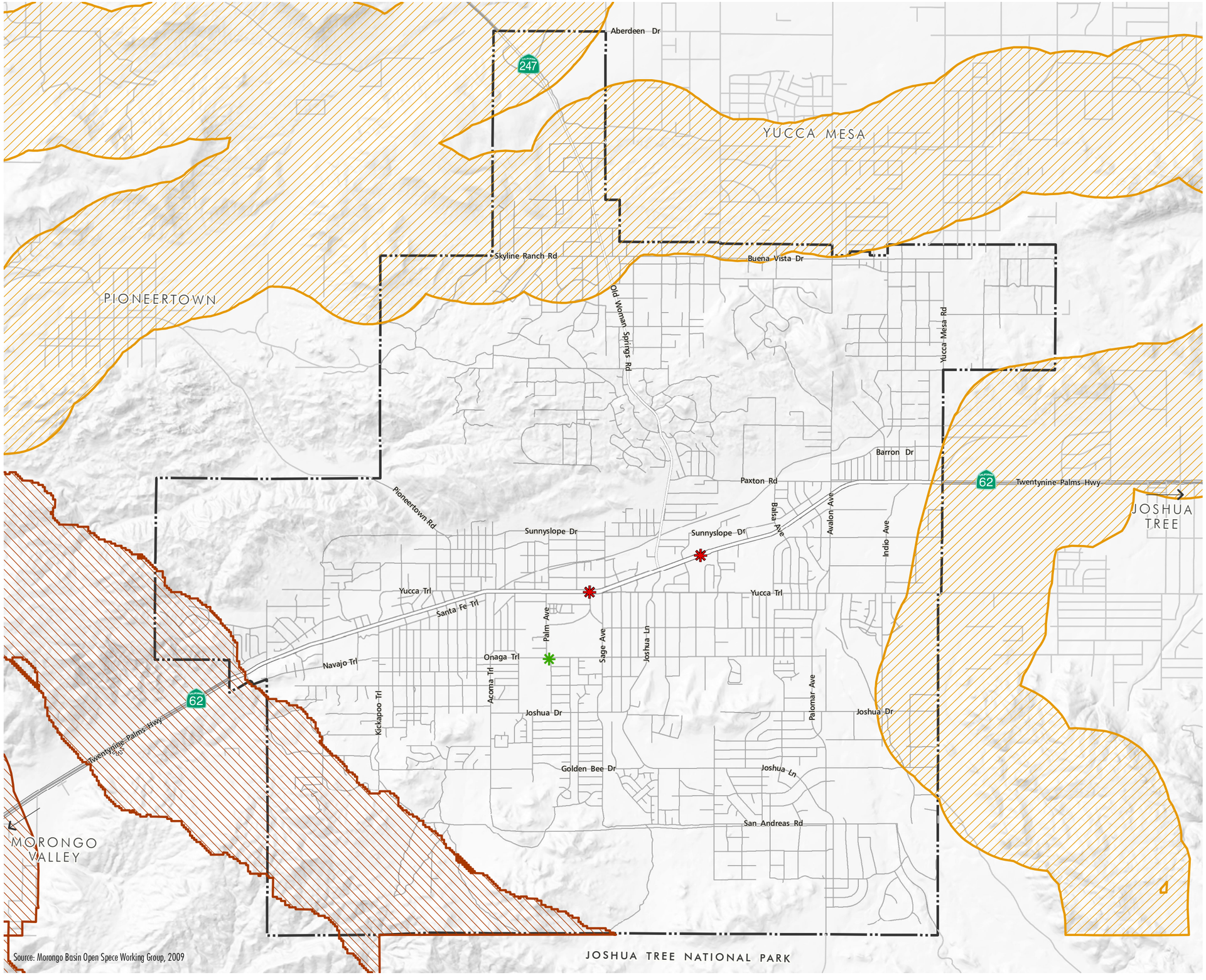
The third OSRA is on a hilltop at the eastern boundary of the Town. This OSRA provides added connectivity with the Joshua Tree-29 Palms linkage and BLM land located east of the Town. The proposed land uses at this location are low density lots in a hillside area.

### Wetland and Riparian Resources

The majority of the Town is located within the Morongo Basin watershed, which generally drains from west to east primarily through Yucca Creek; however, the northern end of the Town drains northeastward into the Homestead Valley. No major water bodies are within the Town. Many of the Town's existing drainage courses have insufficient hydraulic capacity and, therefore, intense storms often result in significant quantities of water and sediment being conveyed from the mountains through the developed areas in the Town, resulting in flooding and sediment disposition within properties and in the streets.

# 5.3 - BIOLOGICAL RESOURCES

## Figure 5.3-4
## WILDLIFE CORRIDOR EVALUATION AREAS (WCEA)




Source: Morongo Basin Open Spece Working Group, 2009

YUCCA VALLEY GENERAL PLAN
DRAFT EIR

TYV-01 05.01.13

0 1,500 3,000 6,000 Feet

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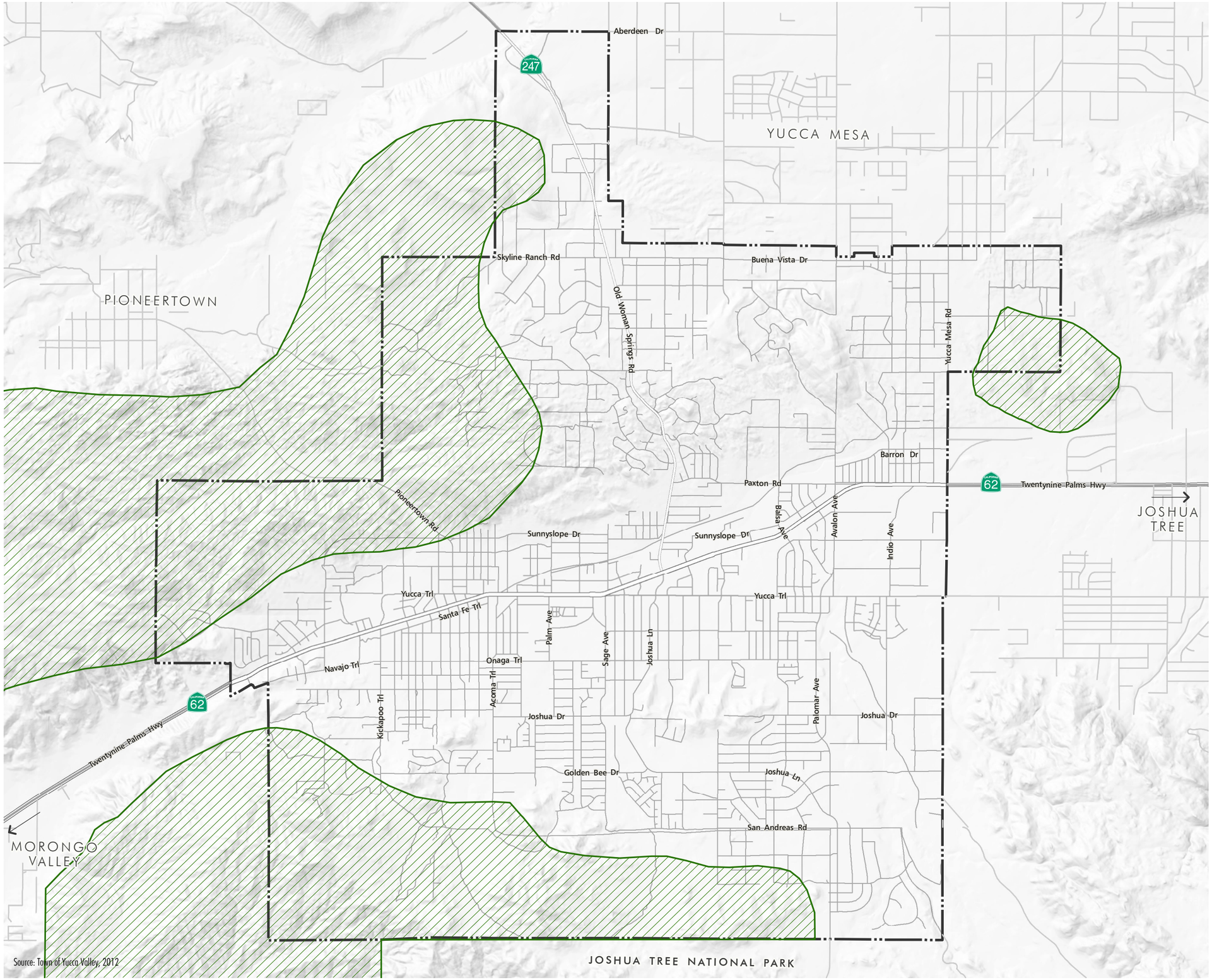
# 5.3 - BIOLOGICAL RESOURCES

Figure 5.3-5

## OPEN SPACE RESOURCE AREAS (OSRA)




Open Space Resource Area

Town Limits

YUCCA VALLEY GENERAL PLAN

DRAFT EIR

TYV-01 05.01.13

0 1,500 3,000 6,000 Feet

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Wetland and riparian resources in and near the Town are considered sensitive biological resources and are regulated by the Corps, CDFW, and/or RWQCB according to several federal and state regulations. Wetland and riparian resources within the Town would include creeks, washes, underground water (aquifers), and other water courses as well as various riparian vegetation communities that are associated with these water courses. While no wetland habitats are identified on the CNDDB, the USFWS National Wetlands Inventory identifies several wetlands and riparian resources within and adjacent to the Town, including mesquite bosque, riverine, riparian forest, riparian scrub, fresh emergent wetland, freshwater pond, and other wetlands that are associated with Pinyon Creek, Yucca Creek, and numerous other washes. A description of each agency's jurisdiction is provided below.

***United States Army Corps of Engineers Jurisdiction***

In accordance with Section 404 of the CWA, the Corps has regulatory authority over the discharge of dredged or fill material into waters of the U.S. (including nonwetland waters of the U.S. and wetlands). Federal jurisdiction is dependent on a demonstrated nexus between the subject water feature and navigable waters or interstate commerce.

The Corps and EPA define wetlands as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions." To be considered a Corps jurisdictional wetland under Section 404 of the CWA, an area must possess three wetland characteristics: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. The definition of wetlands is discussed further in the biological technical report included as Appendix D to this DEIR.

The Corps defines nonwetland waters of the U.S. as drainages, or portions thereof, which have strong hydrology indicators such as the presence of seasonal flows and an ordinary high watermark (OHWM). An OHWM is defined as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as [a] clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas." Areas delineated as nonwetland waters of the U.S. may lack hydrophytic vegetation or hydric soil characteristics. The definition of nonwetland waters of the U.S is discussed further in the biological technical report included as Appendix D to this DEIR.

***California Department of Fish and Wildlife Jurisdiction***

In accordance with Sections 1600 to 1616 of the Fish and Game Code, the CDFW regulates activities that would divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake that supports fish or wildlife. These sections discuss the process by which an individual, government agency, or public utility must notify the CDFW prior to any such activity. The CDFW regulates wetland areas only to the extent that those wetlands are part of a river, stream, or lake as defined by the CDFW. Following such notification, the CDFW must inform the individual, agency, or utility of the existence of any fish and wildlife resources that may be substantially adversely affected by the activity. The CDFW must also include a proposal called the SAA for measures to protect fish and wildlife resources.

The CDFW exerts jurisdiction over all waters of the state, such as streams and rivers (measured from bank to bank) and any "riparian" vegetation associated with the waters. Streams and rivers are defined by the presence of a channel bed and banks, and at least an intermittent flow of water. The term "riparian" vegetation refers to vegetation that occurs in and/or adjacent to a watercourse. Typical "riparian" vegetation includes willows, mulefat, western sycamores (*Platanus racemosa*), Fremont cottonwoods, cattails (*Typha* spp.), and other vegetation found in moist areas and typically associated with the banks of a stream or lake shoreline. CDFW jurisdictional areas are delineated by the outer edge of riparian vegetation or from the top of one channel bank to the top of the opposite channel bank, whichever is wider. Thus, defining the limits of the CDFW jurisdiction based on riparian habitat will

automatically include any wetland areas and may include additional areas that do not meet the Corps criteria for soils and/or hydrology (e.g., where riparian woodland canopy extends beyond the channel area of a stream away from frequently saturated soils). In addition, the CDFW may take jurisdiction over isolated wetlands and streambeds in cases where the Corps may not. Therefore, the CDFW jurisdiction is typically equal to or greater than the Corps jurisdiction.

***Regional Water Quality Control Board***

The RWQCB is the primary agency responsible for protecting water quality in California. The RWQCB regulates discharges to surface waters under Section 401 of the CWA and the California Porter-Cologne Water Quality Control Act. The RWQCB's jurisdiction extends to all waters of the state and to all waters of the U.S. considered jurisdictional by the Corps and CDFW. The RWQCB also regulates isolated wetlands, such as vernal pools, that are not regulated by the Corps. Section 401 of the CWA and the state Porter-Cologne Water Quality Control Act give the RWQCB the authority to regulate any proposed activity that may affect water quality. Water quality certification and/or a Report of Waste Discharge must be based upon a finding that the proposed discharge will comply with water quality standards.

### 5.3.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

B-1 Have a substantial effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

B-2 Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

B-3 Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

B-4 Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.

B-5 Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

B-6 Conflict with the provisions of an adopted habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

### 5.3.3 Environmental Impacts

The following impact analysis addresses thresholds of significance for which the Initial Study disclosed potentially significant impacts. The applicable thresholds are identified in brackets after the impact statement.

***IMPACT 5.3-1: DEVELOPMENT PURSUANT TO THE GENERAL PLAN UPDATE COULD IMPACT SENSITIVE PLANT AND ANIMAL SPECIES KNOWN TO OCCUR IN AND/OR NEAR THE TOWN OF YUCCA VALLEY. [THRESHOLD B-1]***

***Impact Analysis:*** Development according to the proposed land use plan would replace existing natural lands in the Town with developed land uses. Development of natural lands could impact sensitive plant and animal species known to occur in the Town, as described above in Tables 5.3-1 and 5.3-2. Sensitive species other than those listed in these tables may also be impacted.

Sensitive biological resources are regulated by the USFWS and the CDFW. These agencies require an assessment of the presence or potential presence of special status species and the vegetation communities in which they are likely to occur within the project vicinity prior to the approval and construction of a proposed development project.

The General Plan Open Space and Conservation Element identifies several implementation actions to reduce impacts:

OSC 1 Implement development regulations and guidelines that minimize or eliminate impacts of development on natural open space areas.

OSC 15 Establish standards and regulations that implement, support, and protect open space, wildlife corridors, and protected biological resources.

OSC 16 Establish standards and regulations in the Development Code which minimize impacts of new development on open space and conservation areas.

OSC 22 Explore the possibility of developing a Transfer of Development Rights (TDR) ordinance, to allow the transfer of units or square footage from one property to another to preserve properties with significant biological resources, hillside areas and natural slopes. This may result in an increased density or intensity of the "receiving site" to preserve property development potential.

While these implementation actions would assist in reducing impacts, under the CESA and FESA, future development projects consistent with the proposed land use plan would require more detailed evaluations of biological resources and formulation of mitigation measures by a qualified biologist. Consequently, impacts to sensitive plant and animal species are considered potentially significant in the absence of mitigation.

***IMPACT 5.3-2 BUILDOUT OF THE GENERAL PLAN UPDATE WOULD IMPACT HABITAT TYPES INHABITED BY SENSITIVE SPECIES. [THRESHOLD B-2 (PART)]***

***Impact Analysis:*** Habitats that support sensitive species are considered sensitive habitats. The USFWS and CDFW often require creation or restoration of onsite or offsite habitat as a condition of allowing impacts to sensitive species by development projects. Each of the habitat/land cover types in the Town, except for disturbed lands and urban/developed lands, are identified above in Tables 5.3-1 and 5.3-2 as habitats for one or more sensitive species. In addition, vegetation communities may become sensitive and/or species may become listed in the future. Buildout of the General Plan Update would convert some of each the sensitive habitat types in the Town to developed land uses. At buildout of the General Plan Update, 25,106 acres (98.5 percent of the Town) would be designated for some type of developed land use. The remaining 386 acres would be designated for Open Space – Conservation. Currently, 16,661 acres (65.4 percent of the Town) consists of vacant land.[8] Therefore, implementation of the General Plan

[8] No category of existing land use is specified as open space (conservation); thus, no land presently designated for conservation is included in the acreage currently vacant.

Update would involve development of 16,275 acres (i.e., the remaining 63.8 percent of the Town) of currently vacant land.

The General Plan Open Space and Conservation Element identifies several implementation actions to reduce impacts:

OSC 1, 15, 16 (presented above under Impact 5.3-1)

OSC 20 Identify and assess lands, based upon site specific biological resources evaluations within the WCEAs and OSRAs that are suitable for preservation and may be preserved as public or private lands and as passive or active open space.

OSC 21 Develop standards and guidelines for the WCEA and OSRA areas that includes the following strategies:

a) Maintain residential land use designations with low and very low densities in WCEA and OSRA areas.

b) Discourage conversion of low density residential uses in the WCEA and OSRA to higher density or non-residential uses, retaining on-site areas for undeveloped, natural open space.

c) Apply design features in the WCEA and OSRA that interface with the natural environment such as: limiting the amount of grading that can occur on site or identifying the type of fencing that can be installed that supports wildlife movement.

d) Develop and implement standards and guidelines which limit the maximum disturbance of the land in WCEAs and OSRAs. Design standards and guidelines shall address wildlife corridor connectivity, limitations of ground disturbance, and the retention of native, undisturbed open space.

OSC 22 (presented above under Impact 5.3-1)

Growth accommodated through long-term buildout of the Town of Yucca General Plan would result in significant loss of habitat. To this date, no regional HCP/NCCP has been prepared for the Mojave Desert/Sonoran Desert that mitigates the cumulative loss of habitat as a result of future development. Consequently, while impacts from loss of habitat would be mitigated on a case-by-case basis for each individual development through consultation with the relevant federal and state agencies, cumulative impacts of habitat loss are considered significant. The area over which cumulative impacts are considered is the Mojave Desert Bioregion designated by the California Natural Resources Agency, which spans 20 million acres covering most of San Bernardino and Inyo Counties and parts of Riverside, Los Angeles, Kern, Tulare, and Mono counties.

***IMPACT 5.3-3: DEVELOPMENT OF THE PROPOSED PROJECT WOULD RESULT IN THE LOSS OF UNDETERMINED AMOUNTS OF RIPARIAN HABITATS. [THRESHOLD B-2 (PART)]***

***Impact Analysis:*** Riparian habitats could occur in several areas in the Town. Watercourses in the Town included in the NHD are mapped on Figure 5.3-3 and have the potential to support riparian habitat. Development of the proposed General Plan Update could impact riparian habitats. Riparian habitats are jurisdictional to the CDFW, as explained above in Section 5.3.1.

General Plan Open Space and Conservation Element implementation actions OSC 1, OSC 15, and OSC 16, presented above under Impact 5.3-1, would reduce impacts to riparian habitats. Projects considered for approval by the Town

of Yucca Valley would also require biological resources assessments of each respective project site by a qualified biologist. A jurisdictional delineation of such areas would be required by CDFW if there is potential riparian habitat onsite. If the assessment identified jurisdictional resources onsite, mitigation measures for impacts to jurisdictional waters, wetlands, and/or riparian habitat would be required. Consequently, impacts to riparian habitat are considered potentially significant in the absence of mitigation.

***IMPACT 5.3-4: BUILDOUT OF THE PROPOSED GENERAL PLAN UPDATE COULD IMPACT UNDETERMINED AMOUNTS OF WATERS AND WETLANDS JURISDICTIONAL TO THE US ARMY CORPS OF ENGINEERS, CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE, AND COLORADO RIVER BASIN REGIONAL WATER QUALITY CONTROL BOARD. [THRESHOLD B-3]***

***Impact Analysis:*** Developments according to the General Plan Update could impact waters and wetlands jurisdictional to the CDFW, Corps, and CRBRWQCB. Waters of the US are jurisdictional to the Corps; Waters of the State are jurisdictional to the CRBRWQCB and the CDFW; and wetlands meeting certain criteria are jurisdictional to the Corps and/or the CDFW. Watercourses in the Town included on the NHD are mapped on Figure 5.3-3 and could be jurisdictional to these agencies. General Plan Open Space and Conservation Element implementation actions OSC-1, OSC-15, and OSC-16, presented above under Impact 5.3-1, would reduce impacts to jurisdictional waters and wetlands. Projects considered for approval by the Town of Yucca Valley would also require a biological resources assessment of the project site by a qualified biologist. Where an assessment identified potential jurisdictional waters and/or wetlands onsite, a jurisdictional delineation of such areas would be required. Mitigation measures for impacts to jurisdictional waters, wetlands, and/or riparian habitat would be required if jurisdictional resources were impacted onsite. Consequently, impacts to jurisdictional waters are considered potentially significant in the absence of mitigation.

***IMPACT 5.3-5: DEVELOPMENTS PURSUANT TO THE PROPOSED GENERAL PLAN UPDATE COULD IMPACT WILDLIFE MOVEMENT IN WILDLIFE LINKAGES IDENTIFIED IN THE TOWN IN REGIONAL WIDLIFE CONNECTIVITY STUDIES AND DESIGNATED AS WILDLIFE CORRIDOR EVALUATION AREAS BY THE TOWN. [THRESHOLD B-4 (PART)]***

***Impact Analysis:*** Residential and nonresidential development according to the proposed General Plan Update would occur within the WCEAs. The WCEAs in the Town are designated based on regional wildlife connectivity studies.

The Joshua Tree-29 Palms linkage crosses the northern "pan handle" portion of the Town, as well as a portion of the Town on its eastern border (see Figure 5.3-4). This linkage is somewhat constrained in the northern part of the Town as it passes through a developed industrial area. While constrained, it still provides east–west connectivity between larger open space areas. The area within this linkage on the eastern border of the Town is on a hilly area and supports mostly undisturbed native habitat. Proposed General Plan land uses in this linkage include hillside residential, rural living, rural residential, open space, industrial, and commercial.

The San Bernardino-Little San Bernardino linkage passes through mostly undeveloped, hilly terrain in the southwestern corner of the Town. This area supports high quality native habitat and provides connectivity between Joshua Tree National Park, Big Morongo Canyon, and open space areas to the west. Proposed General Plan Update land uses in the San Bernardino-Little San Bernardino linkage include hillside residential, rural living, rural residential, medium-density residential, and open space.

The General Plan Open Space and Conservation Element identifies several implementation actions to reduce impacts to wildlife movement:

OSC 10: Review development proposals adjacent to designated open space lands and assure that land uses are compatible, and buffers and/or linkages are provided when necessary to maintain natural resource value.

OSC 15, OSC-16, and OSC-22, presented above under Impact 5.3-1

OSC 21 presented under Impact 5.3-2.

However, residential and nonresidential development within the WCEAs could interfere with wildlife movement. Projects considered for approval by the Town of Yucca Valley would require biological resources assessments of each respective project site by a qualified biologist. Mitigation measures would be required if impacts to wildlife movement and/or migration are identified. Consequently, impacts to wildlife movement are considered potentially significant in the absence of mitigation.

***IMPACT 5.3-6 BUILDOUT OF THE GENERAL PLAN UPDATE COULD IMPACT MIGRATORY BIRDS PROTECTED UNDER THE MIGRATORY BIRD TREATY ACT AND THE CALIFORNIA FISH AND GAME CODE. [THRESHOLD B-4 (PART)]***

***Impact Analysis:*** Buildout of the General Plan Update could impact migratory birds protected under the above-referenced federal and state laws. Numerous species of migratory birds occur in the Town, including sensitive species discussed above in Section 5.3.1. The Town is in the Pacific Flyway, an interconnected set of bird migration routes in the western portions of Mexico, the United States including Alaska, and Canada (CDFW 2013; USFWS 2001). Many bird species are abundant at the Big Morongo Canyon Preserve during spring and fall migration seasons (FBMCP 2013). Buildout of the General Plan Update would develop approximately 16,275 acres of currently vacant land and would remove vegetation that could be used for nesting by migratory birds. General Plan Open Space and Conservation Element implementation actions OSC 1, OSC 15, OSC 16, OSC 20, OSC 21, and OSC 22, presented above under Impacts 5.3-1 and 5.3-2, would reduce impacts to migratory birds. However, impacts to migratory birds are considered potentially significant in the absence of mitigation.

***IMPACT 5.3-7: PROJECTS DEVELOPED ACCORDING TO THE PROPOSED GENERAL PLAN UPDATE COULD IMPACT PLANTS PROTECTED BY THE TOWN'S PROPOSED PLANT PROTECTION AND MANAGEMENT ORDINANCE. [THRESHOLDS B-5 (PART)]***

***Impact Analysis:*** Several plant species within the Town are considered valuable resources that warrant protection. The Town has proposed a Plant Protection and Management Ordinance (proposed Ordinance No. 140) to protect these locally important plant species. Buildout of the proposed General Plan Update could impact plants protected under the Town's proposed Plant Protection and Management Ordinance (proposed Ordinance No. 140), which would protect Joshua trees, California juniper, desert willow, single-leaf pinyon pine, all species of palo verde, all species of manzanita, all species of mesquite with stems 2 inches or greater in diameter or 6 feet or greater in height, all species of yucca and our Lord's candle, and all creosote rings measuring 10 feet or greater in diameter. General Plan Open Space and Conservation Element implementation actions OSC 1, OSC 15, OSC 16, OSC 20, OSC 21, and OSC 22, would reduce impacts to these plants.

Harvesting of many species of California native desert plants is prohibited by the California Desert Native Plants Act; clearing native plants from a building site, road, or other right-of-way by a landowner or their agent is permitted if the plants are not to be transported from the site or offered for sale.

Projects considered for approval by the Town of Yucca Valley would require biological resources assessments of each respective project site by a qualified biologist. Where impacts to plants protected by the Plant Protection and Management Ordinance or the California Desert Native Plants Act were identified, mitigation measures identified by

the project biologist would be required. Consequently, impacts to locally protected plants are considered potentially significant in the absence of mitigation.

***IMPACT 5.3-8*** ***BUILDOUT OF THE PROPOSED GENERAL PLAN UPDATE WOULD INCLUDE DEVELOPMENT OF PROJECTS WITHIN THE OPEN SPACE RESOURCE AREAS AND WOULD THUS IMPACT BIOLOGICAL RESOURCES IN THOSE AREAS. [THRESHOLD BIO-5 (PART)]***

***Impact Analysis:*** General Plan Update implementation would include development of projects in the three OSRAs designated by the Town, as shown in Figure 5.3-5. The OSRAs include areas of blackbush scrub, nonnative grassland, semidesert chaparral, urban or built-up land, Mojavean pinyon and juniper woodlands, Mojave mixed woody scrub, and Mojave creosote bush scrub (see Figure 5.3-2). Historical occurrences of sensitive species in Yucca Valley are also mapped on Figure 5.3-2. Sensitive species have historically occurred in Yucca Valley in all of the above-mentioned land cover types. Land use types and permitted densities in the land use plan are shown on Figure 3-5, *Proposed Land Use Plan*. Developments within the OSRAs would impact sensitive species and their habitats. General Plan Open Space and Conservation Element implementation actions OSC 1, OSC 10, OSC 15, OSC 16, OSC 20, OSC 21, and OSC 22, presented above under Impacts 5.3-1, 5.3-2, and 5.3-5, would reduce impacts to biological resources in OSRAs. However, impacts to these open space conservation areas are considered potentially significant in the absence of mitigation.

***IMPACT 5.3-9*** ***IMPLEMENTATION OF THE GENERAL PLAN UPDATE WOULD NOT CONFLICT WITH A HABITAT CONSERVATION PLAN OR NATURAL COMMUNITY CONSERVATION PLAN. [THRESHOLD B-6]***

***Impact Analysis:*** There are two HCPs/NCCPs that are being drafted within the Mojave Desert/Sonoran Desert: the WMP and the draft DRECP. The WMP has been adopted by BLM, but some provisions of the plan are being revised pursuant to a US District Court order. According to the BLM, the Town is no longer a participating agency in the WMP, and the proposed HCP would apply to projects conducted on BLM lands only. Similarly, while the draft DRECP HCP/NCCP would encompass the Town, no projects (i.e., energy projects) subject to the draft DRECP HCP/NCCP are planned or proposed within the Town. The Town is not in the plan area of any other existing or planned HCP or NCCP. Therefore, implementation of the proposed General Plan Update would not conflict with any HCP or NCCP.

### 5.3.4 Relevant General Plan Policies and Implementation Actions

#### Open Space and Conservation Element

***Open Space and Conservation Element Policies***

OSC 1-2 Support regional, state, and federal efforts to evaluate, acquire, and conserve open space areas in and around Yucca Valley.

OSC 1-3 Support the Mojave Desert Land Trust in their efforts to preserve open space resources within the Morongo Basin.

OSC 1-4 Offer flexible development standards in exchange for providing open space and trail easements or rights-of-way.

OSC 1-5 Encourage new development to retain natural open space areas as part of project design to the greatest extent practicable.

OSC 1-6 Encourage the preservation, integrity, function, productivity and long term viability of environmentally sensitive habitats, wildlife corridors and significant geological features within the Town.

**BIOLOGICAL RESOURCES**

OSC 4-1 Protect, conserve, and preserve the Town's biological resources, especially sensitive, rare, threatened or endangered species of plants and wildlife and their habitats.

OSC 4-2 Support practical efforts to maintain a broad variety of habitats, with priority given to suitable habitat for rare and endangered species occurring in the Town and vicinity.

OSC 4-3 Require new development proposals to minimize impacts to existing habitat and wildlife to the maximum extent practicable. Require revegetation of disturbed natural habitat areas with native or non-invasive naturalized species.

OSC 4-4 Minimize and mitigate urban development impacts on sensitive habitat and wildlife areas.

OSC 4-5 Encourage and participate in the planning and development of multi-use corridors along drainage channels and utility easements to provide wildlife corridors and public interconnection between open space areas in the community and vicinity.

OSC 4-6 Require the use of native and approved, non-native, drought tolerant plant species in development projects which provide or enhance wildlife habitat and serve to extend the local desert environment into the urban design of the Town.

OSC 4-7 Promote biodiversity by protecting natural communities with high habitat value, protecting habitat linkages to prevent further fragmentation, and encouraging an appreciation for the natural environment and biological resources.

OSC 4-8 Require that development projects provide copies of required permits, or verifiable statements that permits are not required, from the California Department of Fish and Game (2081 Individual Take Permit) and US Fish and Wildlife Service (Section 7 Take Authorization) prior to receiving grading permits or other approvals that would permit land disturbing activities and conversion of habitats or impacts to protected species.

OSC 4-9 Require each future proposed development project to conduct an analysis to determine if sensitive biological resources and wildlife corridors would be impacted by the development application and adopt process and mitigation regulations for potential resource impacts.

OSC 4-10 Encourage context sensitive development within OSRAs and WCEAs while preserving biological resources and wildlife movement.

OSC 4-11 Require biological resource surveys and assessments as part of the application process for new developments within or adjacent to OSRAs and WCEAS.

OSC 4-12 Coordinate with CDFW and USFWS in the review of biological resource assessments and surveys for private land development applications when applicable.

OSC 4-13 Coordinate with CDFW and USFWS to ensure that state and federal protections required by the Endangered Species Act and the Migratory Bird Treaty Act are addressed during the planning process.

***Open Space and Conservation Implementation Actions***

OSC 1 Implement development regulations and guidelines that minimize or eliminate impacts of development on natural open space areas.

OSC 10 Review development proposals adjacent to designated open space lands and assure that land uses are compatible, and buffers and/or linkages are provided when necessary to maintain natural resource value.

OSC 15 Establish standards and regulations that implement, support, and protect open space, wildlife corridors, and protected biological resources.

OSC 16 Establish standards and regulations in the Development Code which minimize impacts of new development on open space and conservation areas.

OSC 17 Develop flexible development guidelines, standards, and regulations that encourage the provision of open space amenities within new development.

OSC 18 Adopt a comprehensive grading ordinance that will protect and conserve open space and natural and visual resources.

OSC 19 Revise landscape standards and guidelines to encourage the retention and use of existing native and approved non-native drought tolerant plant species in development.

OSC 20 Identify and assess lands, based upon site specific biological resources evaluations within the WCEAs and OSRAs that are suitable for preservation and may be preserved as public or private lands and as passive or active open space.

OSC 21 Develop standards and guidelines for the WCEA and OSRA areas that includes the following strategies:

a) Maintain residential land use designations with low and very low densities in WCEA and OSRA areas.

b) Discourage conversion of low density residential uses in the WCEA and OSRA to higher density or non-residential uses, retaining on-site areas for undeveloped, natural open space.

c) Apply design features in the WCEA and OSRA that interface with the natural environment such as: limiting the amount of grading that can occur on site or identifying the type of fencing that can be installed that supports wildlife movement.

d) Develop and implement standards and guidelines which limit the maximum disturbance of the land in WCEAs and OSRAs. Design standards and guidelines shall address wildlife corridor connectivity, limitations of ground disturbance, and the retention of native, undisturbed open space.

OSC 22 Explore the possibility of developing a Transfer of Development Rights (TDR) ordinance, to allow the transfer of units or square footage from one property to another to preserve properties with significant biological resources, hillside areas and natural slopes. This may result in an increased density or intensity of the "receiving site" to preserve property development potential.

### 5.3.5 Existing Regulations and Standard Conditions

#### Federal

- Endangered Species Act (United States Code, Title 16, Sections 1531 et seq.)
- Clean Water Act (United States Code, Title 33, Sections 1251 et seq.)
- Migratory Bird Treaty Act (United States Code, Title 16, Sections 703-712)

#### State

- California Endangered Species Act (California Fish and Game Code, Section 2080)
- California Fish and Game Code, Section 1600
- California Desert Native Plants Act (California Food and Agriculture Code Sections 80001 et seq.)
- California Natural Community Conservation Planning Program (California Fish and Game Code, Sections 2800 et. seq.)

#### Local

- Plant Protection and Management Ordinance (Ordinance No. 140)

### 5.3.6 Level of Significance Before Mitigation

Upon implementation of regulatory requirements and standard conditions of approval, the following impacts would be less than significant: Impact 5.3-9.

Without mitigation, the following impacts would be **potentially significant**:

- Impact 5.3-1 Buildout of the General Plan Update would impact sensitive species.

- Impact 5.3-2 Implementation of the General Plan Update would impact habitat types inhabited by sensitive species.

- Impact 5.3-3 General Plan Update implementation would cause the loss of undetermined amounts of riparian habitats.

- Impact 5.3-4 Developments according to the General Plan Update could impact waters and wetlands jurisdictional to the US Army Corps of Engineers, California Department of Fish and Wildlife, and the Colorado River Basin Regional Water Quality Control Board.

- Impact 5.3-5 Implementation of the General Plan Update would involve developments in wildlife linkages in the Town identified in regional wildlife connectivity studies and designated as Wildlife Corridor Evaluation Areas by the Town.

- Impact 5.3-6 General Plan Update implementation could impact migratory birds protected under the Migratory Bird Treaty Act and the California Fish and Game Code.

- Impact 5.3-7 Projects developed according to the proposed General Plan Update could impact plants protected by the Town's Plant Protection and Management Ordinance.

- Impact 5.3-8 General Plan Update Implementation would involve developments within the Open Space Resource Areas and would thus impact biological resources in those areas.

### 5.3.7 Mitigation Measures

#### Impact 5.3-1

3-1 The Town of Yucca Valley shall require applicants for future development projects that disturb undeveloped land to prepare a biological resources survey. The biological resources survey shall be conducted by a qualified biologist. The biological resources survey shall include, but not be limited to:

- Analysis of available literature and biological databases, such as the California Natural Diversity Database, to determine sensitive biological resources that have been reported historically from the proposed development project vicinity.
- Review of current land use and land ownership within the proposed development project vicinity.
- Assessment and mapping of vegetation communities present within the proposed development project vicinity.
- Evaluation of potential local and regional wildlife movement corridors.
- General assessment of potential jurisdictional areas, including wetlands and riparian habitats.

a) If the proposed development project site supports vegetation communities that may provide habitat for special status plant or wildlife species, a focused habitat assessment shall be conducted by a qualified biologist to determine the potential for special status plant and/or animal species to occur within or adjacent to the proposed development project area.

b) If one or more special status species has the potential to occur within the proposed development project area, focused species surveys shall be conducted to determine the presence/absence of these species to adequately evaluate potential direct and/or indirect impacts to these species.

c) If construction activities are not initiated immediately after focused surveys have been completed, additional preconstruction special status species surveys may be required, in accordance with the California Endangered Species Act and Federal Endangered Species Act, to assure impacts are avoided or minimized to the extent feasible. If preconstruction activities are required, a qualified biologist will perform these surveys as required for each special status species that is known to occur or has a potential to occur within or adjacent to the proposed development project area.

The results of the biological survey shall be presented in a biological resources survey letter report (for proposed development projects with no significant impacts) or biological resources technical report (for proposed development projects with significant impacts that require mitigation to reduce the impacts to below a level of significance) and submitted to the Town's Planning Department.

3-2 If sensitive biological resources are identified within or adjacent to the proposed development project area, as outlined in the biological resources survey letter report/biological resources technical report, the construction limits shall be clearly flagged to assure impacts to sensitive biological resources are avoided or minimized, to the extent feasible. Prior to implementing construction activities, the Town of Yucca Valley shall require applicants to contract with a qualified biologist to verify that the flagging clearly delineates the construction limits and sensitive resources to be avoided.

3-3 If sensitive biological resources are known to occur within or adjacent to the proposed development project area, as outlined in the biological resources survey letter report/biological resources technical report, the Town of Yucca Valley shall require applicants to contract with a qualified biologist to develop and implement a project-specific contractor training program to educate project contractors on the sensitive biological resources within and adjacent to the proposed development project area and measures being implemented to avoid and/or minimize impacts to these species.

3-4 If sensitive biological resources are present within or adjacent to the proposed development project area and impacts may result from construction activities, as outlined in the biological resources survey letter report/biological resources technical report, a qualified biological monitor may be required during a portion or all of the construction activities to ensure impacts to the sensitive biological resources are avoided or minimized to the extent feasible. The specific biological monitoring requirements shall be evaluated on a project by project basis. The qualified biological monitor shall be approved by the Town on a project by project basis based on applicable experience with the sensitive biological resources that may be impacted by the proposed development project activities.

### Impact 5.3-2

Implementation of Mitigation Measures 3-1, 3-2, 3-3, and 3-4.

### Impact 5.3-3

3-5 The Town of Yucca Valley shall require applicants of development projects that have the potential to affect jurisdictional resources, to contract with a qualified biologist to conduct a jurisdictional delineation following the methods outlined in the 1987 US Army *Corps of Engineers Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (2008) to map the extent of wetlands and nonwetland waters, determine jurisdiction, and assess potential impacts. The results of the delineation shall be presented in a wetland delineation letter report and shall be incorporated into the CEQA document(s) required for approval and permitting of the proposed development project.

3-6 The Town of Yucca Valley shall require applicants of development projects that have the potential to impact jurisdictional features to obtain permits and authorizations from the US Army Corps of Engineers, California Department of Fish and Wildlife, and/or Colorado River Basin Regional Water Quality Control Board. The agency authorization would include impact avoidance and minimization measures as well as mitigation measures for unavoidable impacts. Specific avoidance, minimization, and mitigation measures for impacts to jurisdictional resources shall be determined through discussions with the regulatory agencies during the proposed development project permitting process and may include monetary contributions to a mitigation bank or habitat creation, restoration, or enhancement.

### Impact 5.3-4

Implementation of Mitigation Measures 3-5 and 3-6.

### Impact 5.3-5

3-7 The Town of Yucca Valley shall require a habitat connectivity evaluation for development projects proposed within a Wildlife Corridor Evaluation Area (WCEA) and/or an Open Space Resource Area (OSRA). The results of the evaluation will be incorporated into the project's biological report required under Mitigation Measure 3-1. The habitat connectivity evaluation shall assess the potential for the

project to adversely affect the intended functions of the WCEA and/or OSRA. The evaluation shall also identify project design features that would reduce potential impacts and maintain functionality as habitat and for wildlife movement. To this end, the Town shall incorporate the following measures, to the extent practicable, into projects that would propose development within a WCEA and/or an OSRA:

- Adhere to low density zoning standards
- Encourage clustering of development
- Avoid known sensitive biological resources
- Provide shielded lighting adjacent to sensitive habitat areas
- Encourage development plans that maximize wildlife movement
- Provide buffers between development and wetland/riparian areas
- Protect wetland/riparian areas through regulatory agency permitting process
- Encourage wildlife-passable fence designs (e.g., 3-strand barbless wire fence) on property boundaries
- Encourage preservation of native habitat on the undeveloped remainder of developed parcels
- Minimize road/driveway development to help prevent loss of habitat due to roadkill and habitat loss
- Use native, drought-resistant plant species in landscape design
- Require implementation of mitigation measures within an OSRA
- Encourage participation in local/regional recreational trail design efforts

### Impact 5.3-6

3-8 The Town of Yucca Valley shall require applicants for new development projects to conduct a pre-construction general nesting bird survey within all suitable nesting habitat that may be impacted by active construction during the general avian breeding season (February 1 through August 31). The pre-construction surveys shall be conducted no more than seven days prior to initiation of construction. If no active avian nests are identified within the proposed development project area or within a 300-foot buffer of the proposed development project area, no further mitigation is necessary. If active nests of bird species covered by the Migratory Bird Treaty Act are detected within the proposed development project area or within a 300-foot buffer of the proposed development project area, construction shall be halted until the young have fledged, until a qualified biologist has determined the nest is inactive, or until appropriate mitigation measures that respond to the specific situation have been developed and implemented in consultation with the regulatory agencies.

### Impact 5.3-7

Implementation of Mitigation Measures 3-1, 3-2, 3-3, and 3-4.

### Impact 5.3-8

Implementation of Mitigation Measures 3-1, 3-2, 3-3, 3-4, and 3-7.

## 5.3.8 Level of Significance After Mitigation

### Impact 5.3-1

Buildout of the General Plan Update would impact sensitive species. Implementation of Mitigation Measures 3-1 through 3-4, including required preparation of a biological resources assessment surveying existing biological resources in the project area in compliance with the CESA and FESA, would ensure that impacts to special status species are avoided and/or minimized in accordance with local, state, and federal requirements. Impact 5.1-3, would be less than significant.

### Impact 5.3-2

Growth accommodated through long-term buildout of the Town of Yucca General Plan would result in significant loss of habitat. The CESA and FESA regulate the loss of habitat as it pertains to special status plant and animal species. Coordination with the USFWS and CDFW would ensure that, on a project-by-project basis, habitat is replaced or conserved in accordance with the agency-determined ratios if it is determined, through consultation, that special status plant and animal species occur or are likely to occur onsite. Implementation of Mitigation Measures 3-1, 3-2, 3-3, and 3-4 would also mitigate impacts for each individual project site. However, to this date, no regional habitat conservation plan/natural communities conservation plan has been prepared for the Morongo Basin that mitigates for the cumulative loss of habitat as a result of future development. Consequently, while impacts from loss of habitat would be mitigated for each individual development through consultation with the relevant federal and state agencies, cumulative impacts of habitat loss are considered a **Significant Unavoidable** impact associated with full buildout of the General Plan.

### Impact 5.3-3

Implementation of the General Plan Update could cause the loss of undetermined amounts of riparian habitat. Mitigation Measures 3-5 would require preparation of jurisdictional delineations mapping waters, wetlands, and riparian habitats jurisdictional to the Corps, CDFW, and CRBRWQCB specifying impacts to such resources. Mitigation Measure 3-6 would require project applicants to obtain permits and authorizations from the Corps, CDFW, and CRBRWQCB specifying measures to avoid, minimize, and mitigate impacts. Impacts to jurisdictional riparian habitats would be less than significant.

### Impact 5.3-4

Developments pursuant to the General Plan Update could impact waters and wetlands jurisdictional to the Corps, CDFW, and CRBRWQCB. Mitigation Measures 3-5 and 3-6 would require preparation of jurisdictional delineations; and permits and authorizations to avoid, minimize, and mitigate impacts. Impacts to jurisdictional waters and wetlands would be less than significant.

### Impact 5.3-5

Implementation of the General Plan Update would involve developments in WCEAs in the Town. Mitigation Measure 3-7 would require preparation of habitat connectivity evaluations for each project proposed in a WCEA or OSRA; and it specifies measures to be taken, to the extent practicable, to minimize impacts on wildlife movement. Impacts on wildlife movement would be less than significant.

### Impact 5.3-6

General Plan Update implementation could impact migratory birds protected under the Migratory Bird Treaty Act and the California Fish and Game Code. Mitigation Measure 3-8 would require pre-construction general nesting bird surveys and avoidance of impacts to active nests of bird species protected by federal and state laws. Impacts to migratory birds would be less than significant.

### Impact 5.3-7

Implementation of the proposed General Plan Update could impact plants protected by the Town's proposed Plant Protection and Management Ordinance. Implementation of Mitigation Measures 3-1 through 3-4 would reduce impacts to plants protected by the Town's Plant Protection and Management Ordinance to less than significant.

### Impact 5.3-8

Implementation of the General Plan Update would involve developments within the OCEAs and could thus impact biological resources. Implementation of Mitigation Measures 3-1 through 3-4 and 3-7 would reduce impacts to biological resources within OSRAs to less than significant.

## 5.3.9 References

Alden Environmental. 2013, January 22. Biological Technical Report for the Town of Yucca Valley General Plan Update.

California Department of Fish and Wildlife (CDFW). 2013, April 18. Pacific Flyway Council. http://pacificflyway.gov/About.asp.

Friends of Big Morongo Canyon Preserve (FBMCP). 2013, April 17. Birds of Big Morongo Canyon Preserve. http://www.bigmorongo.org/a3Birds.htm.

US Fish and Wildlife Service (USFWS). 2001, August 3. Pacific Flyway. http://www.pacificflyway.gov/Documents/Pacific_map.pdf.

US Geological Survey (USGS). 2012. National Hydrography Dataset.

Yucca Valley General Plan, Town of. 1995, December 14. Chapter IV: Environmental Resources.

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## 5.4 CULTURAL RESOURCES

Cultural resources include places, objects, and settlements that reflect group or individual religious, archaeological, architectural, or paleontological activities. Such resources provide information on scientific progress, environmental adaptations, group ideology, or other human advancements. This section of the Draft Environmental Impact Report (DEIR) evaluates the potential for implementation of the Yucca Valley General Plan Update to impact cultural resources in the Town of Yucca Valley (Town). The analysis in this section is based, in part, upon the following information:

- *Paleontological and Cultural Resources Assessment for the Town of Yucca Valley General Plan Update*, Cogstone, November 2012

A complete copy of this study is included as Appendix E to this DEIR.

### 5.4.1 Environmental Setting

#### *5.4.1.1 Regulatory Setting*

Federal and state regulations, plans, or guidelines that are potentially applicable to the proposed project are summarized below.

#### Federal Regulations

***National Historic Preservation Act***

The National Historic Preservation Act (NHPA) of 1966 is the primary federal law governing the preservation of cultural and historic resources in the United States. The law establishes a national preservation program and a system of procedural protections that encourage the identification and protection of cultural and historic resources of national, state, tribal, and local significance. Primary components of the NHPA include:

- Articulation of a national policy governing the protection of historic and cultural resources.
- Establishment of a comprehensive program for identifying historic and cultural resources for listing in the National Register of Historic Places.
- Creation of a federal-state/tribal-local partnership for implementing programs established by the act.
- Requirement that federal agencies take into consideration actions that could adversely affect historic properties listed or eligible for listing on the National Register of Historic Places, known as the Section 106 Review Process.
- Establishment of the Advisory Council on Historic Preservation, which oversees federal agency responsibilities governing the Section 106 Review Process.
- Placement of specific stewardship responsibilities on federal agencies for historic properties owned or within their control (Section 110 of the NHPA).

### *National Register of Historic Places*

The National Register of Historic Places (NRHP) is the nation's official list of buildings, structures, objects, sites, and districts worthy of preservation because of their significance in American history, architecture, archeology, engineering, and culture. The NRHP recognizes resources of local, state, and national significance that have been documented and evaluated according to uniform standards and criteria. Authorized under the NHPA, the NRHP is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect historic and archeological resources. The National Register is administered by the National Park Service, which is part of the U. S. Department of the Interior.

To be eligible for listing in the National Register, a resource must meet at least one of the following criteria:

- Is associated with events that have made a significant contribution to the broad patterns of our history.
- Is associated with the lives of persons significant in our past.
- Embodies the distinctive characteristics of a type, period or method of construction, or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction.
- Has yielded, or may be likely to yield, information important in history or prehistory.

### *Archaeological Resources Protection Act*

The Archaeological Resources Protection Act of 1979 regulates the protection of archaeological resources and sites that are on federal and Indian lands.

*Native American Graves Protection and Repatriation Act*

The Native American Graves Protection and Repatriation Act is a federal law passed in 1990 that provides a process for museums and federal agencies to return certain Native American cultural items, such as human remains, funerary objects, sacred objects, or objects of cultural patrimony to lineal descendants and culturally affiliated Indian tribes.

## State Regulations

### *California Public Resources Code*

Archaeological, paleontological, and historical sites are protected pursuant to a wide variety of state policies and regulations enumerated under the California Public Resources Code. In addition, cultural and paleontological resources are recognized as nonrenewable and therefore receive protection under the California Public Resources Code and CEQA.

- California Public Resources Code 5020–5029.5 continued the former Historical Landmarks Advisory Committee as the State Historical Resources Commission. The commission oversees the administration of the California Register of Historical Resources and is responsible for the designation of State Historical Landmarks and Historical Points of Interest.
- California Public Resources Code 5079–5079.65 defines the functions and duties of the Office of Historic Preservation (OHP). OHP is responsible for the administration of federally and state mandated historic preservation programs in California and the California Heritage Fund.

- California Public Resources Code 5097.9–5097.991 provides protection to Native American historical and cultural resources, and sacred sites and identifies the powers and duties of the Native American Heritage Commission (NAHC). It also requires notification to descendants of discoveries of Native American human remains descendants and provides for treatment and disposition of human remains and associated grave goods.

***California Register of Historic Resources***

The State Historical Resources Commission has designed this program for use by state and local agencies, private groups, and citizens to identify, evaluate, register, and protect California's historical resources. The California Register of Historic Resources (CRHR) is the authoritative guide to the state's significant historical and archeological resources. It encourages public recognition and protection of resources of architectural, historical, archeological, and cultural significance; identifies historical resources for state and local planning purposes; determines eligibility for state historic preservation grant funding; and affords certain protections under CEQA.

To be eligible for listing in the CRHR, a resource must meet at least one of the following criteria:

- Associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States.
- Associated with the lives of persons important to local, California or national history.
- Embodies the distinctive characteristics of a type, period, region or method of construction or represents the work of a master or possesses high artistic values.
- Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California or the nation.

In addition to having significance, resources must have integrity for the period of significance. The period of significance is the date or span of time within which significant events transpired or significant individuals made their important contributions. Integrity is the authenticity of a historical resource's physical identity as evidenced by the survival of characteristics or historic fabric that existed during the resource's period of significance.

***California Historical Landmarks***

California Historical Landmarks are buildings, structures, sites, or places that have been determined to have statewide historical significance by meeting at least one of the criteria listed below. The resource also must be approved for designation by the County Board of Supervisors or the City/Town Council in whose jurisdiction it is located; be recommended by the State Historical Resources Commission; and be officially designated by the Director of California State Parks. A resource must meet at least one of these following criteria:

- Be the first, last, only, or most significant of its type in the state or within a large geographic region (Northern, Central, or Southern California).
- Be associated with an individual or group having a profound influence on the history of California.
- Be a prototype of, or an outstanding example of, a period, style, architectural movement or construction or is one of the more notable works or the best surviving work in a region of a pioneer architect, designer or master builder.

***California Points of Historical Interest***

California Points of Historical Interest are sites, buildings, features, or events that are of local (city or county) significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value. Points of Historical Interest designated after December 1997 and recommended by the State Historical Resources Commission are also listed in the California Register. No historical resource may be designated as both a landmark and a point. If a point is subsequently granted status as a landmark, the point designation will be retired.

To be eligible for designation as a Point of Historical Interest, a resource must meet at least one of the following criteria:

- The first, last, only, or most significant of its type within the local geographic region (City or County).
- Associated with an individual or group having a profound influence on the history of the local area.
- A prototype of, or an outstanding example of, a period, style, architectural movement or construction or is one of the more notable works or the best surviving work in the local region of a pioneer architect, designer or master builder.

***California Senate Bill 18***

Senate Bill (SB) 18, the Traditional Tribal Cultural Places (TTCPs) law, requires local jurisdictions to provide opportunities for involving NAHC and any appropriate California Native Americans tribes in the land planning process for the purpose of preserving TTCPs. A city or county, when proposing to adopt, amend, revise, or update a general plan or specific plan, must send a written request to NAHC asking for a list of tribes to consult. NAHC is required to provide this list within 30 days of receiving the request. The city or county must send a Tribal Consultation Request letter to each tribal representative on the list; tribes then have 90 days in which to respond to the Consultation Request if they want to consult with the local government to determine whether the project would have an adverse impact on the TTCP. There is no statutory limit on the consultation duration. The local government refers action to agencies 45 days before the action is publicly considered by the local government council, following the CEQA public review time frame. The CEQA public distribution list may include tribes listed by NAHC who have requested consultation or it may not. If the NAHC, tribe, and interested parties agree upon the mitigation measures necessary for the project, they would be included in the project's EIR. If both the City and tribe agree that adequate mitigation or preservation measures cannot be taken, then neither party is obligated to take action.

In addition, SB 18 provides a new definition of TTCP requiring a traditional association of the site with Native American traditional beliefs, cultural practices, or ceremonies or the site must be shown to actually have been used for activities related to traditional beliefs, cultural practices, or ceremonies. Previously, the site was defined to require only an association with traditional beliefs, practices, lifeways, and ceremonial activities. In addition, SB 18 also amended California Civil Code Section 815.3 and adds California Native American tribes to the list of entities that can acquire and hold conservation easements for the purpose of protecting their cultural places.

### *5.4.1.2 Existing Setting*

#### Natural Setting

The Town is located along the southwestern margin of the Mojave Desert in southwestern San Bernardino County. Elevations range from approximately 4,400 feet above mean sea level (amsl) in the northern portion and gradually decline to approximately 3,200 feet amsl near the Yucca Valley Airport. The Town is mapped as geologic sediments of Quaternary alluvium, Quaternary older alluvium, Quaternary Older fan, Quaternary older gravel, Quaternary older fanglomerate, basalt, Old Woman Sandstone, quartz monzonite, monzonite porphyry, and gneissic rocks (Cogstone 2012). The developed portion of the Town is mostly on Quaternary alluvium and Quaternary older alluvium.

## Cultural Setting

### *Prehistoric Cultural Setting*

Excluding the controversial "Early Man" preprojectile point materials from the Calico Ghost Town area, Native American occupation of the Yucca Valley and neighboring regions can be divided into five cultural periods: Paleoindian/San Dieguito (ca. 12,000–7000 years before present (B.P.); Pinto (ca. 7000–4000 B.P.); Gypsum Period (ca. 4000–1500 B.P.); Saratoga Springs Period (ca. 1500–750 B.P.); and the Late Prehistoric Period (ca. 750–200 B.P.), which ended in the ethnographic period.

### *Ethnographic Setting*

At the time of historic contact, the project region was within the ethnographic territory of the Serrano, which comes from a Spanish word meaning "mountaineer" or "highlander." The Serrano were nomadic and migratory, and according to lore passed down, they migrated to the cool, pine forests of the San Bernardino Mountains to the west during the summer and returned to the desert regions during the winter. Prior to European contact, the Serrano were primarily hunters and gatherers. The Serrano culture area extends from the San Bernardino Mountains south to Yucaipa Valley, east to the Mojave River watershed, and north to the Twentynine Palms region (Cogstone 2012). Most Serrano village sites were in the foothills of the upper Sonoran zone, with a few outliers near permanent water sources on the desert floor or in the forest transition zone.

Prehistoric and ethnohistoric archaeological sites likely to be found within the Town include: villages represented by residential bases with house features (stone and/or adobe), storage features, human burials and cremations, and rock art (pictographs and/or petroglyphs); temporary encampments represented by flaked and ground stone scatters with fire hearths and possibly storage features; resource procurement and processing sites represented by bedrock milling stations, tool stone quarries, flaked and ground stone artifact scatters, and/or hunting blinds; trails demarked by cairns and possibly rock art; isolated cultural features such as rock art, intaglios, and/or shrines; isolated flaked or ground stone artifacts; and traditional cultural landscapes/sacred places that may include important gathering or collecting places, springs, mountain tops or rock outcroppings, burial grounds, etc.

### *Historical Setting*

*Spanish and American Periods (ca. 1769–1848)*

Although the Serrano continued to reside in the greater Yucca Valley region as Spanish and Mexican prospectors started to make their way into the valley, they suffered from devastating smallpox epidemics in 1825 and again in 1862. Early colonizers largely ignored the arid, inland regions of southern California, including the Yucca Valley area. It is reported that the region area was first explored by Spaniards making forays northward from Mexico along the southern California coast and Colorado River area.

Under the Treaty of Cordova in 1821, Mexico gained independence from Spain and control of California. By 1834, the Spanish mission lands were being redistributed as private Mexican land grants called "ranchos." There is no historical evidence of any Spanish or Mexican settlements in the Yucca Valley area, although it was essentially under the influence of Mexico until the Treaty of Guadalupe Hidalgo in 1848, when southern California fell under the control of the United States Government (Cogstone 2012).

*Early American Period (1850–1900)*

With the region under American control and the discovery of gold in California in 1848, the stage was set for admittance of California into the union in 1850, which led to the dramatic influx of non-Native people from throughout the nation as well as from other countries. From the 1870s to the turn of the century, the general region was used largely by cattlemen and gold mining prospectors, especially after the discovery of gold east of what is now

Twentynine Palms. The first settlers in the project study area were the de Crevecoeur brothers and their families in approximately 1873, running both cattle and sheep.

Both cattle rustlers and legitimate cattlemen continued to use the project study area throughout the 1870s, and by the early 1880s, both large and small gold mines were in operation, several continuing until the mid-1910s. In 1881, Mark "Chuck" Warren expanded his cattle operations west of his Big Morongo Canyon Ranch and dug a well in what was to become Yucca Valley. The well, windmill, and small frame house, are adjacent to the present-day Yucca Valley Airport. According to the Bureau of Land Management Government Land Office records, no sizeable land patents were filed in the project study area during this era (Cogstone 2013).

*Early 20th Century (1900–1949)*

After the turn of the century, homesteading in the Morongo Basin began. A government land locator named Percy as well as Joseph and Mary Heard were among the first individuals who filed for land patents between 1910 and 1916, mostly in the western portion of the area near Big Skies County Club. Other land patents were filed soon after. Many individuals and families did not stay in the Morongo Basin long due to harsh living conditions such as lack of water and the general difficulty in raising crops in a desert. Warren's Well, the Tunnel (a spring south of the Town), and the Oasis of Mara (in the Twentynine Palms area) provided the only water for settlers until they could dig their own wells.

The first school in Yucca Valley was established in 1915 with 15 students, following the establishment of an earlier school in Morongo Valley. A telephone was not available in Yucca Valley until 1935, and population did not dramatically increase until after World War II when hundreds of land patents were filed. The highway from Morongo Valley through Yucca Valley was constructed in 1937 but not paved until 1951. Electricity did not appear in the project study area until 1946, three years after streets were laid out and the Yucca Water Company, Ltd. was established.

The last cattle drive through Yucca Valley was in 1947, the same year the Yucca Valley Airstrip was constructed to accommodate moviemakers, who were accessing nearby Pioneertown to film westerns in the late 1940s, 1950s, and 1960s (Cogstone 2012).

*Late 20th Century (Post-1950)*

By 1966, Yucca Valley had a population of 8,197 and encompassed approximately 33 square miles. Only two years earlier, natural gas lines were installed. Primary industries in the Town switched from mining, cattle, and crops to real estate and construction, reflecting the population growth. Multiple businesses, shopping facilities, and professional services developed within the project study area during the 1950s and 1960s. The 1950s saw the creation of the Yucca Valley Chamber of Commerce, Morongo Unified School District, the Yucca Valley Sheriff's Reserve Unit, and the Yucca Valley Park District. During the 1960s, due to the increased population growth, chain stores such as Safeway and Bank of America were built in Yucca Valley, as were the Hi-Desert Memorial Hospital facility and the Hi-Desert Nature Center. Also during this time, much of the frontage properties were developed along State Route 62 (Twentynine Palms Highway). In 1964, an attempt to incorporate Yucca Valley into a city was vetoed by voters; however, by 1991, Yucca Valley was incorporated as a town and had a population of 20,700 as of the 2010 census.

The significant mid-century population growth of the Town of Yucca Valley is reflected in the number of land patents filed after 1950. The State of California and 140 individuals filed patents for five acres or more between 1950 and 1959. However, the number of patents filed between 1960 and 1966 dropped by almost half to 79 individuals. The Yucca Valley Lions Club Company, the Yucca Valley Parks and Recreation, and the County of San Bernardino filled out the remainder of land patents filed during this era (Cogstone 2012).

## Cultural Resources

As a part of the Paleontological and Cultural Resources Assessment prepared by Cogstone for the General Plan Update (see Appendix E), a records search for archaeological and historical records was completed for the entire project study area at the San Bernardino Information Center (SBIC) of the California Historic Resources Inventory System (CHRIS). In addition to the records at the SBIC, a variety of other sources were consulted to obtain additional cultural resources information regarding the project study area, including the NRHP, CRHR, California Historical Resources Inventory, California Historical Landmarks, and California Points of Historical Interest. Local county registries were also examined

The records search determined that there are nine prehistoric resources, three historical archaeological resources, and five historic resources in the Town, as shown in Table 5.4-1 and discussed in more detail below.

***Table 5.4-1***
***Previously Recorded Cultural Resources***

| *Reference* | *Site Type* | *Date* | *Time Period* |
|---|---|---|---|
| P1033-H | Historical school house | ND | Mid-20th Century |
| P-36-001605 | Prehistoric camp site | 1975 | Prehistoric |
| P-36-002379 | Prehistoric lithic artifact scatter | 1973 | Prehistoric |
| P-36-002380 | Prehistoric lithic artifact scatter | 1973 | Prehistoric |
| P-36-004851 | Prehistoric quarry site | 1981 | Prehistoric |
| P-36-004852 | Prehistoric lithic artifact scatter | 1981 | Prehistoric |
| P-36-004853 | Prehistoric lithic artifact scatter | 1981 | Prehistoric |
| P-36-004854 | Prehistoric lithic artifact scatter | 1981 | Prehistoric |
| P-36-009610 | Historical ranch complex (Warren's Well) | 1999 | Late 19th Century |
| P-36-009988 | Historical can scatter | 2000 | Early 20th Century |
| P-36-009994 | Historical ranch complex (Warren's Tanks) | 1999 | Turn of 20th Century |
| P-36-010525 | Historical road (CA State Route 62) | 2000 | Mid-20th Century |
| P-36-011658 | Historical dove blind and associated trash | 2004 | Early to Mid-20th Century |
| P-36-013387 | Prehistoric milling slick | 2007 | Prehistoric |
| P-36-013394 | Historical folk art sculptures (Desert Christ Park) | 2007 | Mid-20th Century |
| P-36-033413 | Prehistoric pottery sherds isolate | 2007 | Prehistoric |
| P-36-014407H | Historic trash | 2008 | Mid-20th Century |

Source: Cogstone 2013.

### *Paleontological Resources*

Paleontological resources are mapped based on the presence of known resources and the geologic sediments in the region. Based on the age of the sediment and rock types found in Yucca Valley, the Town's potential fossil yields range from very low to moderate in sensitivity. Figure 5.4-1, *Paleontological Resources Sensitivity Map*, identifies areas where fossil resources are likely to be found. Two vertebrate fossils, an extinct horse and a desert tortoise, are known within the west-central portion of the Town in Quaternary older alluvium. Additional fossils are known regionally in the same sediments (near Twentynine Palms) and include extinct animals such as mammoth, ground sloths, camel, horse, llama, dwarf pronghorn, and saber-toothed cat. Fossils are also known from the Old Woman Sandstone in the local region. These include extinct animals such as a zebra-like horse and Furlong's rabbit in addition to cotton rat, wood rat, and brown bat.

***Archaeological Resources***

The Town and vicinity have prehistoric archeological resources ranging from approximately 10,000 years ago to 200 years ago. As shown in Table 5.4-1, the prehistoric archaeological sites previously recorded include five lithic artifact scatters, a camp site, a quarry site, a bedrock milling station site, and one isolated pottery sherd. The historical archaeological sites include two historic refuse scatters and a dove blind associated with a refuse scatter.

***Historical Resources***

As shown in Table 5.4-1, the historic resources in the Town and vicinity include a historical school house, Warren's Well, Warren's Ranch/Tanks, Desert Christ Park (a local folk art site), and State Route 62 (Twentynine Palms Highway).

## 5.4.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

C-1 Cause a substantial adverse change in the significance of an historical resource pursuant to Section 15064.5.

C-2 Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5.

C-3 Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

C-4 Disturb any human remains, including those interred outside of formal cemeteries.

The Initial Study, included as Appendix A, substantiates that impacts associated with the following thresholds would be less than significant: C-4. This impact will not be addressed in the following analysis.

CEQA Guidelines Section 15064.5 provides direction on determining significance of impacts to archaeological and historical resources. Generally, a resource shall be considered "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code Section 5024.1, Title 14 CCR, Section 4852), listed in section 5.4.1.1.

The fact that a resource is not listed in determined to be eligible for listing in the California Register of Historical Resources, or not included in a local register of historical resources does not preclude a lead agency from determining it may be a historical resource.

## 5.4.3 Environmental Impacts

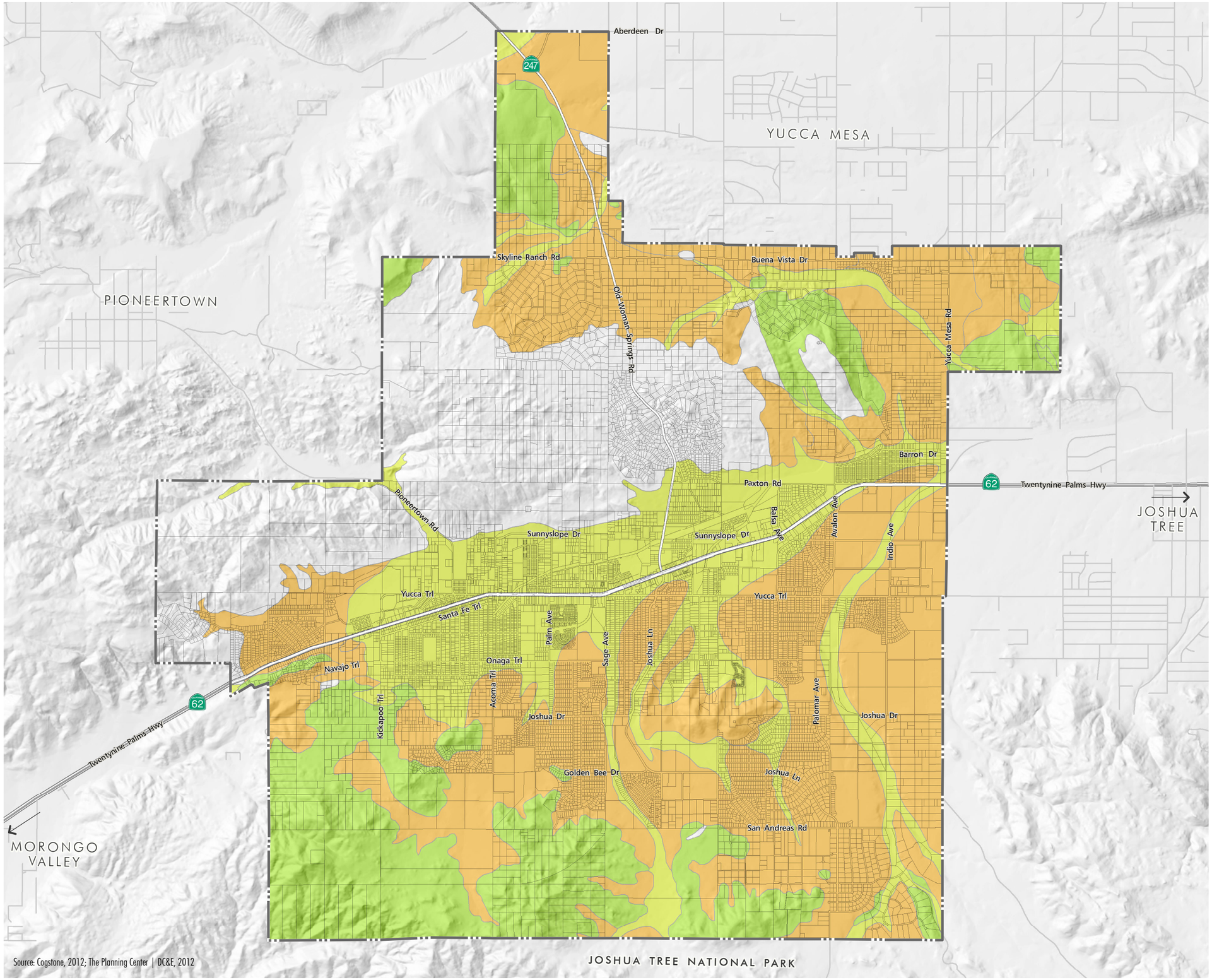
The following impact analysis addresses thresholds of significance for which the Initial Study disclosed potentially significant impacts. The applicable thresholds are identified in brackets after the impact statement.

***IMPACT 5.5-1: FUTURE DEVELOPMENT IN THE TOWN THAT WOULD BE ACCOMODATED BY THE GENERAL PLAN UPDATE COULD IMPACT HISTORIC RESOURCES. [THRESHOLD C-1]***

***Impact Analysis:*** The records search conducted as a part of the Paleontological and Cultural Resources Assessment prepared by Cogstone for the General Plan Update (Appendix E) determined that there are five historic resources in the Town and vicinity. As shown in Table 5.4-1, these resources include a historical school house, Warren's Well, Warren's Ranch/Tanks, Desert Christ Park (a local folk art site), and State Route 62 (Twentynine Palms Highway).

Figure 5.4-1

# PALEONTOLOGICAL RESOURCES SENSITIVITY MAP




Source: Cogstone, 2012; The Planning Center | DC&E, 2012

YUCCA VALLEY GENERAL PLAN
DRAFT EIR

TYV-01 08.26.13

0 1,500 3,000 6,000 Feet

THE PLANNING CENTER DC&E

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Adoption of the General Plan Update in itself would not directly affect any historical structures or resources. However, the aforementioned historic structures and sites may be vulnerable to development activities accompanying infill, redevelopment, or revitalization that would be accommodated under the General Plan Update. In addition, other structures that could meet the National Register criteria upon reaching 50 years of age might be impacted by development or redevelopment activity.

Historical resources are protected by a wide variety of state policies and regulations under the California Public Resources Code. The open space and conservation element of the General Plan Update also contains a number of policies that specifically address sensitive known and potential historical resources and their protection, including policies OSC 7-1, OSC 7-2, OSC 7-4, and OSC 7-5, below in Section 5.4.4, *Relevant General Plan Policies*. For example, policy OSC 7-1 requires development proposals to locate, identify, and evaluate archaeological, historical, Native American, and other cultural sites and ensure that appropriate action is taken to protect these resources.

Additionally, at the time a development project is proposed adjacent or in proximity to a known or potential historic structure or resource, the project-level CEQA document of the development project would need to identify any impacts (direct or indirect) that the project could have on it. The CEQA Guidelines require a project that will have potentially adverse impacts on historical resources to conform to the Secretary of the Interior's Standards for the Treatment of Historic Properties. Furthermore, historic sites or resources listed in the national, state, or local registers maintained by the Town would be protected through local ordinances, the General Plan Update policies, and state and federal regulations restricting alteration, relocation, and demolition of historical resources.

***IMPACT 5.5-2: FUTURE DEVELOPMENT IN THE TOWN THAT WOULD BE ACCOMMODATED BY THE GENERAL PLAN UPDATE COULD IMPACT KNOWN AND UNKNOWN ARCHAEOLOGICAL AND/OR PALEONTOLOGICAL RESOURCES. [THRESHOLDS C-2 AND C-3]***

***Impact Analysis:*** Adoption of the General Plan Update in itself would not directly affect archaeological or paleontological resources or Native American resources. However, the majority of the Town consists of vacant land. As shown in Table 4-1, *Existing Land Use Summary*, and Figure 3-3, *Existing Land Use*, the vast majority of Town land is either single-family land uses (24.8 percent) or vacant (65.4 percent). This is due to the Town's low density residential character and isolated, high-desert location. The Town's abundant vacant land generally consists of undeveloped desert saltbrush scrub, Joshua tree woodland, and pinyon-juniper woodland.

Long-term implementation of the General Plan Update land use plan (see Figure 3-5, *Proposed Land Use Plan*) could allow development (e.g., new development, infill development, redevelopment, and revitalization/restoration), including grading, of known and unknown sensitive areas. Grading and construction activities of undeveloped areas or redevelopment that requires more intensive soil excavation than in the past could potentially cause the disturbance of archeological, paleontological, or Native American resources. Therefore, future development that would be accommodated by the General Plan Update could potentially unearth previously recorded unrecorded archeological, paleontological, or Native American resources. Following is a discussion of these sources and their potential impacts.

### Archeological and Paleontological Resources

The records search conducted as a part of the Paleontological and Cultural Resources Assessment prepared by Cogstone for the General Plan Update (Appendix E) determined that there are nine prehistoric archeological resources and three historical archaeological resources within the Town. As shown in Table 5.4-1, the prehistoric archaeological sites recorded previously include five lithic artifact scatters, a camp site, a quarry site, a bedrock milling station site, and one isolated pottery sherd. The historical archaeological sites include two historic refuse scatters and a dove blind associated with a refuse scatter.

Figure 5.4-1, *Paleontological Resources Sensitivity Map*, identifies areas where fossil resources are likely to be found within the Town. Based on the age of the sediment and rock types found in Yucca Valley, the Town's potential fossil yields range from very low to moderate in sensitivity, as shown if Figure 5.4-1. Two vertebrate fossils, one of an extinct horse and the other a desert tortoise, are known within the west-central portion of the Town in Quaternary older alluvium. Additional fossils are known regionally in the same sediments (near Twentynine Palms) and include extinct animals such as mammoth, ground sloths, camel, horse, llama, dwarf pronghorn, and saber-toothed cat. Fossils are also known from the Old Woman Sandstone in the local region. These include extinct animals such as a zebra-like horse and Furlong's rabbit in addition to cotton rat, wood rat, and brown bat. Developments that requires excavations below ground surface in areas mapped as having moderate fossil yield potential have the potential to uncover paleontological resources.

The open space and conservation element of the General Plan Update contains policies that specifically address sensitive known and potential archeological and paleontological resources and their protection, including policies OSC 1-2, OSC 1-3, OSC 1-5, OSC 1-6, OSC 7-1, OSC 7-2, OSC 7-4, OSC 7-4, OSC 7-5, OSC 7-6, OSC 7-7, and OSC 8-1, as outlined below in Section 5.4.4, *Relevant General Plan Policies*. For example, policy OSC 7-1 requires development proposals to locate, identify, and evaluate archaeological, historical, Native American and other cultural sites, and ensure that appropriate action is taken to protect these resources. Policy OSC 7-3 requires that a paleontologist be on call to document and recover paleontological resources discovered during excavation.

The proposed General Plan Update land use plan (see Figure 3-5) also designates certain areas of the Town as Open Space Conservation and Open Space Recreation, further assuring that known and potential archeological and paleontological resources are protected through the conservation of open space areas. For example, to help implement the preservation of open space areas, policy OSC 1-5 encourages new development to retain natural open space areas as part of project design to the greatest extent practicable.

Additionally, archaeological and paleontological sites are protected by a wide variety of existing federal, state, and local regulations and policies (see *Regulatory Background* discussion above under Section 5.4.1), including the California Public Resources Code. Cultural and paleontological resources are also recognized as nonrenewable and therefore receive protection under the California Public Resources Code and CEQA. Review and protection of archaeological and paleontological resources are also afforded by CEQA for individual development projects subject to discretionary actions that are implemented in accordance with the land use plan of the General Plan Update. Per Public Resources Code Section 21083.2 of CEQA, the lead agency is required to determine whether a development project may have a significant effect on archaeological or paleontological resources. If the lead agency determines that it, may the environmental document is required to address the issue of those resources. However, in the event of an unanticipated discovery of archaeological or paleontological resources during grading and excavation of a development site, development proposals are required to ensure that appropriate action is taken to protect these resources, as indicated in policy OSC 7-1.

It is also important to note that the General Plan Update is a regulatory document that sets forth the framework for future growth and development and does not directly result in development in and of itself. Before any development can occur in the Town, all such development is required to be analyzed for conformance with the General Plan, zoning requirements, and other applicable local and state requirements; comply with the requirements of CEQA; and obtain all necessary clearances and permits.

### Native American Resources and Consultation

As a part of the Paleontological and Cultural Resources Assessment prepared by Cogstone (Appendix E), a Sacred Lands File search was requested from NAHC on December 2, 2011. On December 5, 2011, NAHC replied that there were no known Native American cultural resources previously documented within the project study area (Cogstone 2012). However, NAHC did recommend that the Town contact and consult with 12 Native American tribes or individuals that may have additional knowledge of the religious and cultural significance of historic properties within or immediately adjacent to the project study area for further information.

Letters requesting information on any heritage sites and containing maps and study information were sent on December 7, 2011, to the 12 Native American contacts. After no responses were received, follow-up e-mails were sent and phone calls were placed with the Native America contacts on December 28, 2011, and again on January 5, 2012. To date, no responses have been received from the 12 Native American tribes or individuals contacted.

Additionally, in accordance with SB 18 requirements, the Town sent invitation letters to representatives of the 12 Native American contacts on November 21, 2012, formally inviting them to consult with the Town during the development of the General Plan Update. The intent of the consultation was to provide an opportunity for interested tribes to work together with the Town during the project planning process to identify and protect tribal cultural resources. To date, none of the tribes have submitted formal requests for consultation.

Furthermore, the open space and conservation element of the General Plan Update also contains policies that specifically address Native American resources and their protection, including policies OSC 7-1, OSC 7-4, OSC 7-5, OSC 7-6, and OSC 7-7. For example, policy OSC 7-1 requires development proposals to locate, identify, and evaluate archaeological, historical, Native American and other cultural sites, and ensure that appropriate action is taken to protect these resources.

### 5.4.4 Relevant General Plan Policies and Implementation Actions

The following are relevant policies and implementation actions of the General Plan Update that promote the protection of cultural resources and reduce potential impacts of development on these resources. Policy and action number references are provided in parentheses.

#### Open Space and Conservation Element

OSC 1-2 Support regional, state, and federal efforts to evaluate, acquire, and conserve open space areas in and around Yucca Valley.

OSC 1-3 Support the Mojave Desert Land Trust in their efforts to preserve open space resources within the Morongo Basin.

OSC 1-5 Encourage new development to retain natural open space areas as part of project design to the greatest extent practicable

OSC 1-6 Encourage the preservation, integrity, function, productivity and long term viability of environmentally sensitive habitats, wildlife corridors and significant geological features within the Town.

OSC 7-1 Require development proposals to locate, identify, and evaluate archaeological, historical, Native American and other cultural sites, and ensure that appropriate action is taken to protect these resources.

OSC 7-2 Protect sensitive archaeological and historic resources from vandalism and illegal collection to the greatest extent possible.

OSC 7-3 Require that a paleontologist be "on call" to document and recover paleontological resources discovered during excavation.

OSC 7-4 Require that a records search of the California Historical Resources Information System be conducted and reviewed by a cultural resources professional for proposed development areas to determine presence of known prehistoric or historic cultural resources and the potential for as-yet-undiscovered cultural resources.

OSC 7-5 Require that areas found to contain significant historic or prehistoric artifacts be examined by a qualified consulting archaeologist or historian for appropriate protection and preservation through an accredited museum such as the San Bernardino County Museum.

OSC 7-6 Require that if cultural resources, including archaeological or paleontological resources, are uncovered during grading or other on-site excavation activities, construction shall stop until appropriate mitigation is implemented

OSC 7-7 Require that any archaeological or paleontological resources as determined by a consulting archeologist on a development project site be either preserved in their sites or adequately documented as a condition of removal.

OSC 8-2 Protect, preserve and enhance the Town's hillsides, mountains, canyons, and natural desert terrain.

***Implementation Actions***

OSC 28 In cooperation with local historical associations, the Town shall periodically review the historical and archaeological resources of the area for possible application for status as a historical landmark or inclusion in the National Register of Historic Places.

OSC 29 Maintain an inventory of archeological and paleontological resources.

OSC 30 Maintain information, including mapping that identifies specific locations of sensitive cultural resources, in a confidential manner, and access to such information shall be provided only to those with appropriate professionals and organizations.

OSC 31 Review projects to ensure compliance with SB 18 (traditional tribal cultural places) requirements.

### 5.4.5 Existing Regulations

- California Public Resources Code Sections 5020–5029.5; 5079–5079.65; 5097.9–5097.998; 5097.98
- Tribal Consultation under Senate Bill 18

### 5.4.6 Level of Significance Before Mitigation

Without mitigation, the following impacts would be **potentially significant**:

Impact 5.4-1 Future development in the Town accommodated by the General Plan Update could impact historic resources.

Impact 5.4-2 Future development in the Town that would be accommodated by the General Plan Update could impact known and unknown archaeological and/or paleontological resources.

### 5.4.7 Mitigation Measures

#### Impact 5.4-1

4-1 Applicants for future development projects with intact extant building(s) more than 45 years old shall provide a historic resource technical study to the Yucca Valley Planning Department. The historic resources technical study shall be prepared by a qualified architectural historian meeting Secretary of the Interior Standards. The study shall evaluate the significance and data potential of the resource in accordance with these standards. If the resource meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code Section 5024.1, Title 14 CCR, Section 4852), mitigation shall be identified within the technical study that ensures the value of the historic resource is maintained.

### Impact 5.4-2

4-2 Applicants for future development projects that require excavation greater than five feet below the current ground surface in undisturbed sediments with a moderate or higher fossil yield potential shall provide a technical paleontological assessment to the Yucca Valley Planning Department consisting of a record search, survey, background context, and project-specific recommendations performed by a qualified paleontologist. If resources are known or reasonably anticipated, the assessment shall provide a detailed mitigation plan that requires monitoring during grading and other earthmoving activities in undisturbed sediments; provides a fossil recovery protocol that includes data to be collected; requires professional identification, radiocarbon dates, and other special studies, as appropriate; requires curation at an accredited museum such as the San Bernardino County Museum for fossils meeting significance criteria; and requires a comprehensive final mitigation compliance report, including a catalog of fossil specimens with museum numbers and an appendix containing a letter from the museum stating that it is in possession of the fossils.

4-3 Applicants for future development projects in areas of known or inferred archaeological resources, prehistoric or historic, shall provide a technical cultural resources assessment to the Yucca Valley Planning Department. The technical cultural resources assessment shall be performed by a qualified archaeologist and shall include a record search, survey, background context, and project-specific requirements to mitigate impacts, if any are found. If resources are known or reasonably anticipated, the assessment shall provide a detailed mitigation plan that requires monitoring during grading and other earthmoving activities in undisturbed sediments; provides a treatment plan for potential resources that includes data to be collected; requires professional identification and other special studies as appropriate; requires curation at an accredited museum such as the San Bernardino County Museum for artifacts meeting significance criteria; and requires a comprehensive final mitigation compliance report, including a catalog of specimens with museum numbers and an appendix containing a letter from the museum stating that it is in possession of the materials.

## 5.4.8 Level of Significance After Mitigation

### Impact 5.4-1

Adherence to regulatory requirements, implementation of the General Plan Update policies and implementation actions outlined above, and implementation of Mitigation Measure 4-1 would reduce the potential impacts to historic resources to a level that is less than significant.

### Impact 5.4-2

Adherence to regulatory requirements, implementation of the General Plan Update policies and implementation actions outlined above, and implementation of Mitigation Measures 4-2 and 4-3 would reduce the potential impacts to paleontological and archaeological resources to a level that is less than significant.

## 5.4.9 References

Cogstone. 2012, November. Paleontological and Cultural Resources Assessment for the Town of Yucca Valley General Plan Update.

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## 5.5 GEOLOGY AND SOILS

This section of the Draft Environmental Impact Report (DEIR) evaluates the potential for implementation of the General Plan Update to impact geological and soil resources in the Town of Yucca Valley. The analysis in this section is based in part on the following technical report:

- *Chapter 1, Seismic Hazards, and Chapter 2, Geologic Hazards. In Technical Background Report to the Safety Element Update, Town of Yucca Valley, California. Earth Consultants International, September 2012.*

A complete copy of this study is included as Appendix F to this Draft EIR.

### 5.5.1 Environmental Setting

#### *5.5.1.1 Regulatory Setting*

**Alquist-Priolo Earthquake Fault Zoning Act**

The Alquist-Priolo Earthquake Fault Zoning Act (California Public Resources Code Sections 2621 et seq.) was signed into law in 1972 to mitigate the hazard of fault rupture by prohibiting structures for human occupancy across the trace of an active fault. This state law was passed in direct response to the 1971 San Fernando earthquake, which caused extensive surface fault ruptures that damaged numerous homes, commercial buildings and other structures.

The act requires the State Geologist to delineate "Earthquake Fault Zones" along faults that are "sufficiently active" and "well defined," that is they show evidence of surface displacement within the last 11,500 years (Holocene Epoch) along one or more or their segments (sufficiently active) and are clearly detectable by a trained geologist as a physical feature at or just below the ground surface (well defined). The boundary of an Earthquake Fault Zone is generally about 500 feet from major active faults, and 200 to 300 feet from well-defined minor faults. The act dictates that cities and counties withhold development permits for sites within an Earthquake Fault Zone until geologic investigations demonstrate that the sites are not threatened by surface displacements from future faulting. There are several Alquist-Priolo Earthquake Fault Zones mapped through the Town of Yucca Valley; faults and Earthquake Fault Zones in the Town are discussed further below.

**Seismic Hazards Mapping Act**

The Seismic Hazards Mapping Act (SHMA; California Public Resources Code Section 2695), passed in 1990, addresses earthquake hazards other than surface fault rupture, including strong ground shaking, liquefaction, and earthquake-induced landslides. The California Geological Survey (CGS) is directed by the SHMA to provide local governments with seismic hazard zone maps that identify areas susceptible to liquefaction, earthquake-induced landslides, and other ground failures. The goal is to minimize loss of life and property by identifying and mitigating seismic hazards. The seismic hazard zones delineated by the CGS are referred to as “zones of required investigation.” Site-specific geological hazard investigations are required by the SHMA for construction projects in these areas.

The CGS has released seismic hazards maps of the large metropolitan areas of Los Angeles, Orange, and Ventura counties; funding for this program limits the geographic scope of these studies in southern California to these three counties. Thus, there are currently no state-issued seismic hazard zone maps for the Town of Yucca Valley. Nevertheless, the methodology that the CGS uses to prepare these maps is well documented and can be duplicated in areas that the CGS has yet to map. Areas in Yucca Valley susceptible to liquefaction or earthquake-induced slope instability were mapped during preparation of the technical background report; these hazards are discussed in more detail below.

## California Building Code

Every local agency, such as cities and counties, enforcing building regulations must adopt the provisions of the California Building Code (CBC) within 180 days of its publication, although each jurisdiction can require more stringent regulations, issued as amendments to the CBC. The CBC is known as Title 24 of the California Code of Regulations. The CBCs are published on a triennial basis. The California Building Standards Commission issued the 2010 edition of the CBC based on the 2009 International Building Code published by the International Code Council. The 2010 CBC became effective on January 1, 2011, and remains in effect through 2013. The 2013 CBC is scheduled to go into effect January 2014. Similarly, the 2013 edition of the CBC is based on the 2012 IBC.

The CBC provides requirements for structural design that apply to the construction, alteration, replacement, and demolition of every building or structure and any appurtenances connected or attached to such buildings or structures throughout the state of California. The code is meant to safeguard the public's health, safety, and general welfare through structural strength, general stability, and means of egress by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all buildings and structures within its jurisdiction. Note that building codes provide minimum standards. With respect to seismic shaking, for example, building code provisions are designed to prevent the catastrophic collapse of structures during a strong earthquake; however, structural damage to buildings is expected.

### *Requirements for Geotechnical Investigations*

Requirements for geotechnical investigations are included in CBC; additional requirements for subdivisions requiring tentative and final maps and for other specified types of structures are contained in California Health and Safety Code Sections 17953 to 17955 and in the CBC. Testing of samples from subsurface investigations is required, such as from borings or test pits. Studies must be done as needed to evaluate slope stability, soil strength, position and adequacy of load-bearing soils, the effect of moisture variation on load-bearing capacity, compressibility, liquefaction, differential settlement, and expansiveness.

## California Plumbing Code

The California Plumbing Code, California Code of Regulations Title 24 Part 5, contains requirements for septic tanks.

## Unreinforced Masonry Law

Enacted in 1986, the Unreinforced Masonry Law (Senate Bill 547, codified in Section 8875 et seq. of the California Government Code) required all cities and counties in what was then referred to as Seismic Zone 4 (zones near historically active faults) to identify potentially hazardous unreinforced masonry (URM) buildings in their jurisdictions, establish a URM loss-reduction program, and report their progress to the state by 1990. The owners of such buildings were to be notified of the potential earthquake hazard these buildings pose. Then, starting in 1997, California required all jurisdictions to enforce the 1997 Uniform Code for Building Conservation (UCBC) Appendix, Chapter 1, as the model building code, although local governments could adopt amendments to that code under certain circumstances. The UCBC standards were meant to significantly reduce but not necessarily eliminate the risk to life from collapse of the structure. The CBC includes building standards for historical buildings (California Historical Building Code, Part 8 of Title 24) and for existing buildings (California Existing Building Code, Part 10 of Title 24) based on the International Existing Building Code.

Although the Town of Yucca Valley is in Seismic Zone 4, there is no record that the Town has reported to the Seismic Safety Commission whether or not it has unreinforced masonry buildings in its jurisdiction. The Town of Yucca Valley is not included in either the 2003 or 2006 reports by the Seismic Safety Commission.

Unreinforced masonry and other potentially hazardous building types are discussed further under *Geologic Hazards,* below.

### Real Estate Disclosure Requirements

Since June 1, 1998, the Natural Hazards Disclosure Act has required that sellers of real property and their agents provide prospective buyers with a "Natural Hazard Disclosure Statement" when the property being sold is located within one or more state-mapped hazard areas. For example, if a property lies in a Seismic Hazard Zone as shown on a map issued by the state Geologist, the seller or the seller's agent must disclose this fact to potential buyers. The law specifies two ways in which this disclosure can be made: (1) Using the Natural Hazards Disclosure Statement as provided in Section 1102.6c of the California Civil Code, or (2) using the Local Option Real Estate Disclosure Statement as provided in Section 1102.6a of the California Civil Code.

California state law also states that when houses built before 1960 are sold, the seller must give the buyer a completed earthquake hazards disclosure report and a copy of the booklet entitled "The Homeowner's Guide to Earthquake Safety" written by the California Seismic Safety Commission. The booklet describes structural weaknesses common in homes that can cause significant damage to the structure and provides detailed information on strengthening homes.

The Alquist-Priolo Earthquake Fault Zoning Act and the Seismic Hazards Mapping Act also require that real estate agents, or sellers of real estate acting without an agent, disclose to prospective buyers that the property is in an Earthquake Fault or Seismic Hazard Zone. This mandate, therefore, applies to all properties within the official Alquist-Priolo maps for Yucca Valley, and within any other fault hazard management zones if defined in the Safety Element. In addition, those regions in the study area that have the potential of being impacted by other natural hazards, such as seismically induced liquefaction or slope instability, as identified in the technical background report (Appendix F), should be disclosed to prospective buyers following the provisions of the Natural Hazards Disclosure Act.

### California Environmental Quality Act (CEQA)

Environmental impact reports prepared pursuant to CEQA are required to identify geologic and seismic hazards and to recommend potential mitigation measures, thus giving the local agency the authority to regulate private development projects in the early stages of planning.

### Mojave Desert Air Quality Management District Rules 403 and 403.2 (Fugitive Dust Control)

Mojave Desert Air Quality Management District (MDAQMD) Rules 403 and 403.2 set forth requirements limiting dust that may be emitted from construction, grading, excavation, and clearing of land, and that crosses a property line. Rule 403 requirements include that every reasonable precaution be taken to minimize fugitive dust emissions from wrecking, excavation, grading, clearing of land. Rule 403 applies to all of the MDAQMD spanning Imperial County, most of San Bernardino County, and parts of Riverside, Los Angeles, and Kern Counties. Rule 403.2 sets forth specific requirements for dust control including construction area watering; minimizing tracking of soil onto paved surfaces; covering loaded haul vehicles while operating on paved public roads; stabilizing graded surfaces that will be left exposed 30 days or more; and reducing non-essential earth-moving activity during high winds. Rule 403.2 applies in the Mojave Desert Planning Area of San Bernardino County which includes the Mojave River Valley (Victor Valley and Barstow areas), Morongo Basin, and Lucerne Valley.

## *5.5.1.2 Existing Setting*

### Landforms

The Town of Yucca Valley encompasses highly variable terrain that includes a broad central valley, gently sloping alluvial fans, and rugged mountains. Within the Town limits, the central east-west trending valley slopes very gently to the east, from an elevation of about 3,400 feet above sea level (asl) at its western edge to about 3,100 feet asl at its eastern edge. North of the valley, the Sawtooth Mountains form rounded hills with picturesque boulder outcrops. In

addition to the Sawtooths, the valley is framed by the San Bernardino Mountains to the west, the Bartlett Mountains to the east, and the Little San Bernardino Mountains to the south. Peaks within the Town have elevations of between 3,800 and 4,500 feet asl, with the highest peak within the Town's southern boundary reaching up to an elevation of about 4,600 feet asl. South of Yucca Valley, the Little San Bernardino Mountains rise to more than 5,000 feet asl. Compared to the Sawtooths, the Town's sparsely vegetated hillsides to the south are moderately steep, jagged, and have considerably fewer outcrops—a reflection of the variation in the underlying rock types within Yucca Valley.

The most extensively developed area of Yucca Valley lies along State Highway 62 (SR-62), which generally coincides with the axis of the central valley. Development near the highway is predominantly commercial with a few multifamily residential units. Single family homes comprise most of the remaining development away from SR-62, with the highest concentration of homes spreading across the valley floor and up the gently sloping alluvial fans. Scattered rural and semirural residential development has spread out into hilly areas to the north and south. More than half of the Town's area is still undeveloped, however, including many of the steeper hills and ridgelines. The mountains that border the Town on the south are dedicated to open space and recreation, as part of Joshua Tree National Park and Big Morongo Canyon Preserve.

### Geologic Setting

Southern California is divided into distinct geomorphic provinces, that is, regions having their own unique physical characteristics formed by geologic, topographic, and climatic processes. Yucca Valley is at the boundary of two very distinct provinces. The northern part of the Town, generally north of SR-62, lies within the Mojave Desert Province, an arid region of alluvial fans, desert plains, dry lakebeds, and scattered mountain ranges. This province covers a large portion of southeastern California, stretching from the southern end of the Sierra Nevada Mountains to the Colorado River. Faults in the Mojave Desert Province have a predominant northwesterly trend; however, some faults have a trend more aligned with the Transverse Ranges, described below.

In contrast, the southern part of the Town reaches up the north flank of the Little San Bernardino Mountains, a moderately high range that is the southernmost extension of the Transverse Ranges Province. This province is a series of generally east-west trending mountain ranges and valleys including the San Gabriel and San Bernardino Mountains. These ranges are called "transverse" because they lie at an oblique angle to the prominent northwesterly structural grain of the southern California landscape, a trend that is generally aligned with the San Andreas Fault. The Transverse Ranges are being intensely compressed by active tectonic forces; therefore, they are some of the fastest rising (and fastest eroding) mountains in the world. In Yucca Valley, the boundary of these two provinces is defined by the Pinto Mountain fault, a wide zone of multiple fault strands.

Mountains and hills in and near Yucca Valley are composed of rocks that have been sheared and intensely fractured under the strain of tectonic movement. The down-dropped blocks form deep basins that are filled with overlapping alluvial fans. Yucca Valley overlies two such basins: the Warren Valley Groundwater Basin underlies the main valley and gently sloping terrain to the south; the southwestern edge of the Copper Mountain Groundwater Basin underlies the northern part of the Town, with the Sawtooth Mountains, the Pinto Mountain fault zone, and the Bartlett Mountains forming a barrier between the two basins (CDWR, 2004a; 2004b).

The physiographic and geologic histories of the Yucca Valley area are important because they control to a great extent the geologic hazards as well as the natural resources in the area. For example, erosion and flooding pose significant hazards in Yucca Valley due to the fractured condition of the rock in the local mountains, the sandy nature of the valley sediments, and the intense thunderstorms that occur in the high desert. On the other hand, deep, alluvium-filled basins that are bounded at depth by relatively impermeable rock and faults function as natural underground reservoirs (aquifers) for groundwater, the area's primary source of drinking water.

## Geologic Units

Engineering properties of each geologic unit discussed below are described in Chapter 2, Geologic Hazards, of the Technical Background Report included as Appendix F; some properties are discussed below under "Geologic Hazards." Geologic units in Yucca Valley are mapped on Figure 5.5-1, *Geologic Map*.

### *Sedimentary Deposits*

*Surface Sediments*

Surface geologic units overlie bedrock in the area. In Yucca Valley these units consist predominantly of unconsolidated or semiconsolidated sand, silt, and gravel. The youngest sediments are water-laid alluvium deposited in active or recently active gullies, washes, and floodplains. Gently sloping areas in the southern and northern parts of the Town consist of older, slightly elevated alluvial fan sediments that have been dissected by the active washes and gullies. Erosional remnants of very old fans are present in isolated areas, where they form deeply incised hills, such as Burnt Mountain.

*Young Alluvium (Map Symbol: Qya)*

Young alluvium includes sediments deposited by water in washes, on small fans emanating from canyons within the local hills and mountains, and on floodplains on the valley floor. These deposits predominantly consist of unconsolidated, coarse-grained sediments filling the major active drainage courses, including the Yucca Wash, Water Canyon, Covington Wash, West Burnt Mountain Creek, East Burnt Mountain Creek, and Pipes Wash, as well as silt, sand, and gravel in numerous unnamed washes and gullies that cross the older alluvial fans. The upper reaches of these drainages, especially near the mountains, may contain very large boulders deposited during flash floods. Finer-grained alluvium, including fine sand, silt, and clay, is generally present where past floodwaters have spread out on the valley floor. Young alluvium has no soil development on the surface and is typically reworked by floodwaters or buried by new sediment during storms. Young alluvium is Holocene in age and may be up to about 100 feet thick.

*Older Alluvium (Map Symbol: Qoa)*

Older alluvial fan deposits are Pleistocene age (ranging from about 11,000 to 1 million years old) and generally consist of massive to crudely stratified sand and pebble-cobble gravel eroded from bedrock exposed in the adjacent hills and mountains. Deposits closer to the mountains are typically coarse grained, transitioning to finer-grained sediments (silty sand) downslope, near the valley axis. Layers of clay, sandy clay and gravelly clay are present throughout the sedimentary sequence. The oldest deposits are commonly tilted, folded, and/or faulted near the major active fault zones.

*Very Old Alluvium (Map Symbol: Qof)*

This unit is classified as a fanglomerate, meaning it was deposited in an alluvial fan environment and is composed mostly of boulders and cobbles in a sand matrix. Where exposed at the surface, the fanglomerate is light gray in color, massive, and contains subrounded rock fragments transported from mountains to the south and northwest. At depth, this unit underlies the sequence of young and old alluvium filling the mid to upper part of the basin and is estimated to be at least 2,000 feet thick. The fanglomerate is estimated to be early Quaternary to possibly late Tertiary age (1 million to about 5 million years old).

*Sedimentary Rock (Map Symbol: Ts)*

Sedimentary rock consisting of buff-colored, fine- to medium-grained sandstone, locally with lenses of rounded pebble-cobble conglomerate and minor thin lenses of siltstone, is present in the northern part of the Town. Sediments in this unit were deposited on the quartz monzonite rock described below, then buried by the basaltic lava flows that cap the hills in this area. Consequently, exposure of this unit at the surface by erosion is very limited.

The sandstone is described as friable (grains are not well cemented together), and massive to very faintly bedded. Based on its position between the monzonite and the basalt, it is estimated to be Tertiary in age (between about 1.6 and 65 million years old).

***Crystalline Rocks***

The oldest geologic units in the Yucca Valley area consist of hard, crystalline rock that is exposed in the mountains and buried beneath the alluvium. Crystalline rock classifications are based primarily on origin, texture, and mineral composition. Based on origin alone, the rocks in this area can be classified into three main groups: 1) igneous rocks that crystallized from molten lava that flowed out on the surface (volcanic rocks); 2) igneous rocks that crystallized from the molten state deep within the Earth's crust (plutonic rocks); and 3) rocks of sedimentary origin that have recrystallized under extreme conditions of heat and pressure deep below the Earth's surface (metamorphic rocks).

*Volcanic Igneous Rock: Basalt (Map Symbol: QTb)*

Volcanic rocks are those that solidified on the ground surface. Because these rocks cooled very quickly, they are very fine grained. Classified as basalt, these rocks are black, hard, massive, and vesicular (meaning they have small voids caused by gas bubbles trapped in the flowing lava). This unit is resistant to erosion and tends to form relatively flat-topped hills and ridges.

*Plutonic Rocks: Quartz Monzonite (Map Symbol: Mqm, Mqm-l, Mqm-p)*

Commonly referred to as "granitic," these rocks generally have large grains that can easily be seen without magnification. They often have a spotted appearance and have somewhat variable mineral compositions. Most of these rocks crystallized from magmas that were emplaced over a period of time ranging between about 65 million and 225 million years ago, during the latter part of the Mesozoic Era. In the Yucca Valley area, the predominant mineral assemblage is a light-colored, massive, medium- to coarse-grained rock composed mainly of quartz and feldspars, termed quartz monzonite. These rocks form hills in the easternmost end of the Sawtooth Mountains and the western part of the Bartlett Mountains.

*Metamorphic Rocks: Gneissic Rocks (Map Symbol: Pgn)*

The oldest rocks in the Yucca Valley area are metamorphic rocks that are possibly as old as Precambrian (more than about 500 million years old). These rocks occur predominantly in the mountains south of the central valley, but are also present in isolated areas north of the Pinto Mountain fault zone. This group consists of gneissic rocks consisting mostly of quartz and feldspar. The minerals in gneissic rocks are separated into layers, commonly giving the rock a banded appearance. The bands may be relatively straight, undulating, or contorted.

## Geologic Hazards

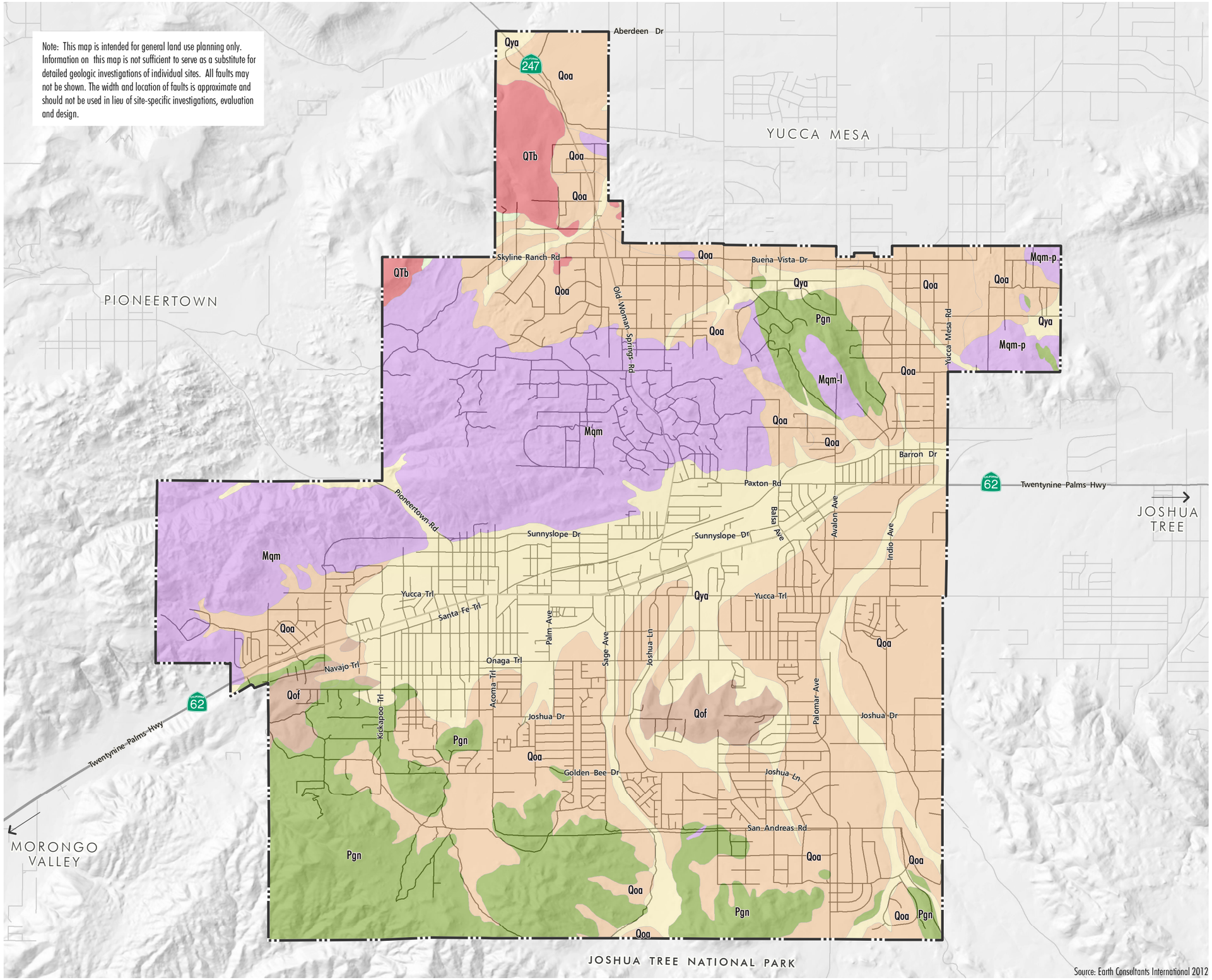
***Faulting and Seismicity***

Strong ground shaking causes the vast majority of earthquake damage. When a fault breaks below ground, the seismic energy released by the earthquake radiates away from the break location in waves that are felt at the surface as shaking. In general, the bigger and closer the earthquake, the more damage it causes. However, other effects (discussed below) are also important. Earthquakes are typically classified by the amount of damage reported or by how strong and how far the shaking was felt. An early measure of earthquake size still used today is the seismic intensity scale, which is a qualitative assessment of an earthquake's effects at a given location. The most commonly used measure of seismic intensity is called the Modified Mercalli Intensity (MMI) scale, a 12-point scale in which an Intensity I earthquake is rarely felt by people and causes no damage to buildings and an Intensity XII earthquake causes total damage to structures and throws objects into the air.

# 5.5 - GEOLOGY AND SOILS

## Figure 5.5-1
## GEOLOGIC MAP

Note: This map is intended for general land use planning only. Information on this map is not sufficient to serve as a substitute for detailed geologic investigations of individual sites. All faults may not be shown. The width and location of faults is approximate and should not be used in lieu of site-specific investigations, evaluation and design.




Source: Earth Consultants International 2012

Surficial Sediments
- Qya - Young Alluvium
- Qoa - Older Alluvium
- Qof - Very Old Alluvium

Sedimentary Rock
- Ts - Sandstone

Igneous Rocks
- QTb - Basalt
- Mqm, Mqm-l, Mqm-p - Quartz Monzonite

Metamorphic Rocks
- Pgn - Gneissic Rocks

Town Limits

YUCCA VALLEY GENERAL PLAN
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TYV-01 08.26.13

0 1,500 3,000 6,000 Feet

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Seismologists now measure the size of an earthquake by the amount of energy released when a fault ruptures. This measure is called the seismic moment magnitude (abbreviated $M_w$ or M), and most moderate to large earthquakes today are reported using moment magnitude. The seismic moment scale is logarithmic. Thus, each one-point increase in magnitude represents a tenfold increase in amplitude of the waves as measured at a specific location, and a 32-fold increase in energy. That is, a magnitude 7 earthquake produces 100 times (10 x 10) the ground motion amplitude of a magnitude 5 earthquake; and a moment magnitude 7 earthquake releases approximately 1,000 times more energy (32 x 32) than a moment magnitude 5 earthquake.

***Faults in the Yucca Valley Region***

The San Andreas fault, which passes 11 miles south of Yucca Valley near the City of Desert Hot Springs, is the principal separation between two tectonic plates of the earth's crust: the North American Plate, on which Yucca Valley and most of eastern California are located, and the Pacific Plate west of the fault. The two plates are moving past each other horizontally, with the North American plate moving southeast and the Pacific Plate moving northwest. About 30 percent of the plate motion occurs on other faults, including the San Jacinto, Whittier-Elsinore, Newport-Inglewood, Palos Verdes, and several faults offshore, in the Pacific Ocean. To the east of the San Andreas fault, movement is distributed among faults of the Eastern California Shear Zone, including those responsible for the 1992 $M_W$ 7.3 Landers and 1999 $M_W$ 7.1 Hector Mine earthquakes. Several of the faults in and near Yucca Valley described below are component faults of the Eastern California Shear Zone. Note also that several faults in and near Yucca Valley were discovered due to ground rupture in the 1992 Landers earthquake and its aftershocks. Faults in and near Yucca Valley are mapped on Figure 5.5-2, *Regional Fault Map,* and Figure 5.5-3, *Faults in and near Yucca Valley*.

*Pinto Mountain Fault Zone*

The Pinto Mountain fault is a prominent fault zone that bounds the north side of the Little San Bernardino Mountains and extends in a westerly direction through the heart of Yucca Valley and on to the Morongo Valley, where it is known as the Morongo Valley fault. The fault zone is at least 45 miles long and possibly as many as 56 miles long, ending at its west end against the San Andreas fault. Recent studies show that this fault has ruptured repeatedly in the last 14,000 years, with at least four surface-rupturing earthquakes within the past about-9,400 years. Rupture of the Pinto Mountain fault is considered the worst-case scenario for Yucca Valley.

*Burnt Mountain Fault*

The Burnt Mountain fault, as with several other faults in the region, was unknown prior to late June 1992, when a 3.7-mile length of this fault ruptured at the ground surface, probably during a large aftershock of the Landers earthquake, with about 2.4 inches of right-lateral offset. The Burnt Mountain fault was later mapped with a total length of about 13 miles. Based on their location, the Burnt Mountain and Eureka Peak faults are thought to be important structures that are accommodating the transfer of strain from the San Andreas fault system to the Eastern California Shear Zone.

*Eureka Peak Fault*

This 12-mile-long fault was "discovered" when it broke the ground surface during the 1992 Landers earthquake sequence, in part as a result of a large aftershock. Although the maximum surface offset measured on the 6.8-mile-long section of the fault that ruptured was only 8 inches, and therefore considerably less than the 6- to 9-foot offsets measured elsewhere, this small amount of offset allowed geologists to map the fault and discover the nearby Burnt Mountain fault. Creepmeters[1] installed along the fault following the Landers earthquake suggest that the fault slipped about 12 cm (4.7 inches) immediately following the main earthquake sequence and that it has since continued to slip.

[1] A creepmeter is an instrument that monitors the slow surface displacement of an active fault. Its function is not to measure fault slip during earthquakes, but to record the slow aseismic slip between earthquakes.

*Landers (or Kickapoo) Fault*

The Landers fault was the name given to the group of faults that ruptured during the 1992 Landers earthquake, including the Homestead Valley, Kickapoo, and Johnson Valley faults, and segments of the Burnt Mountain and Eureka Peak faults. The interval between major ruptures on these faults is uncertain, but is probably in the thousands of years, which is why these faults were unknown or poorly known prior to 1992. As a result of the 1992 earthquake, some of these faults experienced significant lateral displacements—the Kickapoo fault moved laterally nearly 9.5 feet. Individually, these faults could rupture in smaller earthquakes (similar to the 1979 Homestead Valley earthquake swarm that ruptured a portion of the southern Johnson Valley and Homestead Valley faults), but their combined lengths allowed for the magnitude 7.3 earthquake that shook southern California on the morning of June 28, 1992.

*Emerson South – Copper Mountain Fault Zone*

The Emerson South fault last ruptured during the Landers earthquake. This earthquake illustrated the transfer of strain from one fault segment to the next: rupture on the South Johnson Valley fault was transferred to the Emerson fault by the right-stepping Kickapoo (Landers) and Homestead Valley faults, and rupture on the Emerson fault was in turn transferred northward to the Camp Rock fault.

The Emerson South fault is about 34 miles long. The last surface-rupturing earthquake before 1992 on this fault is thought to have occurred about 9,000 years ago, so this fault seems to have long periods of dormancy.

*North Frontal Fault Zone*

This fault zone along the east flank of the San Bernardino Mountains consists of several fault splays that have a combined total length of approximately 40 miles. Several of the fault splays interact with other nearby faults; the most significant of these is the Helendale fault, which seems to right-laterally offset the North Frontal fault zone, dividing it into two main segments referred to as the East and West segments.

The North Frontal fault is thought to have moved in the past 10,000 years, making it an active fault. However, the fault has not been studied in detail. Furthermore, movement on this fault is thought to be responsible for uplift of the San Bernardino Mountains at an average rate of about 1 millimeter/year (40 inches/1,000 years).

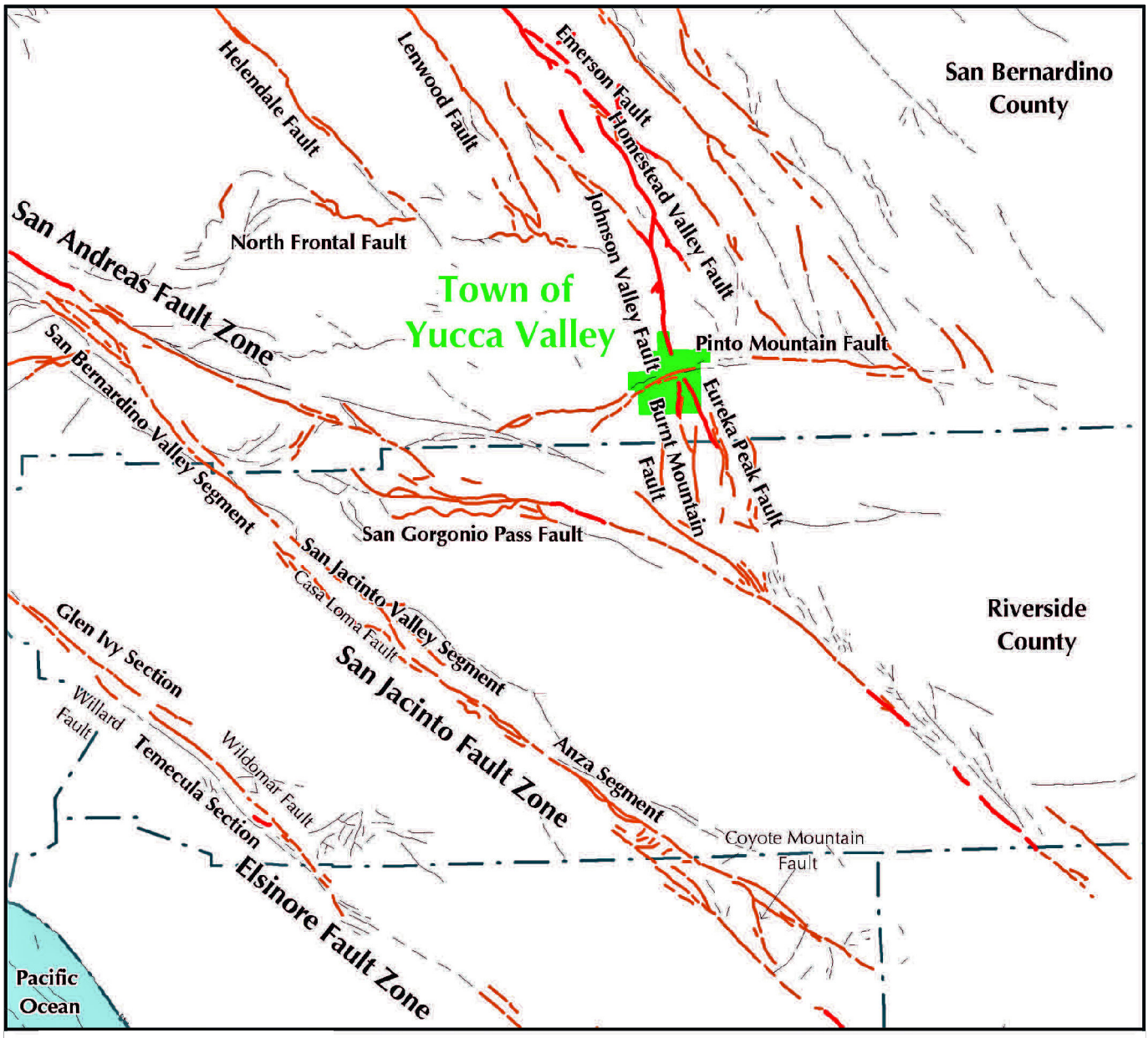
*Johnson Valley Fault*

The Southern Johnson Valley fault is one of the five faults that ruptured during the 1992 Landers earthquake, whereas its northern extension, the Northern Johnson Valley fault, did not. Trenching studies have shown that the Northern Johnson Valley fault last ruptured about 5,800 and 7,500 years ago in large earthquakes. A smaller earthquake may have ruptured the fault about 11,500 years ago. These data suggest that the northern segment of the fault is at or near the end of its cycle and is a likely candidate for an earthquake in the not-too-distant future.

*San Andreas Fault Zone*

The San Andreas fault is the principal boundary between the Pacific and North American plates. The fault extends nearly 800 miles from near Cape Mendocino in northern California to the Salton Sea region in southern California. This fault is considered the "Master Fault" in southern California because it has frequent, large earthquakes and controls the seismic hazards of the area. Many refer to an earthquake on the San Andreas fault as "The Big One," and for many parts of southern California, this is indeed true. However, as shown above, several other faults closer to Yucca Valley have the potential to cause stronger ground shaking, and therefore more local damage, than the San Andreas fault. Nevertheless, the San Andreas fault should be considered in all seismic hazard assessment studies in southern California given its high probability of causing an earthquake in the near future. In 2007–2008, a group of scientists calculated that the southern San Andreas had a 59 percent probability of causing an earthquake of at least magnitude 6.7 in the next 30 years. That probability increases with each passing year without an earthquake.

Figure 5.5-2
# REGIONAL FAULT MAP




Modified from: Jennings, 1995

**Explanation**

Fault Showing Evidence of Historic Rupture (Active).
Fault Showing Evidence of Holocene Rupture (Active).
Fault Showing Evidence of Quaternary and Late Quaternary Rupture (Potentially Active).

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0 8 16 MILES

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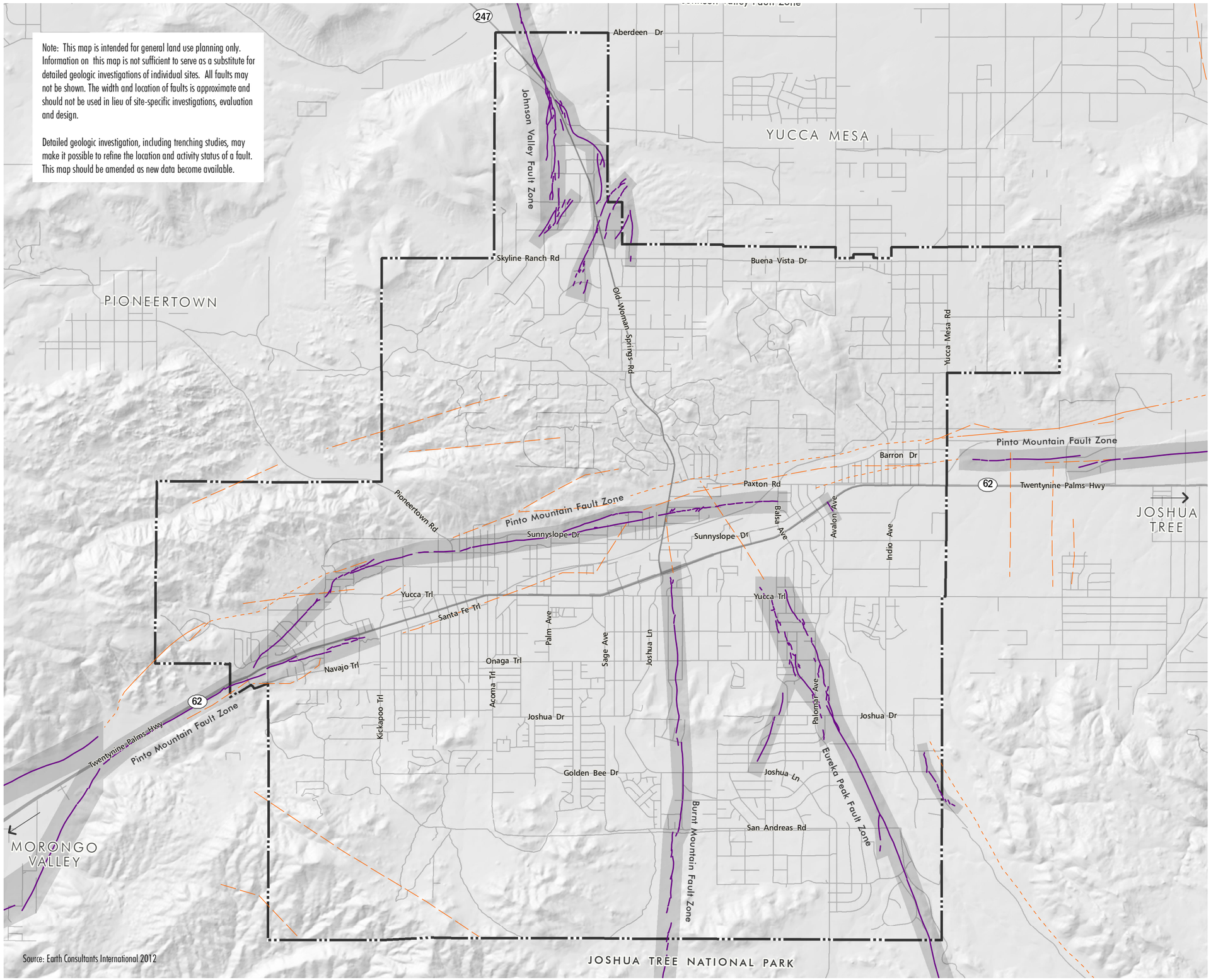
Figure 5.5-3

# FAULTS IN AND NEAR YUCCA VALLEY

Note: This map is intended for general land use planning only. Information on this map is not sufficient to serve as a substitute for detailed geologic investigations of individual sites. All faults may not be shown. The width and location of faults is approximate and should not be used in lieu of site-specific investigations, evaluation and design.

Detailed geologic investigation, including trenching studies, may make it possible to refine the location and activity status of a fault. This map should be amended as new data become available.




Source: Earth Consultants International 2012

- Alquist-Priolo Earthquake Fault
- Fault; not zoned under the Alquist-Priolo Act
- Alquist-Priolo Earthquake Fault Zone
- Town Limits

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Large faults, such as the San Andreas, are often divided into segments or sections in order to evaluate their future earthquake potential. The sections are typically based on physical characteristics along the fault, particularly changes in the angle and/or direction of the fault, and type of faulting (movement along a fault can be horizontal, vertical, or some combination thereof). Each fault section is assumed to have a characteristic slip rate, recurrence interval (time between moderate to large earthquakes), and displacement (amount of offset during an earthquake). Historical records and studies of prehistoric earthquakes show it is possible for more than one section to rupture during a large quake or for ruptures to overlap into adjacent sections. For example, the last major earthquake on a portion of the southern San Andreas fault (and the largest earthquake reported in California) was the 1857 Fort Tejon (magnitude 8) event. This earthquake ruptured the Cholame, Carrizo, Big Bend, and Mojave North and Mojave South sections of the fault, resulting in displacements of as much as 27 feet along the rupture zone. There are data that suggest that these sections and portions of sections, which are combined into a fault segment, tend to rupture together time and time again in what is referred to as a "characteristic earthquake."

The southern San Andreas fault is now divided into ten sections named, from north to south, Parkfield, Cholame, Carrizo, Big Bend, Mojave North, Mojave South, San Bernardino North, San Bernardino South, San Gorgonio-Garnet Hill, and Coachella. The southernmost sections are discussed further below because these are the sections closest to Yucca Valley. Specifically, the Yucca Valley area is, at a minimum, about 21.5 miles from the San Bernardino South section, 11 miles from the San Gorgonio-Garnet Hill segment, and 22 miles from the Coachella segment.

- **The San Bernardino (South and North) segments** combined are about 43 miles long from north of the city of Banning northwest to near Cajon Pass. These faults, like the Coachella section, appear to be nearly vertical; motion along the fault is mainly horizontal. Both segments appear to have last ruptured in the $M_w$7.5 (estimated) Wrightwood Earthquake of 1812. If both sections rupture together in the future, the resultant magnitude 7.5 earthquake could cause peak ground accelerations in the Town of Yucca Valley of between about 0.44g and 0.15g. If these fault sections rupture in conjunction with the Mojave and/or Coachella Valley segments, higher ground motions could be expected in the region.

- **The San Gorgonio-Garnet Hill section** is about 41 miles long and extends northwesterly and westerly from just north of the city of Indio through the San Gorgonio Pass to north of the City of Banning. From south to north, this section is composed of two main branches (the Banning fault on the south and the Mission Creek fault on the north) in addition to several other faults, including the Garnet Hill fault. At its western end, the Garnet Hill fault merges with the San Gorgonio Pass fault. Unlike the San Bernardino and Coachella sections to the north and south, respectively, this section is very complex; fault movement is both horizontal and vertical. Each of these faults that are part of the San Gorgonio-Garnet Hill section is discussed further in the paragraphs below.

- **The Banning fault** is an older structure dating back to latest Miocene time about 4 or 5 to 7.5 million years ago, when it is thought to have served as an ancestral strand of the San Andreas fault. Based on geologic and geomorphic characteristics, as well as the fault's tectonic history during the last two million years, the Banning fault is divided into three segments. The western segment, extending from the San Jacinto fault southeastward to the Calimesa area, is considered not active because it does not break Quaternary alluvium and has no surface expression (the location of the fault has been inferred from gravity data and other indirect evidence). The central segment for the most part also does not affect Quaternary deposits. There is, however, a two-mile-long section of the central Banning fault that offsets young alluvium. Therefore, the fault is active in that area. The easternmost portion of the ancestral Banning fault, from Cottonwood Canyon to its junction with the Coachella section of the fault near the Indio Hills, has been reactivated during Quaternary time and has many geomorphic characteristics of an active fault.

- **The Mission Creek fault**. Some researchers have suggested this fault is an older strand of the San Andreas that is either less active than other strands or no longer active. This is most likely true for the northern end of

the fault, but trenching near its southern end, at Thousand Palms Oasis, has shown that at this site, the fault has experienced four, and probably as many as five, surface-rupturing earthquakes in the past about 1,200 years. The most recent earthquake on this strand is most likely an A.D. 1680 event. Comparison of data obtained at the Thousand Palms Oasis site with data from the Indio site to the south and the Wrightwood site about 75 miles to the northwest, suggests that the southernmost 125 miles of the San Andreas fault have ruptured together and thus has the potential to rupture again together in large earthquakes.

- **The Garnet Hill fault** parallels the trend of the Banning fault, extending from a few miles west of Whitewater south to Thousand Palms, where the fault trace dies out.

- **The San Gorgonio Pass fault zone** begins west of Whitewater and extends westward to the Calimesa area. Faults within this east–west trending zone have thrust ancient crystalline rock southward over younger sedimentary rock and alluvial sediments. These faults formed during the Pleistocene in response to compression; activity of some of these faults continued into the Holocene, as indicated by many youthful scarps present in young alluvium.

- **The San Gorgonio-Garnet Hill section** is thought to have last ruptured in 1812, although additional studies need to be conducted to confirm this. Paleoseismic data also suggest that the Coachella, San Gorgonio-Garnet Hill, and San Bernardino sections ruptured simultaneously in earthquakes that occurred around A.D. 1500 and possibly A.D. 1680. Investigators suggest that some of the strain is also being transferred northward onto the faults in the Indio Hills and probably the Eastern California Shear Zone.

- ***The Coachella segment*** comprises the relatively straight fault extending from Bombay Beach in the Salton Sea northward to north of Indio, a distance of about 42 miles. This section is the only section of the southern San Andreas fault that has not produced a major earthquake in historic times. The last surface-rupturing earthquake on this section appears to have occurred more than 320 years ago, around A.D 1680 or 1690. In the A.D. 1680 earthquake, the Coachella section appears to have ruptured together with the San Gorgonio-Garnet Hill and San Bernardino segments; this also appears to have happened in an earthquake around A.D. 1450.

*Calico-Hidalgo Fault Zone*

The Calico fault, 34 miles long, slipped during the 1992 Landers earthquake and was the source of a magnitude 5.3 earthquake that shook the eastern California area on March 18, 1997. The 1997 earthquake is considered the last large aftershock of the Landers earthquake, and its epicenter was on the northern section of the fault, about 12 miles east-northeast of Barstow.

The Calico fault is the longest and possibly the fastest slipping of the faults in the Eastern California Shear Zone. The recurrence interval between earthquakes on this fault is estimated at about 1,500 years, although researchers have suggested that in this portion of the southern California fault system earthquakes recur in clusters, with long periods of inactivity between clusters.

*Pisgah-Bullion Mountain-Mesquite Lake Fault Zone*

The Pisgah fault, 21 miles long, experienced triggered slip in 1992 due to the Landers earthquake. The fault is thought to have last moved in the Holocene, but the interval between surface-rupturing earthquakes is unknown. The Pisgah fault alone could generate an earthquake of estimated magnitude between 6.0 and 7.0. However, the Pisgah fault may also rupture together with the 34-mile-long Bullion fault to the south and the 22-mile-long Mesquite Lake fault farther south. The Bullion fault last ruptured on October 16, 1991, during the $M_w$ 7.1 Hector Mine earthquake. Prior to that, both the Bullion and Mesquite Lake faults appear to have ruptured during a large earthquake in the mid to late Holocene.

Relatively recent studies of the Mesquite Lake fault have shown that this fault has had three large surface-rupturing earthquakes in the past about 10,200 years, each creating an apparent vertical offset of between 3.3 to 3.9 feet,, suggesting similar-sized earthquakes.

*Lenwood, Lockhart, Old Woman Springs Faults*

Another of the Eastern California Shear Zone faults, the Lenwood fault is approximately 47 miles long. Trenching studies have shown that the fault has ruptured at least three times in the Holocene, roughly 200–400, 5,000–6,000, and 8,300 years ago, for a recurrence between major surface ruptures of 4,000 to 5,000 years.

The Lockhart fault, approximately 44 miles long, is north of the Lenwood fault. The North Lockhart fault—a segment that shows no evidence of Holocene activity—adds 6 miles to the length above. The interval between major surface-rupturing earthquakes on the Lockhart fault is estimated at between 3,000 and 5,000. The central portion of the fault ruptured during the Holocene, and segments both to the north and south are believed to have last ruptured in the Quaternary.

The Old Woman Springs fault segment, approximately 6 miles long, is the main trace of a complex system of faulting at the junction between the Eastern segment of the North Frontal Fault Zone and the Lenwood fault. The fault is thought to have last moved in the Holocene, and is therefore considered active.

Although the Lenwood and Lockhart faults form an essentially a continuous, 90-mile-long system, there is no evidence that these faults ruptured together in the past. Nevertheless, such an event might be possible, as evidenced by the rupture of five separate fault segments during the Landers earthquake.

*Helendale-South Lockhart Fault*

The Helendale fault is the westernmost fault of the Eastern California Shear Zone. The Helendale fault is 56 miles long, but it also seems to form a continuous fault with the South Lockhart fault to the north. Towards its southern end, the Helendale fault seems to offset the North Frontal fault, separating it into east and west segments.

The central and southern segments of the South Lockhart fault display evidence of Holocene rupture, including deformed Holocene sediments and well-defined scarps. The northern segment of the South Lockhart fault is poorly defined and does not show evidence of Holocene rupture, indicating that the whole fault may not rupture at the same time. Rupture of multiple segments of both the Helendale and the South Lockhart faults may result in a large-magnitude earthquake that would be greater than if the South Lockhart or the Helendale fault ruptured alone. Estimates of the recurrence interval for large surface-rupturing events on the Helendale fault range from 3,000 to 11,000 years.

***Ground Shaking***

Ground shaking and fault rupture are the geologic hazards that have the greatest potential to severely impact the Yucca Valley area, given that the town is intersected by and located near several significant faults that could cause moderate to large earthquakes. Epicenters of earthquakes detected by instruments between 1932 and December 2011 in and around the Town of Yucca Valley, and the approximate location of earlier earthquakes extending back to 1800, are shown in Figure 5.5-4, *Historical Seismicity Map*). The locations of earlier earthquakes are approximate because prior to 1932 there were no instruments to measure the location and magnitude of an earthquake. The map shows the locations most earthquakes in Yucca Valley occurred along the north–south trending faults extending through the Town that ruptured in 1992. In fact, a large percentage of the seismic events shown on Figure 5.5-4 are aftershocks of the 1992 Landers earthquake, with most of these occurring in the 1990s. Some aftershocks of the Landers sequence have continued into the new millennium. The east-trending Pinto Mountain fault has a relatively low number of earthquakes associated with it, possibly suggesting that the section of the fault that extends through the Yucca Valley area is locked. A locked fault is one that is not slipping because the frictional forces on the fault

exceed the shear forces across the fault. A locked fault stores strain that is eventually released, typically during an earthquake.

In order to provide a better understanding of the shaking hazard posed by these local faults and other, more distant seismic sources, a deterministic seismic hazard analysis for a central point in the town and several other randomly selected points within town limits was conducted using the software program EQFAULT. This analysis estimates the Peak Horizontal Ground Accelerations (PHGA) that could be expected at these locations due to earthquakes occurring on any of the known active or potentially active faults within 62 miles.

PHGA depends on the size of the earthquake (which is dependent on the rupturing fault's dimensions), the proximity of the rupturing fault to the study area, and local soil and rock conditions. The underlying geologic conditions, as described above under "Geologic Units," were considered in the study.

*Ground Shaking in the Yucca Valley Area*

Based on the ground shaking analyses described above, those faults that can cause peak horizontal ground accelerations of about 0.1g or greater (Modified Mercalli Intensities greater than VII) in the Yucca Valley area are listed in Table 5.5-1. Most of the faults in this table are mapped on Figures 5.5-2, *Regional Fault Map*, and 5.5-3, *Faults in and near Yucca Valley*. The deterministic analyses indicate that the Pinto Mountain, Burnt Mountain, and Eureka Peak faults have the potential to generate very strong ground shaking in Yucca Valley, with median PHGA values as high as 0.7g to 0.8g. Shaking at these levels can cause significant damage to older structures and moderate damage to even newer buildings constructed in accordance with the latest building codes.

***Table 5.5-1***
***Estimated Horizontal Peak Ground Accelerations and Seismic Intensities in the Yucca Valley Area***

| *Fault or Fault Segment* | *Approx. Distance to Yucca Valley (miles)* | *Magnitude of Mmax* | *PHGA (g)[1] from Mmax (median)* | *MMI from Mmax* |
|---|---|---|---|---|
| Pinto Mountain | 0 – 4.8 | 7.2 | 0.8 – 0.35 | XII – IX |
| Burnt Mountain | 0 – 5.4 | 6.5 | 0.75 – 0.21 | XII - VIII |
| Eureka Peak | 0 – 6.0 | 6.5 | 0.74 – 0.16 | XII - VII |
| Landers (faults involved in the Landers 1992 earthquake) | 0 – 6.8 | 7.3 | 0.65 – 0.23 | XI - IX |
| Emerson – South Copper Mountain | 6.8 – 16.5 | 7.0 | 0.37 – 0.10 | X - VII |
| North Frontal (East segment) | 7.7 – 15.5 | 6.7 | 0.36 – 0.15 | X – VIII |
| Johnson Valley (Northern) | 8.5 – 17.2 | 6.7 | 0.25 – 0.09 | X - VII |
| San Andreas (entire southern) | 11.3 – 31.1 | 8.0 | 0.38 – 0.19 | X – VIII |
| San Andreas (San Bernardino + San Gorgonio-Garnet Hill + Coachella) | 11.3 – 31.1 | 7.7 | 0.33 – 0.17 | X – VIII |
| San Andreas (San Bernardino [South and North]) | 21.5 – 30.8 | 7.5 | 0.30 – 0.15 | X - VIII |
| San Andreas (San Gorgonio-Garnet Hill Coachella) | 22 – 31.1 | 7.2 | 0.26 – 0.12 | IX – VIII |
| Calico – Hidalgo | 14.2 – 23.1 | 7.3 | 0.26 – 0.10 | IX - VII |
| Pisgah – Bullion Mountain.– Mesquite Lake | 15.6 – 25.1 | 7.3 | 0.24 – 0.09 | IX – VII |
| Lenwood – Lockhart – Old Woman Springs | 15.8 – 24.5 | 7.5 | 0.23 – 0.11 | IX - VII |
| North Frontal (West Segment) | 22.9 – 30.6 | 7.2 | 0.18 – 0.08 | IX – VII |
| Helendale – South Lockhart | 27 – 35.1 | 7.3 | 0.13 – 0.07 | IX – VI |

Source: ECI 2012.
Abbreviations: PHGA: Peak Horizontal Ground Acceleration: g: gravity; Mmax: maximum magnitude earthquake; MMI: Modified Mercalli Intensity
[1] Median PHGA is listed as two numbers with the first number higher than the second; the two numbers correspond to the range of distance in miles shown in the second column from left.

The ground motions presented in Table 5.5-1 are based on the largest earthquake that each fault, or fault segment, is believed capable of generating, referred to as the maximum magnitude earthquake (Mmax). This deterministic approach is useful to study the effects of a particular earthquake on a building or community. However, since many faults pose a hazard to the region, it is also important to consider the overall likelihood of damage from a plausible

suite of earthquakes, including earthquakes of different sizes on the same fault. This approach is called probabilistic seismic hazard analysis (PSHA), and typically considers the likelihood of exceeding a certain level of damaging ground motion that could be produced by any or all faults within a given radius of the project site, or in this case, the Town of Yucca Valley. Most seismic hazard analyses consider a distance of 100 km (62 miles), but this is arbitrary. PSHA has been utilized by the U.S. Geological Survey (USGS) to produce national seismic hazard maps such as those used by the Uniform Building Code, the International Building Code, and the California Building Code.

Ground motions that have a 10 and 2 percent probability of being exceeded in 50 years in the vicinity of Town Hall were estimated using the interactive ground motion module from the CGS and the USGS. For Yucca Valley, the estimated level of ground motion that has a 10 percent probability of being exceeded in 50 years is approximately 0.5g. The level of ground motion with a 2 percent probability of being exceeded in 50 years is nearly 1.0g. The principal sources responsible for these levels of shaking are the Pinto Mountain and Burnt Mountain faults, with the Pinto Mountain fault contributing most to the seismic hazard. These levels of shaking are in the moderate to very high range for southern California and can be expected to cause significant damage, particularly to older and poorly constructed buildings.

Regardless of which fault causes a damaging earthquake, there will always be aftershocks. By definition, these are smaller earthquakes that happen close to the mainshock (the biggest earthquake of the sequence) in time and space. These smaller earthquakes occur as the Earth adjusts to the regional stress changes created by the mainshock. As the size of the mainshock increases, there typically is a corresponding increase in the number of aftershocks, the size of the aftershocks, and the size of the area in which they might occur.

On average, the largest aftershock will be 1.2 magnitude units less than the mainshock. Thus, a $M_w$ 6.9 earthquake will tend to produce aftershocks up to $M_w$ 5.7 in size. This is an average, and there are many cases where the biggest aftershock is larger than the average predicts. The key point is that: any major earthquake will produce aftershocks large enough to cause additional damage, especially to already weakened structures. Consequently, postdisaster response planning must take damaging aftershocks into account.

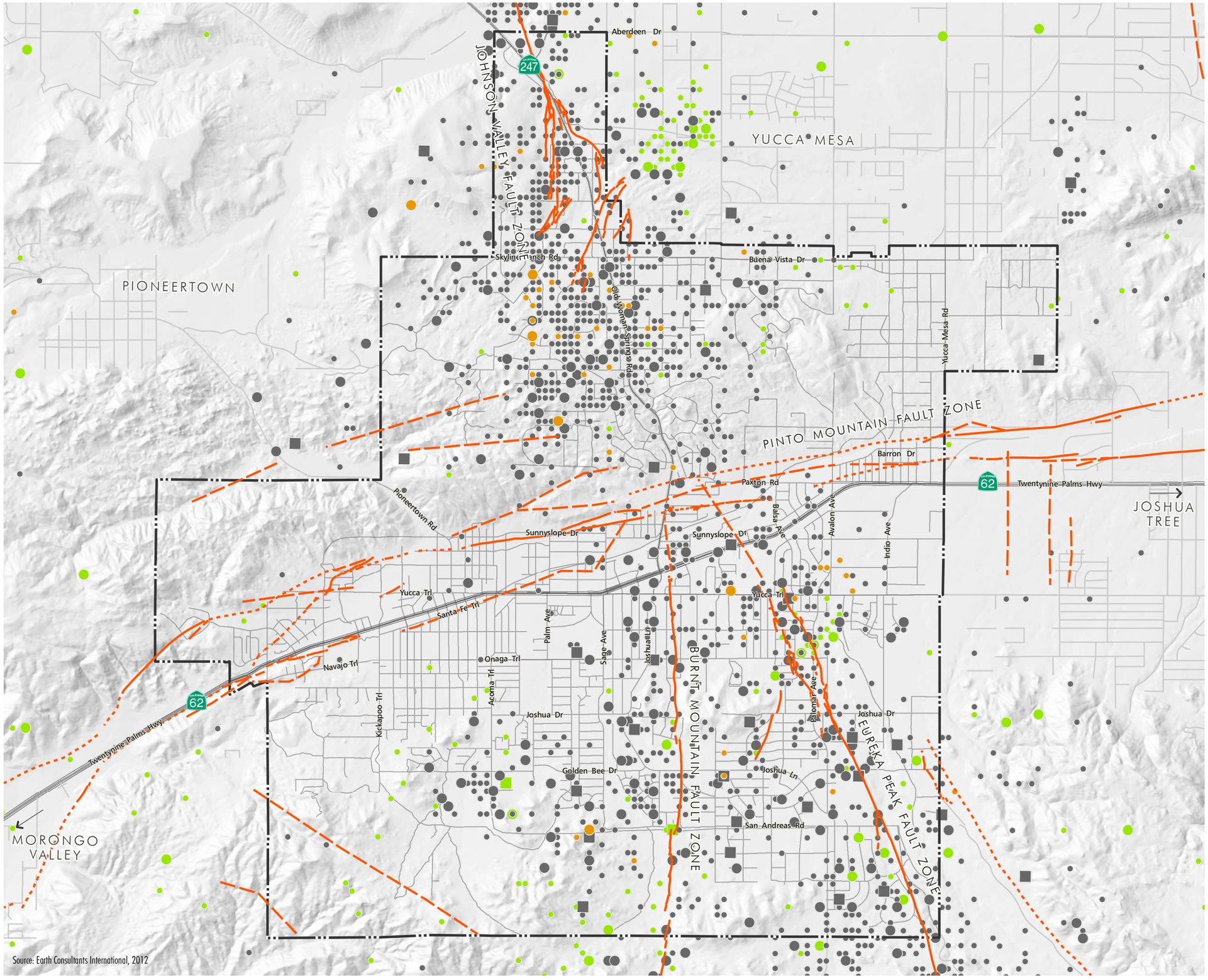
*ShakeMaps*

Another way to communicate the seismic shaking hazard is with the use of ShakeMaps. A ShakeMap depicts various levels of ground shaking throughout the region where an earthquake occurs. ShakeMaps are compiled from the California Integrated Seismic Network—a network of seismic recording instruments located throughout the state—and are automatically generated following moderate to large earthquakes.

ShakeMaps can also be used for planning and emergency preparedness by creating hypothetical earthquake scenarios. These scenarios are not predictions—knowing when or how large an earthquake will be in advance is still not possible. However, using realistic assumptions about the size and location of a future earthquake, we can make predictions of its effects and use this information for loss estimations and emergency response planning. Figure 5.5-5, *ShakeMap, 1992 Landers Earthquake*, is based on actual reports of damage observed and shaking felt by residents throughout the region. Seismic ground shaking in the Town of Yucca Valley was perceived as severe to violent.

# 5.5 - GEOLOGY AND SOILS

## Figure 5.5-4
## HISTORICAL SEISMICITY MAP




Source: Earth Consultants International, 2012

Earthquake Magnitude
- 2 to 3
- 3 to 4
- 4 to 5
- 5 to 6
- 6 to 7
- 7+

- Pre - 1992 Earthquakes in green
- 1992 - 1999 Earthquakes in gray
- 2000 - 2011 Earthquakes in orange

Quaternary Fault
- Fault - Known Location
- Fault - Approximate Location
- Fault - Concealed or Inferred Location
- Town Limits

YUCCA VALLEY GENERAL PLAN
DRAFT EIR

TYV-01 04.30.13

0 1,500 3,000 6,000 Feet

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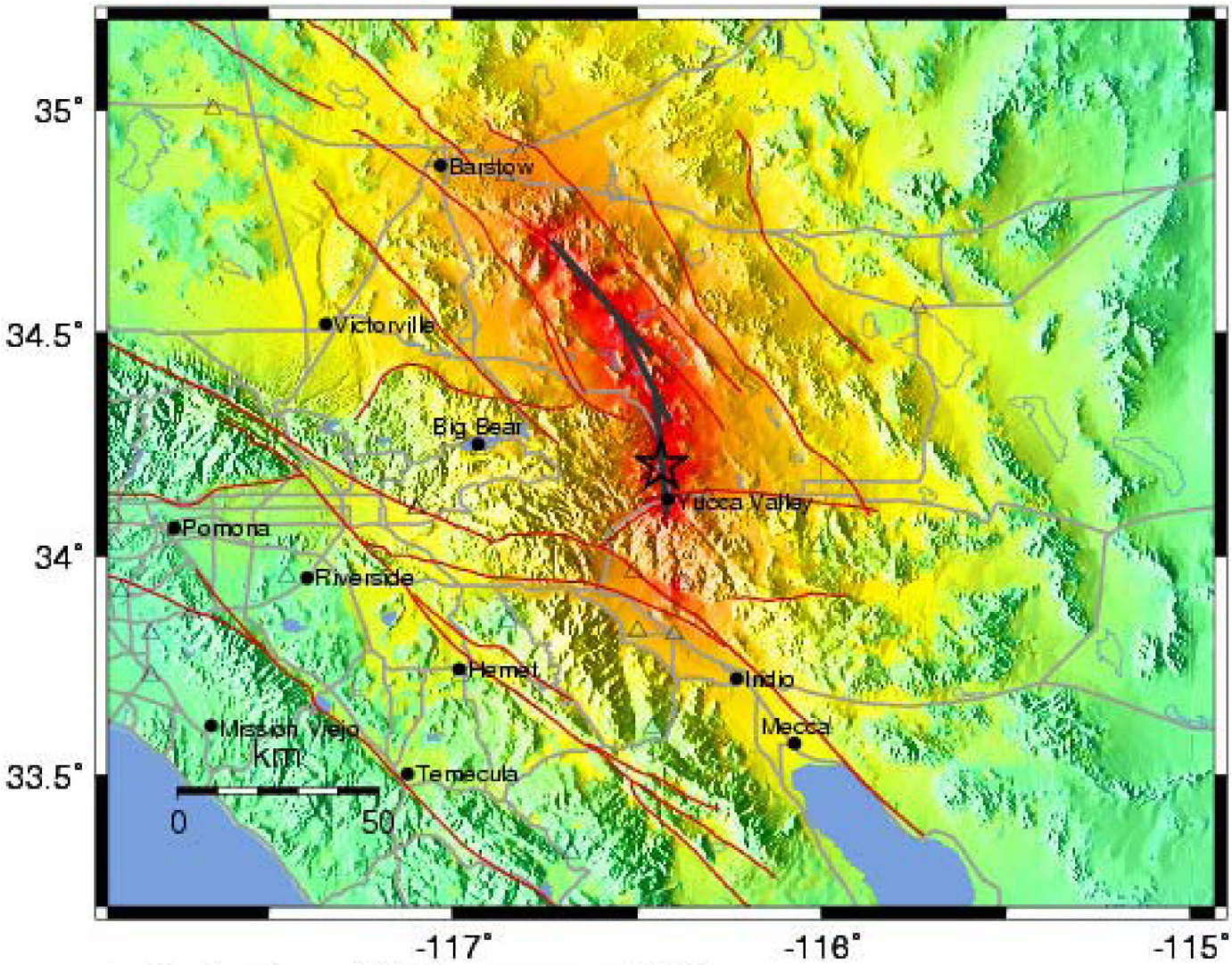
Figure 5.5-5

## SHAKEMAP, 1992 LANDERS EARTHQUAKE




Map Version 4 Processed Fri Feb 2, 2007 10:00:29 AM PST,

| PERCEIVED SHAKING | Not felt | Weak | Light | Moderate | Strong | Very strong | Severe | Violent | Extreme |
|---|---|---|---|---|---|---|---|---|---|
| POTENTIAL DAMAGE | none | none | none | Very light | Light | Moderate | Moderate/Heavy | Heavy | Very Heavy |
| PEAK ACC.(%g) | *<.17* | *.17-1.4* | *1.4-3.9* | *3.9-9.2* | *9.2-18* | 18-34 | 34-65 | 65-124 | >124 |
| PEAK VEL.(cm/s) | <0.1 | 0.1-1.1 | 1.1-3.4 | 3.4-8.1 | *8.1-16* | *16-31* | *31-60* | *60-116* | *>116* |
| INSTRUMENTAL INTENSITY | I | II-III | IV | V | VI | VII | VIII | IX | X+ |

**Source**: http://earthquake.usgs.gov/eqcenter/shakemap/sc/shake/9108645/

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***Historic Earthquakes***

Notable past earthquakes that have caused significant ground shaking in the southern California area, including Yucca Valley, are described in detail in the technical background report (see Appendix F) and summarized below in Table 5.5-2.

***Table 5.5-2***
***Selected Historic Earthquakes***

| *Earthquake* | *Year* | *Fault* | *Magnitude* | *Notable Effects* |
|---|---|---|---|---|
| Wrightwood | 1812 | San Andreas, Mojave segment | 7.5 (estimated) | San Juan Capistrano Mission church roof collapsed, killing 40. Walls damaged and statues destroyed at San Gabriel Mission. |
| San Jacinto | 1899 | San Jacinto | 6.5 (estimated) | Extensive damage in San Jacinto and Hemet, with nearly all brick buildings either badly damaged or destroyed. Six people were killed in the Soboba Indian Reservation as a result of falling adobe walls. |
| San Jacinto | 1918 | San Jacinto | 6.8 | Extensive damage to the business districts of San Jacinto and Hemet; many masonry structures collapsed. |
| North San Jacinto Fault | 1923 | San Jacinto | 6.3 | Minor damage in San Bernardino and Redlands. |
| Long Beach | 1933 | Newport-Inglewood | 6.4 | 115 fatalities; $40 to 50 million in property damage. |
| Desert Hot Springs | 1948 | San Andreas, south branch | 6.5 | Walls cracked, water mains broke across wide area of southern California. |
| Borrego Mountain | 1968 | Coyote Creek fault, a branch of the San Jacinto Fault Zone | 6.5 | |
| San Fernando | 1971 | San Fernando | 6.6 | 65 deaths; over $500 million property damage. |
| Homestead Valley Earthquake Sequence | 1979 | Johnson Valley | 5.2 (largest) | Surface cracks, surface displacements suggesting fault rupture, ground lurching, and minor structural damage. |
| North Palm Springs | 1986 | | 5.6 | 29 injuries; 51 homes destroyed or damaged in the Palm Springs-Morongo Valley area. |
| Joshua Tree | 1992 | Eureka Peak (?) | 6.1 | Slight to moderate damage in Joshua Tree, Yucca Valley, Twentynine Palms, Desert Hot Springs, and Palm Springs. |
| Landers | 1992 | 5 faults | 7.3 | 1 death; largest earthquake in southern California in 40 years. |

**Table 5.5-2**
**Selected Historic Earthquakes**

| Earthquake | Year | Fault | Magnitude | Notable Effects |
|---|---|---|---|---|
| Big Bear | 1992 | Unknown | 6.4 | Substantial damage in Big Bear Lake area. |
| Northridge | 1994 | Oak Ridge | 6.7 | 57 deaths; 1,500 injuries; damaged 12,500 structures; most expensive earthquake (property damage) in US history. |
| Hector Mine | 1999 | several | 7.1 | |
| Baja California | 2010 | Borrego | 7.2 | |

Source: ECI 2012.

***Hazardous Buildings***

The principal threat in an earthquake is not limited to ground shaking, fault rupture or liquefaction, but the damage that the earthquake causes to buildings that house people or an essential function. Continuing advances in engineering design and building code standards over the past decade have greatly reduced the potential for collapse in an earthquake of most of our new buildings. However, many buildings were built before some of the earthquake design standards were incorporated into the building code. Several building types are a particular concern in this regard.

- **Unreinforced Masonry Buildings:** In the late 1800s and early 1900s, unreinforced masonry was the most common type of construction for larger downtown commercial structures and for multistory apartment and hotel buildings. These were recognized as a collapse hazard following the San Francisco earthquake of 1906, the Santa Barbara earthquake of 1925, and again the aftermath of the Long Beach earthquake of 1933. These buildings are still recognized as the most hazardous buildings in an earthquake. Per Senate Bill 547, local jurisdictions are required to enact structural hazard reduction programs by inventorying pre-1943 unreinforced masonry buildings and developing mitigation programs to correct the structural hazards.

- **Precast Concrete Tilt-up Buildings:** This building type was introduced following World War II and gained popularity in light industrial buildings during the late 1950s and 1960s. Extensive damage to concrete tilt-up buildings in the 1971 San Fernando earthquake revealed the need for better anchoring of walls to the roof, floor, and foundation elements of the building and for stronger roof diaphragms.[2] In the typical damage to these buildings, the concrete wall panels would fall outward and the adjacent roof would collapse, creating a direct hazard.

- **Soft-Story Buildings:** Soft-story buildings are those in which at least one story, commonly the ground floor, has significantly less rigidity and/or strength than the rest of the structure. This can form a weak link in the structure unless special design features are incorporated to give the building adequate structural integrity. Typical examples of soft-story construction are buildings with glass curtain walls on the first floor only or buildings placed on stilts or columns, leaving the first story open for landscaping, street-friendly building entry, parking, or other purposes. In the early 1950s to early 1970s, soft story buildings were a popular construction style for low- and mid-rise concrete frame structures.

[2] A roof diaphragm is a structural roof deck that is capable of resisting shear that is produced by lateral forces, such as wind or seismic loads.

- **Nonductile Concrete Frame Buildings:** Nonductile concrete frame buildings have stiff reinforced concrete frames that do not bend when shaken or twisted, which increases the likelihood of structural failure during an earthquake. This type of construction was common in the very early days on reinforced concrete buildings, and they continued to be built until the codes were changed to require improved building performance in earthquakes in 1973. There were large numbers of these buildings built for commercial and light industrial use in California's older, densely populated cities. Although many of these buildings have four to eight stories, there are many in the lower height range. This category also includes one-story parking garages with heavy concrete roof systems supported by nonductile concrete columns.

***Surface Fault Rupture***

Surface fault rupture is fissuring and displacement of the ground surface and can occur along the fault that breaks in an earthquake or another fault. Faults are classified as active, potentially active, or inactive:

- Active: faults show evidence of ground displacement within the last 11,000 years, and are thus thought capable of producing earthquakes.

- Potentially Active: show evidence of movement within the past 1.6 million years, but no evidence shows movement within the last 11,000 years.

- Not Active: evidence shows the fault has not moved in the last 11,000 years.

However, some faults previously thought not active have ruptured in recent earthquakes—including the Landers earthquake—and evidence needed to determine whether a fault has moved in the last 11,000 years can be difficult to obtain. Surface fault rupture hazard on faults in Yucca Valley is described below:

- **Pinto Mountain fault:** Several traces are classified active. Several fault strands within the zone were interpreted as having ruptured repeatedly in the past 14,000 years, with four events occurring in the past 9,400 years, for an approximate recurrence interval of about 2,500 to 3,000 years. Although the fault has not ruptured historically, sections of it did experience minor slip associated with the Landers earthquake. Traces of this fault are zoned Alquist-Priolo Earthquake Fault Zones.

- **Burnt Mountain fault:** Discovered due to Landers earthquake. Landforms associated with fault indicate the fault has ruptured the ground surface in the Holocene or late Pleistocene. No data on past earthquakes or earthquake recurrence are available. This fault is designated an Alquist-Priolo Earthquake Fault Zone.

- **Eureka Peak fault**: Discovered due to Landers earthquake. Fault trenching showed evidence of past (pre-1992) surface rupturing events in the Holocene and late Pleistocene that indicate that this fault has been active in the past and has the potential to rupture again in the future. The fault is designated an Alquist-Priolo Earthquake Fault Zone.

- **Lower Covington Flat fault:** Activity unknown; should be investigated if development is proposed across it.

- **Southern Johnson Valley fault:** The maximum displacement in the Landers earthquake was 10.2 feet. The fault zone varies in width up to over 330 feet wide. Trenching data indicate that the Johnson Valley fault has ruptured five times in the last 25,000 years, for an average recurrence interval of 5,000 years.

***Liquefaction and Related Ground Failure***

Liquefaction causes various types of ground failure. It typically occurs within 50 feet of the surface, in saturated, loose, fine- to medium-grained sandy to silty soils in the presence of ground accelerations over 0.2g. Earthquake shaking suddenly increases pressure in the water that fills the pores between soil grains, causing the soil to behave like a liquid or semiviscous substance. This process can be observed at the beach standing on wet sand; when you tap the sand with your feet, water comes to the surface, the sand liquefies, and your feet sink.

Liquefaction can cause damage due to ground settlement, a loss of bearing capacity in the foundation soils, and the buoyant rise of buried structures. That is, when soils liquefy, the structures built on them can sink, tilt, and suffer significant damage. In addition to loss of bearing strength, liquefaction-related effects include ground oscillations, lateral spreading, and flow failures or slumping.

There are three general conditions that need to be met for liquefaction to occur. The first of these—strong ground shaking of relatively long duration—can be expected to occur in the Yucca Valley area as a result of an earthquake on any of the several active faults in the region. The second condition—geologically young, loose, unconsolidated sediments—occurs locally in some areas, typically along the active drainages, and on the young alluvial fans. The third condition—water-saturated sediments within about 15 meters (50 feet) of the surface—has not been reported historically in the Yucca Valley area, and as a result, the hazard of liquefaction occurring in the alluvial sediments underlying the valley portion of the study area is currently considered low to very low. Liquefaction susceptibility in Yucca Valley is mapped on Figure 5.5-6, *Seismic Hazard Zones.*

Unchecked groundwater recharge in the area could increase liquefaction susceptibility in the future. However, personnel from both the USGS and the Hi-Desert Water District (HDWD) are aware of this issue, and as reclaimed water is recharged into some of the subbasins in the area, they will reportedly monitor and maintain groundwater levels below the critical 50-foot depth to avoid developing susceptibility to liquefaction. The types of ground failure typically associated with liquefaction are explained below.

- **Lateral Spreading.** Lateral displacement of soil due to liquefaction in a subsurface layer is called lateral spreading. Even a very thin liquefied layer can act as a hazardous slip plane if it is continuous over a large enough area. Once liquefaction transforms the subsurface layer into a fluid-like mass, the mass may move down-slope toward a cut slope or free face (such as a river channel or a canal). Lateral spreading most commonly occurs on gentle slopes between 0.3 and 3 degrees, and it can displace the ground surface by several feet to tens of feet. Such movement damages pipelines, utilities, bridges, roads, and other structures.

- **Flow Failure.** The most catastrophic mode of ground failure caused by liquefaction is flow failure. Flow failure usually occurs on slopes greater than 3 degrees. Flows are principally liquefied soil or blocks of intact material riding on a liquefied subsurface. Displacements are often in the tens to hundreds of feet, but under certain conditions, soils can be displaced for tens of miles, at velocities of tens of miles per hour.

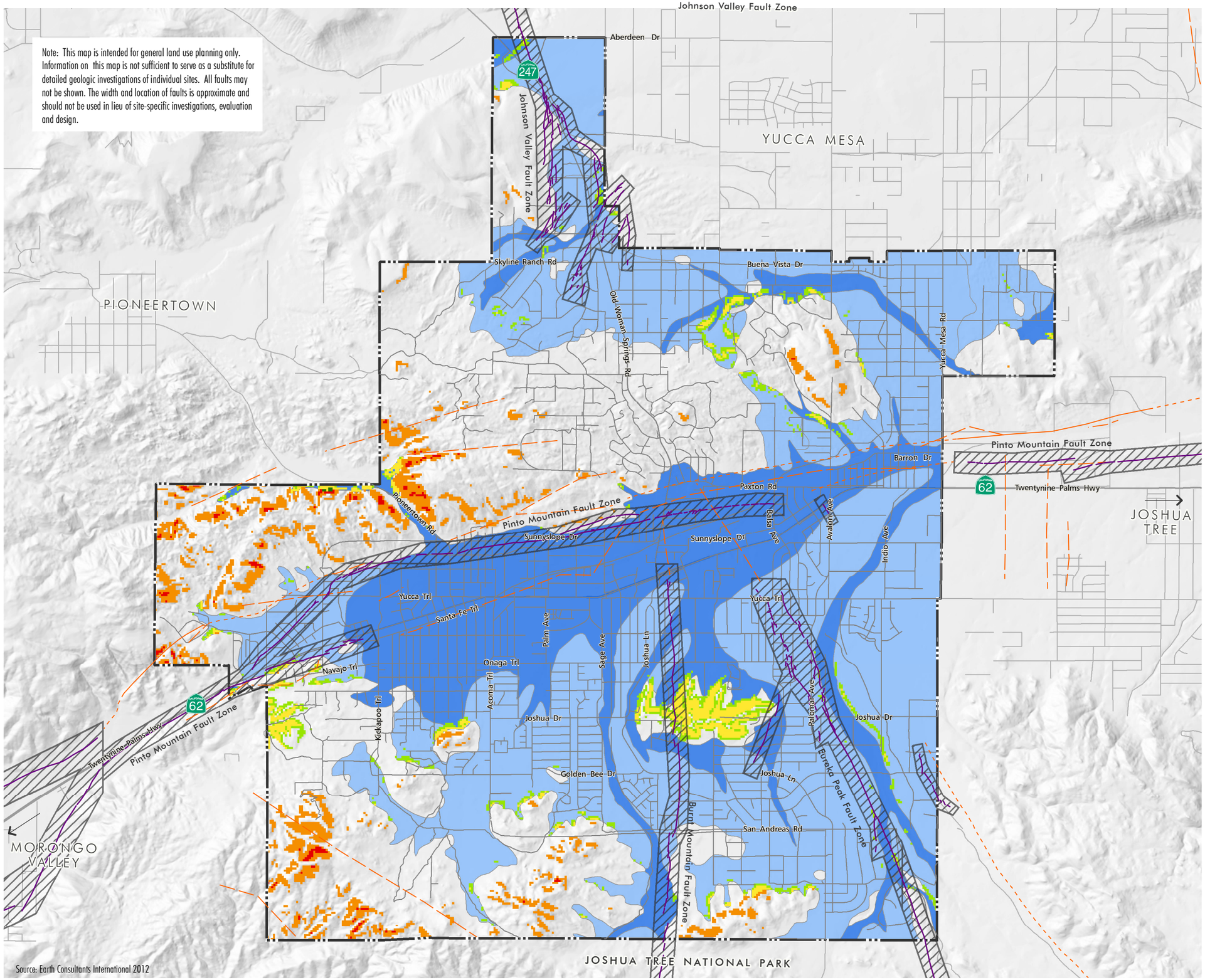
- **Ground Oscillation.** When liquefaction occurs at depth but the slope is too gentle to permit lateral displacement, the soil blocks that are not liquefied may separate from one another and oscillate on the liquefied zone. The resulting ground oscillation may be accompanied by the opening and closing of fissures (cracks) and sand boils, potentially damaging structures and underground utilities.

- **Loss of Bearing Strength.** When a soil liquefies, loss of bearing strength may occur beneath a structure, possibly causing the building to settle and tip. If the structure is buoyant, it may float upward.

# 5.5 - GEOLOGY AND SOILS

## Figure 5.5-6
## SEISMIC HAZARD ZONES

Note: This map is intended for general land use planning only. Information on this map is not sufficient to serve as a substitute for detailed geologic investigations of individual sites. All faults may not be shown. The width and location of faults is approximate and should not be used in lieu of site-specific investigations, evaluation and design.




Source: Earth Consultants International 2012

- Alquist-Priolo Earthquake Fault
- Fault; not zoned under the Alquist-Priolo Act
- Alquist-Priolo Earthquake Fault Zone

**Earthquake-Induced Slope Instability**

- Rock Falls
- Rock Slides
- Soil Falls
- Soil Slides
- Soil Slumps

**Liquefaction Susceptability**

- Low - Areas underlain by course-grained Holocene age sediments, groundwater depth > 100' or unknown
- Very Low - Areas underlain by course-grained Pleistocene age sediments, groundwater depth > 100' or unknown
- Town Limits

YUCCA VALLEY GENERAL PLAN
DRAFT EIR

TYV-01 08.26.13

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- **Ground Lurching.** Soft, saturated soils have been observed to move in a wavelike manner in response to intense ground shaking, forming ridges or cracks on the ground surface. At present, the potential for ground lurching at a given site can be predicted only generally. Areas underlain by a thick accumulation of colluvium and alluvium appear to be the most susceptible to ground lurching. Under strong ground motion, lurching can be expected in loose, cohesionless soils or in clay-rich soils with high moisture content. The deformation can persist after shaking stops.

***Earthquake-Induced Slope Failure***

Strong ground motions can worsen existing unstable slope conditions. Seismically induced landslides can overrun structures, harm people or damage property, sever utility lines, and block roads, thereby hindering rescue operations after an earthquake. Although numerous types of earthquake-induced landslides have been identified, the most widespread type generally consists of shallow failures involving surficial soils and the uppermost weathered bedrock in moderate to steep hillside terrain (these are also called disrupted soil slides). Rockfalls and rock slides on very steep slopes are also common.

A combination of geologic conditions leads to landslide vulnerability. These include high seismic potential; rapid uplift and erosion resulting in steep slopes and deeply incised canyons; highly fractured and folded rock; and rock with inherently weak components, such as silt or clay layers. The orientation of the slope with respect to the direction of the seismic waves (which can affect the shaking intensity) can also control the occurrence of landslides. Groundwater conditions at the time of the earthquake also play an important role in the development of seismically induced slope failures.

The specific types of earthquake-induced landslides that occur in rock and sedimentary deposits under dry conditions include rock falls, rock slides, rock avalanches, soil falls, and soil slides. With the exception of rock avalanches, the materials involved are mostly shallow, generally less than 10 feet deep. The geologic and slope conditions commonly necessary for these failures to occur were used to evaluate the earthquake-induced slope instability potential in the Yucca Valley area and develop the potential earthquake-induced landslide zones shown on Figure 5.5-6, *Seismic Hazard Zones*.

Rockfalls may happen suddenly and without warning, but are more likely to occur in response to earthquake-induced ground shaking, during periods of intense rainfall, or as a result of human activities, such as grading and blasting. Ground acceleration of at least 0.10g in steep terrain is necessary to induce earthquake-related rockfalls. Such ground acceleration is anticipated in the Sawtooth Mountains when the Pinto Mountain fault ruptures next.

*Ridgetop Fissuring and Shattering*

Ridgetop shattering—which leaves the surface looking as if it was plowed—by the 1994 Northridge earthquake occurred locally to structures at the tops of relatively high (greater than 100 feet), narrow (typically less than 300 feet wide) ridges flanked by slopes steeper than about 2.5:1 (horizontal:vertical). Ridgetop fissuring and shattering is considered a result of intense amplification or focusing of seismic energy due to local topographic effects.

Ridgetop shattering may occur locally in the mountains bordering the Yucca Valley area, including the Sawtooths and Little San Bernardinos. Particularly susceptible to this hazard would be the long, narrow ridgetop dominating the view to the north when entering the Town of Yucca Valley from the west, both to the west-southwest and northeast of Pioneertown Road. To the south, ridgetop shattering could also occur locally along the top of Burnt Mountain and at the top of the mountain flanking South Park.

***Seismically Induced Settlement***

Under certain conditions, strong ground shaking can cause the densification of soils, resulting in local or regional

settlement of the ground surface. During strong shaking, soil grains become more tightly packed due to the collapse of voids and pore spaces, resulting in a shrinkage of the soil column. This type of ground failure typically occurs in loose granular, cohesionless soils, and can occur in either wet or dry conditions. Unconsolidated young alluvial deposits are especially susceptible to this hazard. Artificial fills may also experience seismically induced settlement. Damage to structures typically occurs as a result of local differential settlements. Regional settlement can damage pipelines by changing the flow gradient on water and sewer lines, for example. As shown in Figure 5.5-1, certain areas of the Town of Yucca Valley are underlain by young, unconsolidated alluvial deposits and artificial fill. These sediments are susceptible to seismically induced settlement.

***Slope Instability***

Ground shaking is considered the most likely trigger of slope failure in the Yucca Valley area; earthquake-induced slope failures are discussed above under "Seismic Hazards." Therefore, slope instability other than earthquake-induced landslides is discussed very briefly here and is described in more detail in Chapter 2, Geologic Hazards, of the technical background report included as Appendix F of this DEIR.

Slope failures are grouped in two categories: gross or global failures involving deep-seated or relatively thick slide masses; and surface failures.

*Gross or Global Failures*

Landslides are movements of relatively large landmasses, either as nearly intact bedrock blocks or as jumbled mixes of bedrock blocks, fragments, debris, and soils. Landslides are considered the least likely type of slope failure to occur in Yucca Valley.

*Surface Failures*

Surface failures include the following:

- **Slope creep** in general involves deformation and movement of the outer soil or rock materials that cover a slope due to the forces of gravity overcoming the shear strength of the material. Movement is imperceptibly slow and relatively continuous on moderate to steep slopes. Creep occurs most often in soils that develop on fine-grained bedrock units. Rock creep is a similar process and involves permanent deformation of the outer few feet of the rock face resulting in folding and fracturing. Rock creep is most common in highly fractured, fine-grained rock units, such as siltstone, claystone, and shale.

- **Soil slip** is generated by strong storms and is widespread in steeper slope areas, particularly after winters with prolonged and/or heavy rainfall. Most slips occur on slopes having gradients between about 50 to 150 percent. Slopes within this range of gradients are present in the foothills and mountains within and surrounding Yucca Valley.

- **Debris flows or mudflows**, the most dangerous and destructive of all types of slope failure, are rapidly moving slurries of water, mud, rock, vegetation and debris generated by prolonged heavy rainfall. This type of failure is especially dangerous because it can move at speeds as fast as 40 feet per second (27 miles per hour), is capable of crushing buildings, and can strike with very little warning. Canyons in the Sawtooth and Bartlett Mountains and Little San Bernardino Mountains are susceptible to mudflows, and canyons on Burnt Mountain are susceptible to small mudflows.

- **Rockfalls** are free-falling to tumbling masses of bedrock that have broken off steep canyon walls or cliffs; repeated rockfalls form talus slopes at the bases of cliffs. The granitic bedrock that forms the Sawtooth and Bartlett Mountains commonly weathers into large boulders that perch precariously on slopes, posing a

rockfall hazard to areas adjacent to and below these slopes. Rockfalls can occur suddenly and without warning, but are more likely to occur in response to earthquakes, during periods of intense rainfall, or due to activities such as grading and blasting.

The natural hillsides in Yucca Valley are vulnerable to the types of slope instability mentioned above, mostly in the form of surficial failures and rockfalls. The susceptibility is outlined in Table 5.5-3.

***Table 5.5-3***
***General Slope Stability Potential in Yucca Valley***

| *Location* | *Existing Geologic Conditions* | *Types of Potential Slope Stability* |
|---|---|---|
| Sawtooth and Bartlett Mountains | Moderate to steep natural slopes, many in excess of 26 degrees (50 percent slope gradient). Fractured and faulted bedrock; soils and loose debris at the toes of slopes and in drainage courses. Locally, small to large boulders perched on slopes. | Most Probable<br>Rockfalls and rockslides, falling boulders, soil slips, slumping of oversteepened stream banks; small to large debris flows in canyons; sedimentation at the mouths of canyons and downstream.<br>Least Probable:<br>Large, deep-seated landslides. |
| Little San Bernardino Mountains | Moderate to steep natural slopes, many in excess of 26 degrees (50 percent slope gradient). Fractured and faulted bedrock; soils and loose debris at the toes of slopes and in drainage courses. Foliation dipping steeply to the northwest. | Most Probable:<br>Rockfalls and rockslides, soil slips, slumping of oversteepened stream banks; small to large debris flows in canyons; sedimentation at the mouths of canyons and downstream.<br>Least Probable:<br>Large, deep-seated landslides. |
| Burnt Mountain | Moderate to steep slopes. Although the sediments forming these hills are generally granular with massive to crude bedding, there is a localized potential for slope failure if natural slopes are oversteepened by erosion or grading operations. | Most Probable:<br>Slumps on oversteepened slopes; soil slips, small debris flows, sedimentation at the mouth of canyons.<br>Least Probable:<br>Large, deep-seated landslides. |

Source: ECI 2012.

***Compressible Soils***

Compressible soils are typically geologically young, unconsolidated sediments of low density that may compress under the weight of proposed fill embankments and structures. The settlement potential and the rate of settlement in these sediments depends on the soil characteristics (texture and grain size), natural moisture and density, thickness of the compressible layer(s), the weight of the proposed load, the rate at which the load is applied, and drainage.

In Yucca Valley, compressible soils are most likely to occur where young Holocene-age deposits are present, including the modern and prehistoric floodplains of Yucca Wash and other major drainages. Compressible soils are also commonly found in hillside areas, typically in canyon bottoms, swales, and at the base of natural slopes. The upper few feet of older alluvium, which are commonly weathered and/or disturbed, are also typically compressible.

### *Collapsible Soils*

Hydroconsolidation or soil collapse typically occurs in Holocene-age soils that were deposited in an arid or semiarid environment. Soils prone to collapse are commonly associated with wind-deposited sands and silts, and alluvial fan or debris flow sediments deposited during flash floods. These soils are typically dry and contain minute pores and voids. The soil particles may be partially supported by clay, silt, or carbonate bonds. When saturated, collapsible soils undergo a rearrangement of their grains and a loss of cementation, resulting in substantial and rapid settlement under relatively light loads. An increase in surface water infiltration, such as from irrigation, or a rise in the groundwater table, combined with the weight of a building or structure, can initiate rapid settlement and cause foundations and walls to crack. Typically, differential settlement of structures occurs when landscaping is heavily irrigated close to the structure's foundation.

The young alluvial sediments in the Yucca Valley area may be locally susceptible to this hazard due to their low density, granular nature, rapid deposition in the alluvial fan environment, and the generally dry condition of the near-surface soils.

### *Expansive Soils*

Fine-grained soils, such as silts and clays, may contain variable amounts of expansive clay minerals. These minerals can shrink or swell as the moisture content decreases or increases; the shrinking or swelling can shift, crack, or break structures built on such soils.

The valley is underlain by alluvial sediments that are composed predominantly of granular materials (silty sand, sand, and gravel). Such units typically have a low expansion potential, although pockets of fine-grained expansive soils are present within these units. Silt and clay beds within the older alluvium, although not prevalent, are potentially expansive. Weathered clay soil in the older fan deposits probably falls in the moderately expansive range. The rock units in Yucca Valley are generally not expansive, except where they have been chemically altered (by natural processes), are very weathered, or contain clayey sheared zones. Engineered fills may be expansive and can damage improvements if such soils are incorporated into the fill near the finished surface.

### *Corrosive Soils*

Corrosive soils can, over time, cause extensive damage to buried metallic objects, commonly impacting such things as buried pipelines (such as water mains), and even affecting steel elements within foundations. The electrochemical and bacteriological processes that take place between the soil and the buried structure are complex and depend on a number of factors involving the structure type and certain soil characteristics. For instance, the type, grade, length, and size of the piping, as well as the materials used in pipe connections, can determine which electrochemical reactions will take place in differing soils. The most common factor used in identifying corrosion potential of soils is electrical resistivity. Soils with low resistivity are especially susceptible to corrosion reactions. Other soil characteristics that increase the risk of corrosion to metals are low pH (acidic soils), wet soils, high chloride levels, low oxygen levels, and the presence of certain bacteria. Sulfate-reducing bacteria in soil can increase corrosion risk; soils with high concentrations of soluble sulfates will be corrosive to concrete.

### *Land Subsidence Due to Groundwater Withdrawal*

Land subsidence is the gradual settling or sinking of the ground surface with little or no horizontal movement. Most ground subsidence is caused by human activities, chiefly extraction of groundwater.

Ground-surface effects related to regional subsidence can include earth fissures, sinkholes or depressions, and disruption of surface drainage. Damage is generally restricted to structures sensitive to slight changes in elevations, such as canals, levees, underground pipelines, and drainage courses; however, significant subsidence can result in

damage to wells, buildings, roads, railroads, and other improvements. Subsidence due to the overdraft of groundwater supplies can also result in the permanent loss of aquifer storage capacity.

In the Mojave region, groundwater occurs in sediment-filled basins that are floored by crystalline rock and bounded by faults or various types of impervious rock—all of which act as barriers to groundwater movement. For the most part, natural groundwater replenishment (recharge) in the aquifers occurs by infiltration of stormwater runoff that percolates through the alluvial sediments. During the early years of population growth in the high desert, the rate of groundwater extraction exceeded the natural replenishment, resulting in declining water levels and overdraft of the groundwater supply in more densely populated areas, including Yucca Valley. Since then, overdraft has been greatly reduced in many of the affected areas by careful management of local water supplies, including reducing pumping of local wells, importing water, and the use of artificial recharge.

Because surface water is scarce, Yucca Valley, like many other high desert communities, relied entirely on groundwater from the underlying aquifers for their domestic supply from the early 1900s to the mid-1990s. The main sources of Yucca Valley's water supply are wells in the northern part of the Warren Valley Groundwater Basin. This basin underlies the Town's alluvial area south of the Pinto Mountain fault zone. The Warren Valley Basin was in a state of overdraft for many years, with water levels in some areas dropping as much as 300 feet between 1940 and 1994. Since 1995, recharge sites (percolation ponds) in the Yucca Valley region receive water from the California Aqueduct via the Morongo Basin Pipeline, and water levels in the Warren Valley Basin have recovered significantly. Recharge is also supplied by irrigation and septic system return flows that percolate back into the ground.

To date, subsidence has not been reported in Yucca Valley. However, the thick alluvial deposits comprising these aquifers may be susceptible to compaction (with resulting subsidence at the surface) should rapid groundwater withdrawal occur beneath the area in response to the water needs of the Town's growing population.

***Capability of Soils to Support Septic Tanks***

All residents and businesses in the Town of Yucca Valley currently use septic systems and subsurface disposal systems to treat and dispose of wastewater. Soils in the Yucca Valley are mostly porous and permeable with high percolation rates. However, high levels of nitrate in groundwater under the Town have resulted from the large number of septic systems in and near the Town. The Colorado River Basin Regional Water Quality Control Board prohibited new septic systems in parts of Yucca Valley in 2011. The HDWD in 2009 adopted a revised Sewer Master Plan that includes a three-phase development of new sewer collection and treatment systems. The treated wastewater would then be used for groundwater recharge. The District plans to construct a water reclamation facility that will use a tertiary advanced treatment system to treat wastewater and generate effluent that would then be delivered to recharge basins where it would percolate into and recharge the Warren Valley groundwater basin. Water quality is discussed further in Section 5.8, *Hydrology and Water Quality*, of this DEIR.

### 5.5.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

G-1 Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. (Refer to Division of Mines and Geology Special Publication 42.)

ii) Strong seismic ground shaking.

iii) Seismic-related ground failure, including liquefaction.

iv) Landslides.

G-2 Result in substantial soil erosion or the loss of topsoil.

G-3 Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

G-4 Be located on expansive soil, as defined in Table 18-1B of the Uniform building Code (1994), creating substantial risks to life or property.

G-5 Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

### 5.5.3 Environmental Impacts

The following impact analysis addresses thresholds of significance for which the Initial Study disclosed potentially significant impacts. The applicable thresholds are identified in brackets after the impact statement.

***IMPACT 5.5-1: BUILDOUT OF THE GENERAL PLAN UPDATE WOULD NOT EXPOSE PEOPLE AND STRUCTURES TO SUBSTANTIAL HAZARDS FROM STRONG GROUND SHAKING OR FROM SURFACE RUPTURE OF A FAULT. [THRESHOLDS G-1.I, G-1.II]***

***Impact Analysis:*** The following describes potential hazards from strong ground-shaking and fault rupture in Yucca Valley:

#### Strong Ground Shaking

Faults in the Yucca Valley region; the maximum magnitude earthquake that each fault is considered likely capable of generating; and the MMI intensity of ground shaking in Yucca Valley that would result respecting each fault, are described above in Section 5.5-1. Buildout of the proposed General Plan Update would increase the number of residents and workers, and total development intensity, in the Town. Thus, General Plan Update buildout would increase the numbers of people and structures in Yucca Valley that would be exposed to strong ground shaking.

Geologic investigations of project sites would be required under the Alquist-Priolo Earthquake Fault Zoning Act and the Seismic Hazards Mapping Act. Design and construction of structures built pursuant to the General Plan Update would be required to comply with the current CBC, which is updated on a three-year cycle. Projects developed pursuant to the General Plan Update would comply with legal and regulatory requirements regarding geologic investigations of project sites, building design, and building construction. No substantial hazards would occur.

#### Surface Rupture of a Fault

Four active faults are known in the Town of Yucca Valley, two of which were discovered by surface rupture resulting from the 1992 Landers earthquake. The activity of a fifth fault in Yucca Valley, the Lower Covington Flat Fault, is unknown; however, geologic investigation is required if development is proposed across it under the Alquist-Priolo Earthquake Fault Zoning Act. Geologists and/or engineers conducting such investigations would identify setbacks from identified active fault traces. Setbacks would be subject to approval by the Town Community Development

Department. No substantial hazard would occur.

***IMPACT 5.5-2*** ***BUILDOUT OF THE GENERAL PLAN UPDATE WOULD NOT EXPOSE PEOPLE AND STRUCTURES TO SUBSTANTIAL HAZARDS FROM LIQUEFACTION AND RELATED GROUND FAILURE. [THRESHOLD G-1.III]***

***Impact Analysis:*** Liquefaction potential in the alluvial sediments underlying the valley portion of the Town is currently considered low to very low due to the lack of groundwater within 50 feet of the ground surface. The USGS and HDWD control groundwater recharge into the groundwater basins underlying the Town to prevent groundwater levels from rising to less than 50 feet below ground surface. No substantial hazard would occur.

***IMPACT 5.5-3*** ***ADHERENCE TO THE RECOMMENDATIONS IDENTIFIED IN THE GEOTECHNICAL STUDIES REQUIRED FOR NEW DEVELOPMENT ASSOCIATED WITH BUILDOUT OF THE PROPOSED GENERAL PLAN UPDATE WOULD ENSURE THAT RISKS FROM H EARTHQUAKE-RELATED HAZARDS WOULD BE MINIMIZED. [THRESHOLD G-1.IV]***

***Impact Analysis:*** The following describes potential hazards from earthquake-related ground failure in Yucca Valley.

### Earthquake-Related Slope Failures

Ground acceleration of at least 0.10g in steep terrain is necessary to induce earthquake-related rockfalls. Such ground acceleration is anticipated in the Sawtooth Mountains when the Pinto Mountain fault ruptures next. Ridgetop shattering may occur locally in the mountains bordering the Yucca Valley area, including the Sawtooths and Little San Bernardinos.

The hills and mountains in the Yucca Valley area have not been mapped within a State-delineated Seismic Hazard Zone for seismically induced landsliding. Nevertheless, mapping procedures similar to those used by the CGS were used to identify the potentially unstable slopes identified in Figure 5.5-6. Until an official map of seismic hazards is issued for this area by the CGS, this figure should be used as the official map. All development projects proposed within or near the potentially unstable slopes identified in Figure 5.5-6 should be evaluated to determine their potential for seismically induced landsliding.

For suspect slopes, appropriate geotechnical investigation and slope stability analyses should be performed for both static and dynamic (earthquake) conditions. Protection from rockfalls or surficial slides can often be achieved by protective devices such as barriers, retaining structures, catchment areas, or a combination of the above. The runout area of the slide at the base of the slope and the potential bouncing of rocks must also be considered. If it is not feasible to remedy the unstable slope conditions, building setbacks should be imposed. After required geotechnical investigations, and required implementation of recommendations in geotechnical investigation reports, developments pursuant to the General Plan Update would not create substantial hazards arising from earthquake-related slope failures.

### Seismic Settlement

Certain areas of the Town of Yucca Valley (see Figure 5.5-1) are underlain by young, unconsolidated alluvial deposits and by artificial fill; these sediments are susceptible to seismically induced settlement.

Remedial measures to reduce hazards from seismically induced settlement are similar to those used for liquefaction. Recommendations are provided by the project's geologist and soil engineer following a detailed geotechnical investigation of the site. Overexcavation and recompaction is the most commonly used method to densify soft soils susceptible to settlement. Deeper overexcavation below final grades, especially at cut/fill, fill/natural, or alluvium/bedrock contacts may be recommended to provide a more uniform subgrade. Overexcavation should also

be performed so that large differences in fill thickness are not present across individual lots. In some cases, specially designed deep foundations, strengthened foundations, and/or fill compaction to a minimum standard that is higher than required by the CBC may be recommended.

Projects developed pursuant to the proposed General Plan Update would be required to have geotechnical investigations of the project sites conducted per state laws and regulations and General Plan policies. Compliance with recommendations in the geotechnical investigations reports would be required as conditions of issuance of building and grading permits by the Town. No substantial hazard would occur.

***IMPACT 5.5-4 BUILDOUT OF THE PROPOSED GENERAL PLAN UPDATE WOULD NOT CAUSE SUBSTANTIAL EROSION. [THRESHOLD G-2]***

***Impact Analysis:*** Erosion is the movement of rock and soil, and is a natural process. Common agents of erosion in the Yucca Valley region are water and wind. However, ground-disturbing activities can greatly accelerate erosion if effective erosion control measures are not used. The Town of Yucca Valley gets very little rainfall; the average annual rainfall over the entire Lucerne Planning Area watershed is five inches (CRBRWQCB 2006). The CORPs has identified that there are currently no Waters of the U.S. within the Town because the most prominent water course in the Town, the Yucca Valley Creek, is classified as an intermittent desert stream.[3] Therefore, water courses in the Town discharge to desert basins (not water bodies). If a jurisdictional determination has been made that the project does not discharge to federal waters, then no enrollment under the General Construction Permit is necessary and no impacts are considered to occur. Furthermore, demolition, land clearing, grading, and construction activities of projects approved pursuant to the proposed General Plan Update would be required to comply with Mojave Desert Air Quality Management District (MDAQMD) Rules 403 and 403.2 regulating fugitive dust emissions, thus minimizing wind erosion from such ground-disturbing activities. Construction activities within the Town would not generate substantial erosion.

***IMPACT 5.5-5: ADHERENCE TO THE RECOMMENDATIONS IDENTIFIED IN THE GEOTECHNICAL STUDIES REQUIRED FOR NEW DEVELOPMENT ASSOCIATED WITH BUILDOUT OF THE PROPOSED GENERAL PLAN UPDATE WOULD NOT EXPOSE PEOPLE AND STRUCTURES TO GEOLOGIC HAZARDS FROM COLLAPSIBLE SOILS, COMPRESSIBLE SOILS, CORROSIVE SOILS, OR GROUND SUBSIDENCE. [THRESHOLD G-3]***

***Impact Analysis:*** The following describes potential hazards from soil conditions in Yucca Valley.

### Collapsible Soils

Young alluvial sediments in the Yucca Valley area may be locally susceptible to soil collapse due to their low density, granular nature, rapid deposition in the alluvial fan environment, and the generally dry condition of the near-surface soils.

The potential for soils to collapse should be evaluated on a site-specific basis as part of the geotechnical studies for development. If the soils are determined to be collapsible, the hazard can be reduced by several different measures or combination of measures, including excavation and recompaction, or presaturation and preloading of the susceptible soils in place to induce collapse prior to construction. After construction, infiltration of water into the subsurface soils should be minimized by proper surface drainage design, which directs excess runoff to catch basins and storm drains.

[3] Waters of the US include waters used, or potentially usable, in interstate or foreign commerce; interstate waters including interstate wetlands; waters—including intermittent waters—and wetlands, the destruction of which could affect interstate or foreign commerce; tributaries to waters identified above; and wetlands adjacent to waters identified above (Code of Federal Regulations, Title 33, Section 328.3). It should be noted that the Corps determination is reviewed every five years.

### Compressible Soils

In Yucca Valley, compressible soils are most likely to occur where young Holocene-age deposits are present, including floodplains. Compressible soils are also commonly found in hillside areas, typically in canyon bottoms, swales, and at the base of natural slopes. The upper few feet of older alluvium, which are commonly weathered and/or disturbed, are also typically compressible.

When development is planned within areas that contain potentially compressible soils, a geotechnical soil analysis is required to identify this hazard. The analysis should consider soil types onsite; the load of any proposed fills and structures that are planned; the type of structure (i.e., a road, pipeline, or building); and local groundwater conditions. Removal and recompaction of near-surface soils is generally the minimum that is required. Deeper removals may be needed for heavier loads or for structures that are sensitive to minor settlement. Based on the soil analysis, partial removal and recompaction of the compressible soils is sometimes performed, followed by settlement monitoring for a number of months after additional fill has been placed but before structures are built. In cases where it is not feasible to remove the compressible soils, buildings can be supported on specially engineered foundations that may include caissons or piles.

### Corrosive Soils

Corrosion testing is an important part of geotechnical investigations. Onsite soils, as well as any imported soils, are typically tested in the laboratory for resistivity, pH, chloride, and sulfates. For treatment of high sulfate content, special cement mixes and specified water contents are typically used for concrete that will be in contact with the soil. For corrosion of metals, there are a number of procedures used to protect the structure, including cathodic protection, coatings such as paint or tar, or wrapping with protective materials. Site-specific recommendations must be provided by an engineer who is a corrosion specialist.

### Land Subsidence

To date, subsidence has not been reported in Yucca Valley; however, subsidence could occur in the event of rapid groundwater withdrawal.

Preventing land subsidence requires management of groundwater conservation and recharge to avoid overdraft of groundwater basins. Measures for minimizing subsidence include:

- Determining the safe yields of groundwater basins so that available supplies can be balanced with extraction.
- Increase natural recharge by developing spreading basins to capture and percolate stormwater runoff. In rural areas, individual property owners should be encouraged to collect stormwater in rain barrels or cisterns.
- Water recycling.
- Continued monitoring of the groundwater levels in both HDWD wells and available private wells.
- Monitoring ground elevations in areas where groundwater levels are decreasing.
- Minimizing adverse land use effects on the supply and quality of the local groundwater. For example, there is currently no community-wide sewage treatment and disposal system in Yucca Valley. Wastewater is discharged to individual septic tanks and leaching systems. This is thought to contribute to high

concentrations of nitrate locally in groundwater wells of the Warren Valley Basin. As a consequence, the California Regional Water Quality Control Board - Colorado River Basin Region (CRBRWQCB), has recommended a septic prohibition for parts of Yucca Valley (2010) and adopted the prohibition in the form of an amendment to the Basin Plan for the Colorado River Basin Region (2011). The HDWD has developed a plan for a centralized sewer collection and wastewater treatment facility. Treated water would be returned to the Warren Valley Basin aquifer.

The HDWD has already implemented several water saving programs, including discouraging the wasteful use of water and providing public information on water conservation, desert landscaping, and resource management.

The HDWD currently has water supply capabilities to meet daily demands as well as future demands into the year 2035, even for multiple dry years. This supply includes local groundwater, future imported water allotments, and imported groundwater currently banked in the Warren Valley Basin aquifer. Considering water supplies available in Yucca Valley and current and planned water management efforts, substantial hazards from land subsidence in Yucca Valley are unlikely.

***IMPACT 5.5-6:*** ***NEW SEPTIC TANKS ARE PROHIBITED IN PARTS OF YUCCA VALLEY, AND NEW SEPTIC TANKS ALLOWED IN AREAS OUTSIDE THE WASTEWATER TREATMENT PLANT PHASING PLAN BOUNDARIES WOULD BE REQUIRED TO COMPLY WITH THE PLUMBING CODE TO ENSURE SOIL CONDITIONS WOULD ADEQUATELY SUPPORT SEPTIC TANKS. [THRESHOLD G-4]***

***Impact Analysis:*** All residents and businesses in the Town of Yucca Valley currently use septic systems and subsurface disposal systems to treat and dispose of wastewater. Soils in the Yucca Valley are mostly porous and permeable with high percolation rates.

### Nitrate Pollution

The large number of septic tanks used in Yucca Valley has resulted in nitrate pollution of groundwater. Increasing groundwater use caused the groundwater level to drop over 300 feet between the 1940s and 1995, when recharge of the basin with imported SWP water began. During that time, groundwater levels dropped faster than nitrates from septic systems moved downward. However, groundwater levels in HDWD Warren Valley Basin wells have risen an average of 151 feet between the 1992–93 and 2011–2012 water years. High levels of nitrates from septic systems were found in some wells after recharge with SWP water began. An estimated 880 acre-feet of septic discharge currently reaches the groundwater annually (HDWD 2012b).

### Septic System Prohibition and Proposed Wastewater Treatment and Water Reclamation System

The CRBRWQCB in 2011 prohibited discharge from septic systems in areas of the Town of Yucca Valley shown on Figure 5.8-4, *Wastewater Treatment Project Phasing Map*. The prohibition will be phased, with areas of the Town prohibited from discharging beginning in 2016, 2019, and 2022. A wastewater treatment and water reclamation system that would collect, treat, and reclaim wastewater in the majority of Yucca Valley is currently being developed. The system, which is projected to begin operation in 2016, includes a sewer collection system, a wastewater treatment plant, and water reclamation recharge ponds. The prohibition of new septic tanks in parts of Yucca Valley is due to groundwater pollution and not due to physical characteristics of soils including percolation rates.

### Requirements Governing Septic Systems Where Still Permitted

Septic systems that would be installed in parts of the Town where they would still be permitted—that is, outside of the phased prohibited areas shown on Figure 5.8-4—would be mandated to comply with requirements for septic tanks in the California Plumbing Code, California Code of Regulations, Title 24, Part 5.

## 5.5.4 Relevant General Plan Policies and Implementation Actions

### Safety Element

***Safety Element Policies***

| | |
|---|---|
| S 1-1 | Collect and maintain data on soils and areas of steep slopes (30 percent or greater) or slopes prone to failure within the Town boundaries. |
| S 1-2 | Limit grading associated with development to the minimum necessary to provide for planned improvements, while maintaining maximum natural and undisturbed vegetation to control soil disturbance and erosion. |
| S 1-3 | Require development proposals with a slope of 30 percent or greater and/or subject to rockfalls, landslides or excessive erosion to be accompanied by a geotechnical analysis and associated technical reports. |
| S 1-4 | Require development on slopes prone to failure or slopes 30 percent or greater to |
| S 2-1 | Participate in local and regional emergency preparedness planning efforts with public and quasi-public agencies to assure the continued functionality of major utility services in the event of a major earthquake. |
| S2-2 | Collect and distribute earthquake preparedness information and materials to Town residents and local businesses. |
| S 2-3 | Encourage and promote the development of ground water recharge basins in areas where increased potential for liquefaction resulting from an earthquake will have a minimal effect on existing and planned development. |
| S 2-4 | Encourage the location of heavily irrigated areas away from foundations and other structural supports to minimize the creation of a localized liquefaction hazards in areas of high seismicity. |
| S 2-5 | Evaluate development in areas identified as being subject to a rockfall or landslide hazard to minimize the potential of those hazards impacting property. |
| S 2-6 | Implement development restrictions and seismic study requirements around active faults pursuant to the Alquist-Priolo Act to ensure that potential impacts of seismic hazards are mitigated. |
| S 2-7 | Maintain an inventory of unreinforced masonry structures in compliance with California's Unreinforced Masonry Law. |

S 2-8 Coordinate with the U.S. Geological Survey to assure the provision of earthquake predictions which may impact the Town and surrounding area.

S 2-9 Coordinate and cooperate with public and quasi-public agencies to ensure that major utility systems and roadways have continued functionality in the event of a major earthquake.

***Safety Element Implementation Actions***

S 1 Disseminate information on areas of landslide susceptibility at Town Hall and on the Town's website by making available/ posting a link to the Slope Distribution Map.

S 2 Develop and adopt a detailed hillside grading ordinance with review standards to assess potential impacts from development on slopes 30 percent or greater.

S 3 Contract with a state-certified geologist and/or geological engineer to review and determine the adequacy of geotechnical studies for proposed projects.

S 4 Establish and maintain a reference collection of maps and other materials illustrating the location of seismic hazards occurring within the Town boundaries.

S 5 Disseminate information on fault locations at Town Hall and on the Town website by making available/ posting a link to the Seismic Hazards Map.

S 6 Update building, zoning and grading codes as needed to ensure adopted standards mitigate potential seismic hazards and comply with the Alquist-Priolo Act and Unreinforced Masonry Law.

S 7 Communicate with the Hi-Desert Water District to ensure the seismic safety of all existing and proposed water storage tanks and pipe connections.

S 8 Revise the Municipal Code to include requirements that protect the community from liquefaction.

S 9 Identify unreinforced masonry structures and maintain an inventory of their locations to inform local emergency response personnel and educate the public of the dangers associated with these structures during a catastrophic event.

### 5.5.5 Existing Regulations and Standard Conditions

#### State

- Alquist-Priolo Earthquake Fault Zoning Act (California Public Resources Code Sections 2621 et seq.)
- Seismic Hazards Mapping Act (California Public Resources Code Section 2695)
- California Building Code (CBC; Title 24, California Code of Regulations [CCR], Part 2)
- Unreinforced Masonry Law (California Government Code Sections 8875 et seq.)

- Natural Hazards Disclosure Act (California Civil Code Sections 1103 et seq.; California Public Resources Code Section 2694)
- General Permit for Discharges of Storm Water Associated with Construction Activity (Order 2009-0009-DWQ, State Water Resources Control Board)
- California Health and Safety Code Sections 17953 to 17955 and CBC Section 1802: Requirements for Geotechnical Investigation
- California Code of Regulations Title 24 Part 5: California Plumbing Code

### Regional

Mojave Desert Air Quality Management District Rules 403 and 403.2: Fugitive Dust Control

### Town of Yucca Valley

- The Town of Yucca Valley Building Code, Municipal Code Section 8.02.020.A, adopts the California Building Code including the Grading Code contained therein.

## 5.5.6 Level of Significance Before Mitigation

Upon implementation of regulatory requirements and standard conditions of approval, the following impacts would be less than significant: 5.5-1, 5.5-2, 5.5-3, 5.5-4, 5.5-5, and 5.5-6.

## 5.5.7 Mitigation Measures

No mitigation measures are required.

## 5.5.8 Level of Significance After Mitigation

Impacts would be less than significant after compliance with legal and regulatory requirements and General Plan policies; no mitigation is required.

## 5.5.9 References

California Department of Water Resources (CDWR). 2004a, February 27. Warren Valley Groundwater Basin. http://www.water.ca.gov/pubs/groundwater/bulletin_118/basindescriptions/7-12.pdf.

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Earth Consultants International (ECI). 2012, September. Chapter 1, Seismic Hazards, and Chapter 2, Geologic Hazards. In Technical Background Report to The Safety Element Update, Town of Yucca Valley, California.

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Mojave Desert Air Quality Management District. 2013, May 1. Rules 403 and 403.2. http://www.mdaqmd.ca.gov/Modules/ShowDocument.aspx?documentid=313.

## 5.6 GREENHOUSE GAS EMISSIONS

This section evaluates the potential for land use changes within the Town of Yucca Valley General Plan Update to cumulatively contribute to greenhouse gas (GHG) emissions impacts. Because individually no single project is large enough to result in a measurable increase in global concentrations of GHG emissions, global warming impacts of a project are considered on a cumulative basis.

This section is based on the methodology recommended by the Mojave Desert Air Quality Management District (MDAQMD). The analysis contained herein focuses on air pollution from regional emissions and localized pollutant concentrations. The analysis is in this section is based on the population and employment projections anticipated within the Town of Yucca Valley at the full buildout of the General Plan (post-2035) as well as anticipated demographic changes anticipated in the Town in 2020 and 2035 based on SCAG projections. The analysis in this section is based on buildout of the proposed land use plan; vehicle miles traveled (VMT) provided by Fehr and Peers, modeled using the San Bernardino County Transportation Analysis Model (SBTAM) for trips (origin-destination method) (see Appendix I to this DEIR),[1] electricity use provided by Southern California Edison (SCE),;natural gas use provided by the Southern California Gas Company (SoCalGas); waste generation identified for the Town of Yucca Valley by the California Department of Resources Recycling and Recovery (CalRecycle); and water use for the Town based on the Hi-Desert Water District's (HDWD) 2010 Urban Water Management Plan (UWMP). GHG emissions modeling is included in Appendix C of this EIR.

### 5.6.1 Environmental Setting

#### *5.6.1.1 Greenhouse Gases and Climate Change*

Scientists have concluded that human activities are contributing to global climate change by adding large amounts of heat-trapping gases, known as GHG, to the atmosphere. The primary source of these GHG is fossil fuel use. The Intergovernmental Panel on Climate Change (IPCC) has identified four major GHG—water vapor, carbon dioxide ($CO_2$), methane ($CH_4$), and ozone ($O_3$)—that are the likely cause of an increase in global average temperatures observed in the 20th and 21st centuries. Other GHG identified by the IPCC that contribute to global warming to a lesser extent include nitrous oxide ($N_2O$), sulfur hexafluoride ($SF_6$), hydrofluorocarbons, perfluorocarbons, and chlorofluorocarbons (IPCC 2001).[2] The major GHG are briefly described below. Table 5.6-1 lists the GHG applicable to the proposed project and their relative global warming potentials (GWP) compared to $CO_2$.

- **Carbon dioxide ($CO_2$)** enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and respiration, and also as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is removed from the atmosphere (sequestered) when it is absorbed by plants as part of the biological carbon cycle.

- **Methane ($CH_4$)** is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and from the decay of organic waste in municipal landfills and water treatment facilities.

[1] SBTAM is a subregional regional transportation model based on the Southern California Association of Government's TransCad model.

[2] Water vapor ($H_2O$) is the strongest GHG and the most variable in its phases (vapor, cloud droplets, ice crystals). However, water vapor is not considered a pollutant.

***Table 5.6-1***
***Greenhouse Gases and Their Relative Global Warming Potential Compared to $CO_2$***

| *GHGs* | *Atmospheric Lifetime (Years)* | *Global Warming Potential Relative to CO21* |
|---|---|---|
| Carbon Dioxide ($CO_2$) | 50 to 200 | 1 |
| Methane ($CH_4$)[2] | 12 (±3) | 21 |
| Nitrous Oxide ($N_2O$) | 120 | 310 |
| Hydrofluorocarbons: | | |
| HFC-23 | 264 | 11,700 |
| HFC-32 | 5.6 | 650 |
| HFC-125 | 32.6 | 2,800 |
| HFC-134a | 14.6 | 1,300 |
| HFC-143a | 48.3 | 3,800 |
| HFC-152a | 1.5 | 140 |
| HFC-227ea | 36.5 | 2,900 |
| HFC-236fa | 209 | 6,300 |
| HFC-4310mee | 17.1 | 1,300 |
| Perfluoromethane: $CF_4$ | 50,000 | 6,500 |
| Perfluoroethane: $C_2F_6$ | 10,000 | 9,200 |
| Perfluorobutane: $C_4F_{10}$ | 2,600 | 7,000 |
| Perfluoro-2-methylpentane: $C_6F_{14}$ | 3,200 | 7,400 |
| Sulfur Hexafluoride ($SF_6$) | 3,200 | 23,900 |

Source: IPCC 2001.

[1] Based on 100 year time horizon of the GWP of the air pollutant relative to $CO_2$.

[2] The methane GWP includes direct effects and indirect effects due to the production of tropospheric ozone and stratospheric water vapor. The indirect effect due to the production of $CO_2$ is not included.

- **Nitrous oxide ($N_2O$)** is emitted during agricultural and industrial activities as well as during combustion of fossil fuels and solid waste.

- **Fluorinated gases** are synthetic, strong GHGs that are emitted from a variety of industrial processes. Fluorinated gases are sometimes substituted for ozone-depleting substances. These gases are typically emitted in smaller quantities, but because they are potent GHGs, they are sometimes referred to as high-GWP gases.

    - **Chlorofluorocarbons (CFCs)** are GHGs covered under the 1987 Montreal Protocol and used for refrigeration, air conditioning, packaging, insulation, solvents, or aerosol propellants. Since they are not destroyed in the lower atmosphere (troposphere, stratosphere), CFCs drift into the upper atmosphere where, given suitable conditions, they break down ozone. These gases are also ozone-depleting gases and are therefore being replaced by other compounds that are GHGs covered under the Kyoto Protocol.

    - **Perfluorocarbons (PFCs)** are a group of human-made chemicals composed of carbon and fluorine only. These chemicals (predominantly perfluoromethane [$CF_4$] and perfluoroethane [$C_2F_6$]) were introduced as alternatives, along with HFCs, to the ozone-depleting substances. In addition, PFCs are emitted as by-products of industrial processes and are used in manufacturing. PFCs do not harm the stratospheric ozone layer, but they have a high global warming potential.

- **Sulfur Hexafluoride ($SF_6$)** is a colorless gas soluble in alcohol and ether and slightly soluble in water. $SF_6$ is a strong GHG used primarily in electrical transmission and distribution systems as an insulator.

- **Hydrochlorofluorocarbons (HCFCs)** contain hydrogen, fluorine, chlorine, and carbon atoms. Although ozone-depleting substances, they are less potent at destroying stratospheric ozone than CFCs. They have been introduced as temporary replacements for CFCs and are also GHGs.

- **Hydrofluorocarbons (HFCs)** contain only hydrogen, fluorine, and carbon atoms. They were introduced as alternatives to ozone-depleting substances to serve many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are also used in manufacturing. They do not significantly deplete the stratospheric ozone layer, but they are strong GHGs (IPCC 2001;IPCC 2007; EPA 2012).

### California's Greenhouse Gas Sources and Relative Contribution

California is the second largest emitter of GHG in the United States, only surpassed by Texas, and the tenth largest GHG emitter in the world. However, California also has over 12 million more people than the state of Texas. Because of more stringent air emission regulations, in 2001 California ranked fourth lowest in carbon emissions per capita and fifth lowest among states in $CO_2$ emissions from fossil fuel consumption per unit of Gross State Product (total economic output of goods and services) (IPCC 2007).

CARB's latest update to the statewide GHG emissions inventory was conducted in 2012 for year 2009 emissions.[3] In 2009, California produced 457 million metric tons (MMT) of $CO_2$-equivalent ($CO_2e$) GHG emissions. California's transportation sector is the single largest generator of GHG emissions, producing 37.9 percent of the state's total emissions. Electricity consumption is the second largest source, comprising 22.7 percent. Industrial activities are California's third largest source of GHG emissions, comprising 17.8 percent of the state's total emissions. Other major sectors of GHG emissions include commercial and residential, recycling and waste, high global warming potential GHGs, agriculture, and forestry (CARB 2012).[4]

### Human Influence on Climate Change

For approximately 1,000 years before the Industrial Revolution, the amount of GHG in the atmosphere remained relatively constant. During the 20th century, however, scientists observed a rapid change in the climate and climate change pollutants that are attributable to human activities. The amount of $CO_2$ has increased by more than 35 percent since preindustrial times and has increased at an average rate of 1.4 parts per million (ppm) per year since 1960, mainly due to combustion of fossil fuels and deforestation (IPCC 2007). These recent changes in climate change pollutants far exceed the extremes of the ice ages, and the global mean temperature is warming at a rate that cannot be explained by natural causes alone. Human activities are directly altering the chemical composition of the atmosphere through the buildup of climate change pollutants (CAT 2006).

[3] Methodology for determining the statewide GHG inventory is not the same as the methodology used to determine statewide GHG emissions under Assembly Bill 32 (AB 32) (2006).

[4] $CO_2$-equivalence is used to show the relative potential that different GHGs have to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. The global warming potential of a GHG is also dependent on the lifetime, or persistence, of the gas molecule in the atmosphere.

Climate-change scenarios are affected by varying degrees of uncertainty. IPCC's *2007 IPCC Fourth Assessment Report* projects that the global mean temperature increase from 1990 to 2100, under different climate-change scenarios, will range from 1.4 to 5.8°C (2.5 to 10.4°F). In the past, gradual changes in the Earth's temperature changed the distribution of species, availability of water, etc. However, human activities are accelerating this process so that environmental impacts associated with climate change no longer occur in a geologic timeframe but within a human lifetime (IPCC 2007).

### Potential Climate Change Impacts for California

Like the variability in the projections of the expected increase in global surface temperatures, the environmental consequences of gradual changes in the Earth's temperature are also hard to predict. In California and western North America, observations of the climate have shown: 1) a trend toward warmer winter and spring temperatures, 2) a smaller fraction of precipitation falling as snow, 3) a decrease in the amount of spring snow accumulation in the lower and middle elevation mountain zones, 4) an advance snowmelt of 5 to 30 days earlier in the springs, and 5) a similar shift (5 to 30 days earlier) in the timing of spring flower blooms (CAT 2006). According to the California Climate Action Team (CAT), even if actions could be taken to immediately curtail climate change emissions, the potency of emissions that have already built up, their long atmospheric lifetimes (see Table 5.6-1), and the inertia of the Earth's climate system could produce as much as 0.6°C (1.1°F) of additional warming. Consequently, some impacts from climate change are now considered unavoidable. Global climate change risks to California are shown in Table 5.6-2 and include public health impacts, water resources impacts, agricultural impacts, coastal sea level impacts, forest and biological resource impacts, and energy impacts. Specific climate change impacts that could affect the project include health impacts from a reduction in air quality, water resources impacts from a reduction in water supply, and increased energy demand.

***Table 5.6-2***
***Summary of GHG Emission Risks to California***

| *Impact Category* | *Potential Risk* |
|---|---|
| Public Health Impacts | Poor air quality made worse<br>More severe heat |
| Water Resources Impacts | Decreasing Sierra Nevada snow pack<br>Challenges in securing adequate water supply<br>Potential reduction in hydropower<br>Loss of winter recreation |
| Agricultural Impacts | Increasing temperature<br>Increasing threats from pests and pathogens<br>Expanded ranges of agricultural weeds<br>Declining productivity<br>Irregular blooms and harvests |
| Coastal Sea Level Impacts | Accelerated sea level rise<br>Increasing coastal floods<br>Shrinking beaches<br>Worsened impacts on infrastructure |
| Forest and Biological Resource Impacts | Increased risk and severity of wildfires<br>Lengthening of the wildfire season<br>Movement of forest areas<br>Conversion of forest to grassland<br>Declining forest productivity<br>Increasing threats from pest and pathogens<br>Shifting vegetation and species distribution<br>Altered timing of migration and mating habits<br>Loss of sensitive or slow-moving species |
| Energy Demand Impacts | Potential reduction in hydropower<br>Increased energy demand |

Sources: CEC 2006, CEC 2008.

### *5.6.1.2 Regulatory Setting*

#### Federal Laws and Regulations

The U.S. Environmental Protection Agency (EPA) announced on December 7, 2009, that GHG emissions threaten the public health and welfare of the American people and that GHG emissions from on-road vehicles contribute to that threat. The EPA's final findings respond to the 2007 U.S. Supreme Court decision that GHG emissions fit within the Clean Air Act definition of air pollutants. The findings do not in and of themselves impose any emission reduction requirements, but allow the EPA to finalize the GHG standards proposed in 2009 for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation (EPA 2009).

The EPA's endangerment finding covers emissions of six key GHGs—$CO_2$, $CH_4$, $N_2O$, hydrofluorocarbons, perfluorocarbons, and $SF_6$—that have been the subject of scrutiny and intense analysis for decades by scientists in the United States and around the world (the first three are applicable to the proposed project).

In response to the endangerment finding, the EPA issued the Mandatory Reporting of GHG Rule that requires substantial emitters of GHG emissions (large stationary sources, etc.) to report their emissions data. Facilities that emit 25,000 metric tons (MT) or more of $CO_2$ per year are required to submit an annual report.

## State Regulations

Current State of California guidance and goals for reductions in GHG emissions are generally embodied in Executive Order S-03-05, Assembly Bill 32, and Senate Bill 375.

### *Executive Order S-03-05*

Executive Order S-3-05, signed June 1, 2005, set the following GHG reduction targets for the state:

- 2000 levels by 2010
- 1990 levels by 2020
- 80 percent below 1990 levels by 2050

### *Assembly Bill 32, the Global Warming Solutions Act (2006)*

Current State of California guidance and goals for reductions in GHG emissions are generally embodied in Assembly Bill 32 (AB 32), the Global Warming Solutions Act. AB 32 was passed by the California state legislature on August 31, 2006, to place the state on a course toward reducing its contribution of GHG emissions. AB 32 follows the 2020 tier of emissions reduction targets established in Executive Order S-3-05.

AB 32 directed CARB to adopt discrete early action measures to reduce GHG emissions and outline additional reduction measures to meet the 2020 target. Based on the GHG emissions inventory conducted for the Scoping Plan by CARB, GHG emissions in California by 2020 are anticipated to be approximately 596 $MMTCO_2e$. In December 2007, CARB approved a 2020 emissions limit of 427 $MMTCO_2e$ (471 million tons) for the state. The 2020 target requires a total emissions reduction of 169 $MMTCO_2e$, 28.5 percent from the projected emissions of the business-as-usual (BAU) scenario for the year 2020 (i.e., 28.5 percent of 596 $MMTCO_2e$) (CARB 2008).[5]

In order to effectively implement the emissions cap, AB 32 directed CARB to establish a mandatory reporting system to track and monitor GHG emissions levels for large stationary sources that generate more than 25,000 MT of $CO_2e$ per year, prepare a plan demonstrating how the 2020 deadline can be met, and develop appropriate regulations and programs to implement the plan by 2012. The Climate Action Registry Reporting Online Tool was established through the Climate Action Registry to track GHG emissions.

*CARB 2008 Scoping Plan*

The final Scoping Plan was adopted by CARB on December 11, 2008. Table 5.6-3 identifies GHG reduction measures identified in the 2008 Scoping Plan. Key elements of CARB's GHG reduction plan that may be applicable to the proposed project include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards (adopted and cycle updates in progress).

[5] CARB defines BAU in its Scoping Plan as emissions levels that would occur if California continued to grow and add new GHG emissions but did not adopt any measures to reduce emissions. Projections for each emission-generating sector were compiled and used to estimate emissions for 2020 based on 2002–2004 emissions intensities. Under CARB's definition of BAU, new growth is assumed to have the same carbon intensities as was typical from 2002 through 2004.

- Achieving a mix of 33 percent for energy generation from renewable sources (anticipated by 2020).

- A California cap-and-trade program that links with other Western Climate Initiative (WCI) partner programs to create a regional market system for large stationary sources (adopted 2011).

- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets (several Sustainable Communities Strategies have been adopted).

- Adopting and implementing measures pursuant to state laws and policies, including California's clean car standards (amendments to the Pavley Standards adopted 2009; Advanced Clean Car standard adopted 2012), goods movement measures, and the Low Carbon Fuel Standard (LCFS)(adopted 2009).[6]

- Creating target fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the state's long-term commitment to AB 32 implementation (in progress).

[6] On December 29, 2011, the U.S. District Court for the Eastern District of California issued several rulings in the federal lawsuits challenging the LCFS. One of the court's rulings preliminarily enjoins the CARB from enforcing the regulation during the pendency of the litigation. In January 2012, CARB appealed the decision and on April 23, 2012, the Ninth Circuit Court granted CARB's motion for a stay of the injunction while it continues to consider CARB's appeal of the lower court's decision.

***Table 5.6-3***
***Scoping Plan Greenhouse Gas Reduction Measures and Reductions toward 2020 Target***

| *Recommended Reduction Measures* | *Reductions Counted toward 2020 Target of 169 MMTCO2e* | *Percentage of Statewide 2020 Target* |
|---|---|---|
| **Cap and Trade Program and Associated Measures** | | |
| California Light-Duty Vehicle GHG Standards | 31.7 | 19% |
| Energy Efficiency | 26.3 | 16% |
| Renewable Portfolio Standard (33 percent by 2020) | 21.3 | 13% |
| Low Carbon Fuel Standard | 15 | 9% |
| Regional Transportation-Related GHG Targets[1] | 5 | 3% |
| Vehicle Efficiency Measures | 4.5 | 3% |
| Goods Movement | 3.7 | 2% |
| Million Solar Roofs | 2.1 | 1% |
| Medium/Heavy Duty Vehicles | 1.4 | 1% |
| High Speed Rail | 1.0 | 1% |
| Industrial Measures | 0.3 | 0% |
| Additional Reduction Necessary to Achieve Cap | 34.4 | 20% |
| **Total Cap and Trade Program Reductions** | **146.7** | **87%** |
| **Uncapped Sources/Sectors Measures** | | |
| High Global Warming Potential Gas Measures | 20.2 | 12% |
| Sustainable Forests | 5 | 3% |
| Industrial Measures (for sources not covered under cap and trade program) | 1.1 | 1% |
| Recycling and Waste (landfill methane capture) | 1 | 1% |
| **Total Uncapped Sources/Sectors Reductions** | **27.3** | **16%** |
| **Total Reductions Counted toward 2020 Target** | **174** | **100%** |
| **Other Recommended Measures – Not Counted toward 2020 Target** | | |
| State Government Operations | 1.0 to 2.0 | 1% |
| Local Government Operations | To Be Determined | NA |
| Green Buildings | 26 | 15% |
| Recycling and Waste | 9 | 5% |
| Water Sector Measures | 4.8 | 3% |
| Methane Capture at Large Dairies | 1 | 1% |
| **Total Other Recommended Measures – Not Counted toward 2020 Target** | **42.8** | **NA** |

Source: CARB 2008.
Notes: The percentages in the right-hand column add up to more than 100 percent because the emissions reduction goal is 169 $MMTCO_2e$ and the Scoping Plan identifies 174 $MMTCO_2e$ of emissions reductions strategies.
$MMTCO_{2e}$: million metric tons of $CO_2e$
[1] Reductions represent an estimate of what may be achieved from local land use changes. It is not the SB 375 regional target.
[2] According to the Measure Documentation Supplement to the Scoping Plan, local government actions and targets are anticipated to reduce vehicle miles by approximately 2 percent through land use planning, resulting in a potential GHG reduction of 2 million metric tons of $CO_2e$ (or approximately 1.2 percent of the GHG reduction target). However, these reductions were not included in the Scoping Plan reductions to achieve the 2020 target.

While local government operations were not accounted for in achieving the 2020 emissions reduction, CARB estimates that land use changes implemented by local governments that integrate jobs, housing, and services result in a reduction of 5 $MMTCO_2e$, which is approximately 3 percent of the 2020 GHG emissions reduction goal. In recognition of the critical role local governments play in the successful implementation of AB 32, CARB is

recommending GHG reduction goals of 15 percent of today's levels by 2020 to ensure that municipal and community-wide emissions match the state's reduction target.[7] Measures that local governments take to support shifts in land use patterns are anticipated to emphasize compact, low-impact growth over development in greenfields, resulting in fewer VMT (CARB 2008).

***Senate Bill 375***

In 2008, SB 375 was adopted and was intended to represent the implementation mechanism necessary to achieve the GHG emissions reductions targets established in the Scoping Plan for the transportation sector as it relates to local land use decisions that affect travel behavior. Implementation is intended to reduce GHG emissions from light-duty trucks and automobiles (excludes emissions associated with goods movement) by aligning regional long-range transportation plans, investments, and housing allocations with local land use planning to reduce VMT and vehicle trips. Specifically, SB 375 requires CARB to establish GHG emissions reduction targets for each of the 17 regions in California managed by a metropolitan planning organization (MPO). Pursuant to the recommendations of the Regional Transportation Advisory Committee, CARB adopted per capita reduction targets for each of the MPOs rather than a total magnitude reduction target.

Southern California Association of Governments (SCAG) is the MPO for the southern California region, which includes the counties of Los Angeles, Orange, San Bernardino County, Riverside, Ventura, and Imperial. SCAG's targets are an 8 percent per capita reduction from 2005 GHG emission levels by 2020 and a 13 percent per capita reduction from 2005 GHG emission levels by 2035. The 2020 targets are smaller than the 2035 targets because a significant portion of the built environment in 2020 has been defined by decisions that have already been made. In general, the 2020 scenarios reflect that more time is needed for large land use and transportation infrastructure changes. Most of the reductions in the interim are anticipated to come from improving the efficiency of the region's existing transportation network. The proposed targets would result in 3 MMTons of GHG reductions by 2020 and 15 MMTons of GHG reductions by 2035. Based on these reductions, the passenger vehicle target in CARB's Scoping Plan (for AB 32) would be met (CARB 2010).

SB 375 requires the MPOs to prepare a Sustainable Communities Strategy (SCS) in their regional transportation plan. For the SCAG region, the 2012 RTP/SCS was adopted in April 2012 (SCAG 2012). The SCS sets forth a development pattern for the region, which, when integrated with the transportation network and other transportation measures and policies, would reduce GHG emissions from transportation (excluding goods movement). The SCS is meant to provide growth strategies that will achieve the regional GHG emissions reduction targets. However, the SCS does not require that local general plans, specific plans, or zoning be consistent with the SCS, but provides incentives for consistency for governments and developers.

***Assembly Bill 1493***

California vehicle GHG emission standards were enacted under AB 1493 (Pavley I). Pavley I is a clean-car standard that reduces GHG emissions from new passenger vehicles (light-duty auto to medium-duty vehicles) from 2009 through 2016 and is anticipated to reduce GHG emissions from new passenger vehicles by 30 percent in 2016. California implements the Pavley I standards through a waiver granted to California by the EPA. In 2012, the EPA issued a Final Rulemaking that sets even more stringent fuel economy and GHG emissions standards for model year 2017 through 2025 light-duty vehicles.

[7] Although the Scoping Plan references a goal for local governments to reduce community GHG emissions by 15 percent from current (interpreted as 2008) levels by 2020, it does not rely on local GHG reduction targets established by local governments to meet the state's GHG reduction target of AB 32. Table 5.6-3 lists the recommended reduction measures, which do not include additional reductions from local measures.

***Executive Order S-01-07***

On January 18, 2007, the state set a new Low Carbon Fuel Standard for transportation fuels sold within the state. Executive Order S-1-07 sets a declining standard for GHG emissions measured in $C0_2e$ gram per unit of fuel energy sold in California. The LCFS requires a reduction of 2.5 percent in the carbon intensity of California's transportation fuels by 2015 and a reduction of at least 10 percent by 2020. The LCFS applies to refiners, blenders, producers, and importers of transportation fuels and would use market-based mechanisms to allow these providers to choose how they reduce emissions during the fuel cycle using the most economically feasible methods.

***Senate Bills 1078 and 107, and Executive Order S-14-08***

A major component of California's Renewable Energy Program is the renewable portfolio standard (RPS) established under Senate Bills 1078 (Sher) and 107 (Simitian). Under the RPS, certain retail sellers of electricity were required to increase the amount of renewable energy each year by at least 1 percent in order to reach at least 20 percent by December 30, 2010. Executive Order S-14-08 was signed in November 2008, which expands the state's renewable energy standard to 33 percent renewable power by 2020. In 2011, the state legislature adopted this higher standard in SBX1-2. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. The increase in renewable sources for electricity production will decrease indirect GHG emissions from development projects, because electricity production from renewable sources is generally considered carbon neutral.

***California Building Code***

Energy conservation standards for new residential and nonresidential buildings were adopted by the California Energy Resources Conservation and Development Commission in June 1977 and updated triannually (Title 24, Part 6, of the California Code of Regulations [CCR]). Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. On May 31, 2012, the California Energy Commission (CEC) adopted the 2013 Building and Energy Efficiency Standards, which go into effect on January 1, 2014. Buildings that are constructed in accordance with the 2013 Building and Energy Efficiency Standards are 25 percent (residential) to 30 percent (nonresidential) more energy efficient than the 2008 standards as a result of better windows, insulation, lighting, ventilation systems, and other features that reduce energy consumption in homes and businesses.

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (CALGreen) was adopted as part of the California Building Standards Code (Part 11, Title 24, California Code of Regulations). CALGreen established planning and design standards for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. The mandatory provisions of the California Green Building Code Standards became effective January 1, 2011.

***2006 Appliance Efficiency Regulations***

The 2006 Appliance Efficiency Regulations (Title 20, CCR Sections 1601 through 1608) were adopted by the California Energy Commission on October 11, 2006, and approved by the California Office of Administrative Law on December 14, 2006. The regulations include standards for both federally regulated appliances and nonfederally regulated appliances.

#### 5.6.1.3 *Existing Setting*

### 2012 Greenhouse Gas Emissions Inventory

An existing emissions inventory of the Town of Yucca Valley was conducted based on the existing land uses and is shown in Table 5.6-4. The existing GHG emissions were calculated using OFFROAD2007, EMFAC2011, and emission factors identified in CalEEMod.

***Table 5.6-4***
***Existing Town of Yucca Valley Greenhouse Gas Emissions Inventory***

| Sector | Existing, 2012, GHG Emissions | |
|---|---|---|
| | $MTCO_2e$/year | Percent of Total |
| Transportation[1] | 157,248 | 67% |
| Energy – Residential[2] | 44,538 | 19% |
| Energy – Nonresidential[2] | 25,414 | 11% |
| Waste[3] | 3,120 | 1% |
| Water/Wastewater[4] | 4,593 | 2% |
| Other – Off-road Equipment[5] | 1,472 | <1% |
| Existing Community-wide Emissions Total | 236,385 | 100% |
| $MTCO_2e$/Service Population (SP)[6] | 7.9 | NA |

Notes: Emissions may not total to 100% due to rounding.
[1] EMFAC2011. Model runs were based on daily per capita VMT data provided by Fehr and Peers.
[2] Natural gas and electricity use were modeled using data provided by SoCalGas and SCE.
[3] WARM model, version 12, based on waste disposal (municipal solid waste and alternative daily cover) and waste characterization data from CalRecycle (CalRecycle 2013). Modeling assumes a 75 percent reduction in fugitive GHG emissions from the landfill's gas capture system.
[4] LGOP, version 1.1, based on the HDWD's 2010 UWMP.
[5] OFFROAD2007 for San Bernardino County proportioned based on the Town of Yucca Valley as a percentage of San Bernardino County based on data from the US Census. Area sources exclude emissions from fireplaces and consumer products in the Town.
[6] Based on a service population of existing: 29,945 people (22,464 residents and 7,481 employees).

## 5.6.2 Thresholds of Significance

#### 5.6.2.1 *CEQA Appendix G Thresholds*

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

GHG-1 Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

GHG-2 Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

#### 5.6.2.2 *Mojave Desert Air Quality Management District Thresholds*

The analysis of the proposed project's air quality impacts follows the guidance and methodologies recommended in MDAQMD's *CEQA and Federal Conformity Guidelines* (2011). CEQA allows the significance criteria established by the applicable air quality management or air pollution control district to be used to assess impacts of a project on air quality. MDAQMD has established thresholds of significance for regional air quality emissions for construction activities and project operation.

#### 5.6.2.3 *Regional Significance Thresholds*

MDAPCD's significance criteria are shown in Table 5.6-5. The thresholds identified in this table are applied to both construction and operational phases of the project regardless of whether they are stationary or mobile sources, resulting in a conservative estimate of air quality impacts of the project. Project with phases shorter than one year (e.g., construction activities) should be compared to the daily value.

***Table 5.6-5***
***MDAQMD Greenhouse Gas Significance Threshold***

| *Annual (tons/year)* | *Daily[1] (lbs/day)* |
|---|---|
| 100,000 (90,718 $MTCO_2e$/year) | 548,000 |

Source: MDAQMD 2011.
[1] Project with phases shorter than one year, including construction activities, can be compared to the daily value.

### 5.6.3 Environmental Impacts

#### 5.6.3.1 *Methodology*

This air quality evaluation was prepared in accordance with the requirements of CEQA to determine if significant air quality impacts are likely to occur in conjunction with future development that would be accommodated by the General Plan Update. MDAQMD has published the *CEQA and Federal Conformity Guidelines,* which are intended to provide local governments with guidance for analyzing and mitigating air quality impacts, and which were used in this analysis. The Town's GHG emissions inventory includes the following sectors:

- **Transportation:** Transportation emissions forecasts were modeled using CARB's EMFAC2011. Model runs were based on daily per capita VMT data provided by Fehr and Peers using the SBTAM regional transportation demand model and 2012 (existing), 2020, and 2035 emission rates. The VMT provided in the model includes the full trip length for land uses in the Town (origin-destination approach) and does not include a 50 percent reduction in VMT for external-internal/internal-external trips. Adjusted daily VMT was multiplied by 347 days per year to account for reduced traffic on weekends and holidays to estimate annual emissions. This assumption is consistent with CARB's methodology within the Climate Change Scoping Plan Measure Documentation Supplement. Modeling was conducted for both a BAU scenario, which does not include GHG emissions reduction from the Pavley Fuel Efficiency Standard and LCFS and for the adjusted BAU (ABAU) scenario, which includes these statewide regulations.

- **Residential:** Natural gas and electricity use for residential land uses in the Town were modeled using data provided by SoCalGas and SCE, respectively. Natural gas use is based on a three-year average (2011, 2010, and 2009) and electricity use is based on a two-year average (2011 and 2010) to account for fluctuation in annual natural use as a result of natural variations in climate. Forecasts are adjusted for increases in population in the Town. The carbon intensity of SCE's purchased electricity is based on the California Public

Utilities Commission's (CPUC) WCI 2008 Emission Factor Calculator (Version 2 for the Western Electricity Coordinating Council [WECC] Region). The ABAU scenario for residential electricity use includes a reduction in carbon intensity of SCE's energy supply required under the 33 percent RPS (CEC 2012).

- **Nonresidential and Town:** Natural gas and electricity use for nonresidential land uses in the Town were modeled using data provided by SoCalGas and SCE, respectively. Natural gas use is based on a three-year average (2011, 2010, and 2009), and electricity use is based on a two-year average (2011 and 2010) to account for fluctuation in annual natural use as a result of natural variations in climate. Forecasts are adjusted for increases in employment (nonresidential) and employment plus population (Town) in the Town. The carbon intensity of SCE's purchased electricity is based on the CPUC's WCI 2008 Emission Factor Calculator (Version 2 for the WECC Region). The ABAU scenario for residential electricity use includes a reduction in carbon intensity of SCE's energy supply required under the 33 percent RPS (CEC 2012).

- **Waste:** Modeling of landfilled waste disposed of by residents and employees in the Town is based on the waste commitment method using the EPA's WARM model, version 12, based on waste disposal (municipal solid waste and alternative daily cover) and waste characterization data from CalRecycle (CalRecycle 2013). Landfills in California have gas capture systems, but because the landfill gas captured is not under the jurisdiction of the Town, the landfill gas emissions from the capture system are not included in the Town's inventory. Only fugitive sources of GHG emissions from landfill are included. Modeling assumes a 75 percent reduction in fugitive GHG emissions from the landfill's gas capture system. The landfill gas capture efficiency is based on CARB's Local Government Operations Protocol (LGOP), Version 1.1. Forecasts are adjusted for increases in population and employment in the Town.

- **Water/Wastewater:** GHG emissions from water and wastewater include indirect GHG emissions from the embodied energy of water and wastewater. Total water generation in the Town is based on the HDWD's 2010 UWMP. Forecasts are adjusted for increases in population and employment and are based on the target per capita SBx7-7.[8] Energy use from water use and wastewater treatment is estimated using energy rates identified by the CEC (CEC 2006) and carbon intensity of energy identified by the CPUC (see Residential and Nonresidential and Town energy identified above). In addition to the indirect emissions associated with the embodied energy of water use and wastewater treatment, wastewater treatment also results in fugitive GHG emissions from wastewater processing from septic tanks (existing) and the proposed wastewater treatment plant (future). Fugitive emissions from wastewater treatment in the Town were calculated using the emission factors in CARB's LGOP, Version 1.1. Forecasts are adjusted for increases in population and employment in the Town.

- **Other Sources:** OFFROAD2007 was used to estimate GHG emissions from landscaping equipment, light commercial equipment, and construction equipment in the Town. OFFROAD2007 is a database of equipment use and associated emissions for each county compiled by CARB. Annual emissions were compiled using OFFROAD2007 for the County of San Bernardino for year 2012. In order to determine the percentage of emissions attributable to the Town of Yucca Valley, landscaping and light commercial equipment is estimated based on population (Landscaping) and employment (Light Commercial Equipment) for the Town of Yucca Valley as a percentage of San Bernardino County. Construction equipment use is estimated based on building permit data for the Town of Yucca Valley and County of San Bernardino from data compiled by the U.S. Census. Daily off-road construction emissions are multiplied by 347 days per year to account for reduced/limited construction activity on weekends and holidays. Forecasts are adjusted for increases in population and employment in the Town. Area sources exclude emissions from fireplaces and consumer products in the Town.

[8] SBx7-7 (2009) requires all water suppliers to reduce per capita urban water use by 20 percent by 2020, with incremental progress towards this goal (10 percent by 2015). The 2010 UWMPs contain water use targets to meet this requirement. Effective 2016, urban retail water suppliers who do not meet the water conservation requirements established by SBx7-7 are not eligible for state water grants or loans.

- **Lifecycle:** Life cycle emissions are not included in this analysis because not enough information is available for the proposed project, and therefore life cycle GHG emissions would be speculative.

The following impact analysis addresses thresholds of significance for which the Initial Study disclosed potentially significant impacts. The applicable thresholds are identified in brackets after the impact statement.

***IMPACT 5.6-1: BUILDOUT OF THE TOWN OF YUCCA VALLEY PURSUANT TO MAXIMUM LEVEL ALLOWED BY THE LAND USE DESIGNATIONS OF THE GENERAL PLAN UPDATE WOULD GENERATE A SUBSTANTIAL INCREASE IN GHG EMISSIONS OVER EXISTING CONDITIONS. [THRESHOLD GHG-1]***

***Impact Analysis:*** Development under the General Plan would contribute to global climate change through direct and indirect emissions of GHG from land uses within the Town. The increase in GHG emissions is based on the difference between existing land uses (see Table 4-1, *Existing Land Use Summary*) and land uses associated with buildout of the General Plan Update (see Table 3-2, *Proposed General Plan Land Use Designations and Buildout Projections*) as well as an estimate of population and employment within the Town at 2035 based on SCAG forecasts (SCAG 2012).[9]

### 2020 – AB 32 Target Year

The community-wide GHG BAU and ABAU emissions inventory for the Town in 2020 compared to existing conditions is included in Table 5.6-6. The ABAU inventory includes reductions from federal and state measures identified in CARB's Scoping Plan, including the Pavley fuel efficiency standards, LCFS for fuel use (transportation and off-road), and a reduction in carbon intensity from electricity use (see the discussion of the inventory methodology). For 2020, the Scoping Plan measures account for a reduction of 45,697 $MTCO_2e$ compared to BAU (19 percent reduction in GHG emissions). Based on SCAG demographic forecasts, the Town is not anticipated to grow substantially between 2012 and 2020. As a result, compared to the Town's existing emissions inventory, the Town will experience a decrease of 40,803 $MTCO_2e$ of GHG emissions (17 percent reduction in GHG emissions from 2012 conditions). Consequently, GHG emissions in the Town would not exceed 100,000 tons (90,718 $MTCO_2e$/year) during this time frame. Impacts would be less than significant for short-term growth anticipated under the General Plan.

### 2035 – SCAG Forecast Year

The community-wide GHG emissions inventory for the Town in 2035 compared to existing conditions is included in Table 5.6-7. The ABAU inventory includes reductions from federal and state measures identified in CARB's Scoping Plan, including the Pavley fuel efficiency standards, LCFS for fuel use (transportation and off-road), and a reduction in carbon intensity from electricity use (see the discussion of the inventory methodology). For 2035, the Scoping Plan measures account for a reduction of 60,125 $MTCO_2e$ compared to BAU (23 percent reduction in GHG emissions).

[9] SCAG forecasts in 2035 identify less employment that identified in Table 4-1. Therefore, the SCAG forecast for employment was adjusted based on the relative increase in employment from 2008 to 2035. The increase in employment between 2008 to 2035 identified by SCAG was added to the baseline employment identified in Table 4-1.

***Table 5.6-6***
***2020 Community-Wide GHG Emissions Inventory for the Town of Yucca Valley***

| | 2020 GHG Emissions (MTCO2e/Year) | | | | |
|---|---|---|---|---|---|
| ***Pollutant*** | ***2012 $MTCO_2e$*** | ***2020 BAU $MTCO_2e$*** | ***2020 ABAU $MTCO_2e$*** | ***ABAU Change from 2012 $MTCO_2e$*** | ***ABAU Change from 2020 BAU $MTCO_2e$*** |
| Transportation[1] | 157,248 | 157,562 | 124,041 | -33,207 | -33,521 |
| Energy – Residential[2] | 44,538 | 47,114 | 40,598 | -3,940 | -6,516 |
| Energy – Nonresidential[2] | 25,414 | 27,065 | 22,500 | -2,913 | -4,479 |
| Waste[3] | 3,120 | 3,306 | 3,306 | 186 | -86 |
| Water/Wastewater[4] | 4,593 | 4,749 | 3,802 | -791 | 0 |
| Other – Off-road Equipment[5] | 1,472 | 1,482 | 1,334 | -138 | -148 |
| **Total Community Emissions** | **236,385** | **241,279** | **195,582** | **-40,803** | **-45,697** |
| MDAQMD Threshold[6] | NA | NA | NA | 90,718 $MTCO_2e$/year | NA |
| Exceeds MDAQMD Threshold | NA | NA | NA | No | NA |
| $MTCO_2e$/Service Population (SP)[7] | 7.9 | 7.6 | 6.2 | NA | NA |

Notes: Emissions forecast based on changes in population (residential energy), employment (nonresidential energy), or service population (Town energy, waste, water/wastewater, transportation).
ABAU includes reductions identified in the Scoping Plan associated with Transportation (Pavley+LCFS), Energy & Water/Wastewater (33% RPS), and Other (LCFS). The current inventory does not account for reductions in building energy use from Title 24 cycle updates.
Emissions may not total to 100% due to rounding.

[1] EMFAC2011 based on daily per capita VMT data provided by Fehr and Peers. Modeling was conducted for both a BAU scenario, which does not include GHG emissions reduction from the Pavley Fuel Efficiency Standard and LCFS, and for the ABAU scenario, which includes these statewide regulations that were adopted for the purpose of reducing GHG emissions.

[2] Natural gas and electricity use were modeled using data provided by SoCalGas and SCE, respectively. The carbon intensity of SCE's purchased electricity is based on the CPUC's WCI 2008 Emission Factor Calculator. The ABAU scenario for residential electricity use includes a reduction in carbon intensity of SCE's energy supply required under the 33 percent RPS (CEC 2012).

[3] WARM model, version 12, based on waste disposal (municipal solid waste and alternative daily cover) and waste characterization data from CalRecycle (CalRecycle 2013). Modeling assumes a 75 percent reduction in fugitive GHG emissions from the landfill's gas capture system.

[4] LGOP, version 1.1, based on the HDWD's 2010 UWMP. Forecasts are adjusted for increases in population and employment and are based on the target per capita SBx7-7. The ABAU scenario for residential electricity use includes a reduction in carbon intensity of SCE's energy supply required under the 33 percent RPS (CEC 2012).

[5] OFFROAD2007 for San Bernardino County proportioned based on the Town of Yucca Valley as a percentage of San Bernardino County, based on data from the US Census. Area sources exclude emissions from fireplaces and consumer products in the Town. The ABAU includes reductions from the LCFS.

[6] MDAQMD 2011. Based on annual threshold of 100,000 tons per year of $CO_2$ emissions.

[7] Based on a service population of existing: 29,945 people (22,464 residents and 7,481 employees); and 2020: 31,731 people (23,763 residents and 7,968 employees).

***Table 5.6-7***
***2035 Community-Wide GHG Emissions Inventory for the Town of Yucca Valley***

| Pollutant | 2035 GHG Emissions (MTCO2e/Year) | | | | |
|---|---|---|---|---|---|
| | ***2012 $MTCO_2e$*** | ***2020 BAU $MTCO_2e$*** | ***2020 ABAU $MTCO_2e$*** | ***ABAU Change from 2012 $MTCO_2e$*** | ***ABAU Change from 2020 BAU $MTCO_2e$*** |
| Transportation[1] | 157,248 | 172,355 | 125,660 | -31,588 | -46,695 |
| Energy – Residential[2] | 44,538 | 51,945 | 44,760 | 222 | -7,185 |
| Energy – Nonresidential[2] | 25,414 | 30,161 | 25,074 | -339 | -5,074 |
| Waste[3] | 3,120 | 3,656 | 3,656 | 535 | 0 |
| Water/Wastewater[4] | 4,593 | 5,112 | 4,104 | -489 | -1,009 |
| Other – Off-road Equipment[5] | 1,472 | 1,500 | 1,350 | -122 | -150 |
| **Total Community Emissions** | **236,385** | **264,729** | **204,604** | **-31,781** | **-60,125** |
| MDAQMD Threshold[6] | NA | NA | NA | 90,718 $MTCO_2e$/year | NA |
| Exceeds MDAQMD Threshold | NA | NA | NA | No | NA |
| $MTCO_2e$/Service Population (SP)[7] | 7.9 | 7.6 | 5.8 | NA | NA |

Notes: Emissions forecast based on changes in population (residential energy), employment (nonresidential energy), or service population (Town energy, waste, water/wastewater, transportation).

ABAU includes reductions identified in the Scoping Plan associated with Transportation (Pavley+LCFS), Energy & Water/Wastewater (33% RPS), and Other (LCFS). The current inventory does not account for reductions in building energy use from Title 24 cycle updates.

Emissions may not total to 100% due to rounding.

[1] EMFAC2011 based on daily per capita VMT data provided by Fehr and Peers. Modeling was conducted for both a BAU scenario, which does not include GHG emissions reduction from the Pavley Fuel Efficiency Standard and LCFS, and for the ABAU scenario, which includes these statewide regulations that were adopted for the purpose of reducing GHG emissions.

[2] Natural gas and electricity use were modeled using data provided by SoCalGas and SCE, respectively. The carbon intensity of SCE's purchased electricity is based on the CPUC's WCI 2008 Emission Factor Calculator. The ABAU scenario for residential electricity use includes a reduction in carbon intensity of SCE's energy supply required under the 33 percent RPS (CEC 2012).

[3] WARM model, version 12, based on waste disposal (municipal solid waste and alternative daily cover) and waste characterization data from CalRecycle (CalRecycle 2013). Modeling assumes a 75 percent reduction in fugitive GHG emissions from the landfill's gas capture system.

[4] LGOP, version 1.1, based on the HDWD's 2010 UWMP. Forecasts are adjusted for increases in population and employment and are based on the target per capita SBx7-7. The ABAU scenario for residential electricity use includes a reduction in carbon intensity of SCE's energy supply required under the 33 percent RPS (CEC 2012).

[5] OFFROAD2007 for San Bernardino County proportioned based on the Town of Yucca Valley as a percentage of San Bernardino County, based on data from the US Census. Area sources exclude emissions from fireplaces and consumer products in the Town. The ABAU includes reductions from the LCFS.

[6] MDAQMD 2011. Based on annual threshold of 100,000 tons per year of $CO_2$ emissions.

[7] Based on a service population of Existing: 29,945 people (22,464 residents and 7,481 employees); and 2035: 35,081 people (26,200 residents and 8,881 employees).

Based on SCAG demographic forecasts, the Town is not anticipated to grow substantially between 2012 and 2035. As a result, compared to the Town's existing emissions inventory, the Town will experience a decrease of 31,781 $MTCO_2e$ of GHG emissions. Consequently, GHG emissions in the Town would not exceed 100,000 tons (90,718 $MTCO_2e$/year) during this (2012–2035) time frame. Impacts would be less than significant for short-term growth anticipated under the General Plan Update.

### Post-2035 – Full Buildout of the General Plan Update

The community-wide GHG emissions inventory at buildout of the General Plan Update compared to existing conditions is included in Table 5.6-8. The ABAU inventory includes reductions from federal and state measures identified in CARB's Scoping Plan, including the Pavley fuel efficiency standards, LCFS for fuel use (transportation and off-road), and a reduction in carbon intensity from electricity use (see the discussion of the inventory methodology). For buildout, the Scoping Plan measures account for a reduction of 173,097 $MTCO_2e$ compared to BAU (23 percent reduction in GHG emissions).

Buildout of the Town is not linked to a development timeline and is based on reasonable worst-case buildout of the parcels as identified in the land use plan. Based on the historic rate of growth in the Town,[10] the amount of development that the Town of Yucca Valley can accommodate in the land use plan is not likely to occur within the next 50 years, let alone within the 20-year planning horizon identified by SCAG. As a result, compared to the Town's existing emissions inventory, the Town will experience a substantial increase of 352,267 $MTCO_2e$ of GHG emissions at buildout. Consequently, GHG emissions in the Town would exceed 100,000 tons (90,718 $MTCO_2e$/year) by full buildout of the General Plan Update.

CARB is currently updating the Scoping Plan to identify additional measures to achieve the long-term GHG reduction targets. At this time, there is no plan past 2020 that achieves the long-term GHG reduction goal established under S-03-05. As identified by the California Council on Science and Technology, the state cannot meet the 2050 goal without major advancements in technology (CCST 2012). Impacts from GHG emissions within the Town of Yucca Valley would be significant for long-term growth anticipated under the General Plan Update.

[10] According to the U.S. Census and California Department of Finance (DOF) population counts for the Town of Yucca Valley, the Town has experienced an average annual growth rate of 1.82 percent since 2000.

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***Table 5.6-8***
***General Plan Buildout (Post-2035) Community-Wide GHG Emissions Inventory for the Town of Yucca Valley***

| | Buildout (Post-2035) GHG Emissions (MTCO2e/Year) | | | | |
|---|---|---|---|---|---|
| ***Pollutant*** | ***2012 $MTCO_2e$*** | ***Buildout BAU $MTCO_2e$*** | ***Buildout ABAU $MTCO_2e$*** | ***ABAU Change from 2012 $MTCO_2e$*** | ***ABAU Change from 2020 BAU $MTCO_2e$*** |
| Transportation[1] | 157,248 | 488,557 | 356,195 | 198,947 | -132,362 |
| Energy – Residential[2] | 44,538 | 128,008 | 110,303 | 65,765 | -17,705 |
| Energy – Nonresidential[2] | 25,414 | 117,919 | 98,019 | 72,606 | -19,900 |
| Waste[3] | 3,120 | 10,367 | 10,367 | 7,247 | 0 |
| Water/Wastewater[4] | 4,593 | 14,972 | 12,035 | 7,442 | -2,937 |
| Other – Off-road Equipment[5] | 1,472 | 1,926 | 1,733 | 261 | -193 |
| **Total Community Emissions** | **236,385** | **761,750** | **588,653** | **352,267** | **-173,097** |
| MDAQMD Threshold[6] | NA | NA | NA | 90,718 $MTCO_2e$/year | NA |
| Exceeds MDAQMD Threshold | NA | NA | NA | **Yes** | NA |
| $MTCO_2e$/Service Population (SP)[7] | 7.9 | 7.6 | 5.8 | NA | NA |

Notes: Emissions forecast based on changes in population (residential energy), employment (nonresidential energy), or service population (Town energy, waste, water/wastewater, transportation).
ABAU includes reductions identified in the Scoping Plan associated with Transportation (Pavley+LCFS), Energy & Water/Wastewater (33% RPS), and Other (LCFS). The current inventory does not account for reductions in building energy use from Title 24 cycle updates.
Emissions may not total to 100% due to rounding.

[1] EMFAC2011 based on daily per capita VMT data provided by Fehr and Peers, Modeling was conducted for both a BAU scenario, which does not include GHG emissions reduction from the Pavley Fuel Efficiency Standard and LCFS and for the ABAU scenario, which includes these statewide regulations that were adopted for the purpose of reducing GHG emissions.

[2] Natural gas and electricity use were modeled using data provided by SoCalGas and SCE, respectively. The carbon intensity of SCE's purchased electricity is based on the CPUC's WCI 2008 Emission Factor Calculator. The ABAU scenario for residential electricity use includes a reduction in carbon intensity of SCE's energy supply required under the 33 percent RPS (CEC 2012).

[3] WARM model, version 12, based on waste disposal (municipal solid waste and alternative daily cover) and waste characterization data from CalRecycle (CalRecycle 2013). Modeling assumes a 75 percent reduction in fugitive GHG emissions from the landfill's Landfill Gas Capture System.

[4] LGOP, version 1.1 based on the HDWD's 2010 UWMP. Forecasts are adjusted for increases in population and employment and are based on the target per capita SBx7-7. The ABAU scenario for residential electricity use includes a reduction in carbon intensity of SCE's energy supply required under the 33 percent RPS (CEC 2012).

[5] OFFROAD2007 w for San Bernardino County proportioned based on the Town of Yucca Valley as a percentage of San Bernardino County based on data from the US Census. Area sources exclude emissions from fireplaces and consumer products in the Town. The ABAU includes reductions from the LCFS.

[6] MDAQMD 2011. Based on annual threshold of 100,000 tons per year of $CO_2$ emissions.

[7] Based on a service population of Existing: 29,945 people (22,464 residents and 7,481 employees); Buildout: 99,491 people (64,565 residents and 34,926 employees).

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***IMPACT 5.6-2: THE TOWN OF YUCCA VALLEY GENERAL PLAN UPDATE WOULD NOT CONFLICT WITH CARB'S 2008 SCOPING PLAN OR SCAG'S 2012 RTP/SCS. [THRESHOLD GHG-2]***

***Impact Analysis:*** The Town has not yet adopted a qualified GHG reduction plan. However, CARB adopted the 2008 Scoping Plan to identify statewide strategies to achieve the GHG reduction targets of AB 32, and SCAG adopted the 2012 RTP/SCS to achieve the local passenger vehicle per capita GHG reduction targets of SB 375.

### CARB's Scoping Plan

In accordance with AB 32, CARB developed the Scoping Plan to outline the state's strategy to achieve 1990 level emissions by year 2020. To estimate the reductions necessary, CARB projected statewide 2020 BAU GHG emissions (i.e., GHG emissions in the absence of statewide emission reduction measures). CARB identified that the State as a whole would be required to reduce GHG emissions by 28.5 percent from year 2020 BAU to achieve the targets of AB 32 (CARB 2008). The revised BAU 2020 forecast shows that the state would have to reduce GHG emissions by 21.6 percent from BAU without Pavley and the 33 percent RPS or 15.7 percent from the adjusted baseline (i.e., with Pavley and 33 percent RPS) (CARB 2012).

Statewide strategies to reduce GHG emissions include the LCFS, California Appliance Energy Efficiency regulations; California Building Standards (i.e., CALGreen and the 2013 Building and Energy Efficiency Standards); 33 percent RPS; changes in the corporate average fuel economy standards (e.g., Pavley I and California Advanced Clean Cars [Pavley II]); and other measures that would ensure the state is on target to achieve the GHG emissions reduction goals of AB 32. Statewide GHG emissions reduction measures that are being implemented over the next seven years would reduce the Town's GHG emissions. New residential and nonresidential construction in the Town would achieve the current building and energy efficiency standards. The new buildings would be constructed in conformance with CALGreen, which requires high-efficiency water fixtures for indoor plumbing and water efficient irrigation systems. Furthermore, all landscaping installed would be required to adhere to the Town's Water Efficient Landscape Ordinance. Compliance with state and local regulations regarding energy and water efficiency would ensure that the growth under the Town of Yucca Valley General Plan Update does not conflict with the Scoping Plan. Therefore, impacts would be less than significant.

### SCAG's 2012 RTP/SCS

SCAG's 2012 RTP/SCS is a regional growth management strategy that targets per capita GHG reduction from passenger vehicles and light duty trucks in the Southern California region. The 2012 RTP/SCS incorporates local land use projections and circulation networks in the cities' and counties' general plans. The projected regional development pattern, including location of land uses and residential densities included in local general plans, when integrated with the proposed regional transportation network identified in the 2012 RTP/SCS, would reduce per capita vehicular travel-related GHG emissions and achieve the subregional GHG reduction per capita targets for the SCAG region. Overall, land use designations between the existing current general plan and the proposed general plan are similar. However, the proposed land use plan would allow for more intense commercial, residential, civic, and higher-density residential land uses concentrated near SR-62. The proposed land use plan would generally decrease land use density to the north and to the south with distance from SR-62. These land use strategies are compatibility with the overall goals of the 2012 RTP/SCS. The General Plan Update is consistent with the growth strategies of the 2012 RTP/SCS. Furthermore, Table 5.9-1, *SCAG's 2012–2035 Regional Transportation Plan/Sustainable Communities Strategy Goals Consistency Analysis*, in Section 5.9, *Land Use and Planning*, provides an assessment of the proposed project's relationship to applicable RTP/SCS goals. As identified in this table, the proposed project would be consistent with the applicable RTP/SCS goals. Therefore, the General Plan Update is consistent with SCAG's 2012 RTP/SCS.

### 5.6.4 Relevant General Plan Policies and Implementation Actions

#### *5.6.4.1 Open Space and Conservation*

**Open Space and Conservation Element**

| | |
|---|---|
| Policy OSC 6-3 | Require low water use, drought resistant landscape planting to reduce water demand. |
| Policy OSC 6-4 | Require new development to incorporate Best Management Practices (BMPs) for water use and efficiency and demonstrate specific water conservation measures. |
| Policy OSC 9-1 | Develop, promote, and implement long-term energy efficiency and demand management policies and standards for Town facilities, vehicles, and new development. |
| Policy OSC 9-2 | Support the development of renewable energy generation within the Town, provided that significant adverse environmental impacts associated with such development can be successfully mitigated. |
| Policy OSC 9-3 | Encourage the use of clean and/or renewable alternative energy sources for transportation, heating, and cooling and construction. |
| Policy OSC 9-4 | Encourage the reduction and recycling of household and business waste. |
| Policy OSC 9-5 | Ensure that any planned construction, demolition, addition, alteration, repair, remodel, landscaping, or grading projects divert all reusable, salvageable, and recyclable debris from landfill disposal. |
| Policy OSC 9-6 | Promote use of ride-sharing and mass transit as means of reducing transportation-related energy demand. |
| Policy OSC 9-7 | Encourage development proposals to participate in state, federal, and/or regional solar rebate and incentive programs. |
| Policy OSC 9-8 | Encourage new construction provided for in whole or in part with Town funds, to incorporate passive solar design features, such as daylighting and passive solar heating, where feasible. |
| Policy OSC 9-9 | Promote building design and construction that integrates alternative energy systems, including but not limited to solar, thermal, photovoltaics and other clean energy systems. |
| Policy OSC 10-1 | Participate in the monitoring of all air pollutants of regional concern on a continuous basis. |
| Policy OSC 10-2 | Coordinate air quality planning efforts with other local, regional, and federal agencies. |
| Policy OSC 10-3 | Promote the safe and efficient movement of people and materials into and through the Town as a means of reducing the impact of automobiles on local air quality. |
| Policy OSC 10-4 | Coordinate land use planning efforts to assure that sensitive receptors are reasonably separated from polluting point sources. |
| Policy OSC 10-5 | Provide consistent and effective code enforcement for construction and grading activities to assure ground disturbances do not contribute to blowing sand and fugitive dust emissions. |

Policy OSC 11-1 Continue to participate in and support the provisions of the San Bernardino Regional Greenhouse Gas Reduction Plan.

Policy OSC 11-2 Encourage new development to be designed to take advantage of the desert climate through solar orientation, shading patterns, and other green building practices and technologies.

Policy OSC 11-3 Maintain General Plan Land Use, Housing, and Transportation goals and policies to be aligned with, support, and enhance SCAG's Regional Transportation Plan and Sustainable Communities Strategy to achieve reductions in GHG emissions.

### Open Space and Conservation Implementation Actions

OSC 26 Update water efficient-landscape guidelines, which address the use of drought-tolerant plant materials and irrigation standards in the Development Code in accordance with State law.

OSC 36 Participate in the regional energy management and conservation efforts and encourage the expanded use of energy efficient and alternative fuels, buses with bike racks, and other system improvements including infrastructure for alternative energy vehicles that enhance overall energy efficiency and conservation.

OSC 37 Coordinate with the County to review land use applications proposing to develop solar or windfarms to protect view sheds and scenic resources of the community.

OSC 38 Continue the Town's efforts on community participation in reducing, reusing, and recycling household and business waste.

OSC 39 Provide informational materials and non-Town incentive program information to residents regarding available alternative energy and energy efficiency programs and rebates.

OSC 40 Evaluate the Town's ability to create a program to waive or reduce the permit fees on solar installation projects and promote state, federal, and private rebate programs.

OSC 41 Amend the Development Code to identify land use sources of toxic air contaminants and adopt standards for the regulation of location and protection of sensitive receptors from excessive and hazardous emissions.

OSC 43 Continue to proactively work with the MDAQMD in conjunction with other local and regional agencies in the development and application of air quality regulations.

OSC 44 Require all projects that have the potential to generate significant levels of air pollution to provide detailed impact analyses and design mitigation that incorporates the most advanced technological methods available. Prior to the issuance of construction permits, the Town shall review and determine the effectiveness of proposed mitigation measures and set additional measures as needed.

OSC 45 Establish a goal for solar installations on new and existing homes as well as new commercial/industrial development to be achieved before 2020.

OSC 46 Pursue partnerships with other governmental entities and with private companies and Southern California Edison to establish incentive programs for renewable energy.

#### *5.6.4.2 Land Use*

**Land Use Element**

Policy LU 1-1 Encourage infill development to maximize the efficiency of existing and planned public services, facilities, and infrastructure.

Policy LU 1-2 Require that adjacent land uses and development types complement one another.

Policy LU 1-9 Encourage infill residential development around public facilities and with pedestrian linkages to encourage walkable residential neighborhoods.

Policy LU 1-19 Encourage the relocation of industrial operations that are not compatible with adjacent uses to areas that are conducive to such operations.

Policy LU 1-22 Attract and retain non-polluting, clean industrial development that expands the economic opportunities in the Town.

**Land Use Implementation Actions**

LU13 Coordinate with the Southern California Association of Governments and the Governor's Office of Planning and Research to stay informed of legislation and documentation of the nexus between land use, housing, transportation, and sustainability.

#### *5.6.4.3 Circulation*

**Circulation Element**

Policy C1-7 Encourage development designs that integrate multiple modes of access including pedestrian, bicycle, and public transportation.

Policy C1-8 Apply complete street strategies that accommodate pedestrian, bicycle, transit modes whenever practicable and feasible.

Policy C 1-9 Require sidewalk improvements concurrent with new development where commercial and school uses are planned and where residential densities exceed two units per acre, or as required by the Planning Commission.

Policy C 1-10 Encourage MBTA to provide enhanced bus service to employment areas outside of the Town, such as the Coachella Valley or other nearby areas in the County of San Bernardino.

Policy C 1-11 Encourage MBTA to work with area religious facilities or other sites where underutilized parking or hours of operation could provide opportunities for implementing shared park-and-ride facilities.

Policy C1-12 Encourage MBTA to implement regional transportation solutions that reduce vehicle miles traveled and greenhouse gas emissions.

Policy C1-13 Work with new development to implement MBTA's Transit Guidelines in Project Development (MBTA, 2005) as appropriate.

Policy C1-14 Encourage employers to support Transportation Demand Management techniques, such as bus transit passes or other measures that reduce the reliance of the single occupant vehicle.

| | |
|---|---|
| Policy C1-15 | Design designated truck routes such that the pavement, roadway width, and curb return radii support anticipated heavy vehicle use. |
| Policy C1-16 | Support and work with Caltrans to coordinate signals along SR-62 and SR-247 in Town. |
| Policy C1-17 | Ensure funding is available to implement and maintain signal coordination. |
| Policy C1-19 | Require traffic calming techniques in residential neighborhoods and in Special Policy Areas to slow and manage traffic volumes as deemed appropriate by the Town Engineer. |

**Circulation Implementation Actions**

| | |
|---|---|
| C 2 | Review and revise the street and traffic impact mitigation fee program. |
| C 5 | Provide signs and improve trails, bicycle, equestrian, and pedestrian connections consistent with the Town Trails Master Plan and Park and Recreation Master Plan based on available funding. |
| C 6 | Close gaps in the existing sidewalk network and provide sidewalks adjacent to schools consistent with the Future Sidewalks Map (Figure 4-3 of the 2013 Transportation Study). |
| C 7 | Update the Park and Recreation Master Plan to include bicycle and pedestrian facilities that are complementary to the connectivity and trails planning identified in the Town's Trails Master Plan. |
| C 8 | Apply for funding opportunities to improve pedestrian facilities near schools (such as Safe-Routes-To-School (SR2S) funding). |
| C 9 | Work with MBTA to plan and provide enhanced bus service to employment areas outside of the Town. |
| C 10 | Coordinate with MBTA and religious facilities to discuss expanding opportunities for implementing park-and-ride facilities. |
| C 11 | Consult with MBTA for bus stop placement and design. |
| C 12 | Consult with MBTA on street design to ensure the street accommodates access for a variety of transit options. |
| C 13 | Work with MBTA to create a program to expand ridership in Yucca Valley. |
| C 14 | Establish right-of-way landscaping, signage, and lighting requirements and guidelines to provide an attractive, user-friendly, and safe environment for all users. |
| C 18 | Work with CalTrans to pursue funding for and implement low-cost transportation improvements such as traffic signal coordination where applicable. |
| C 19 | Pursue funding to pave unpaved roadways where the traffic volume exceeds 500 daily trips. |
| C 20 | Update the development code to require the application of non-toxic soil binder annually to minimize dust emissions on existing and new unpaved roads where traffic volumes exceed 500 daily trips if paving is not feasible. |

C 24 Coordinate with utility providers such as Southern California Edison to identify and estimate future demand and corresponding facilities required to serve projected local and regional growth.

C 25 Evaluate and prioritize public infrastructure improvements for inclusion in the Town's Capital Improvement Program.

### 5.6.5 Existing Regulations and Standard Conditions

- AB 32: California Global Warming Solutions Act
- Executive Order S-3-05: Greenhouse Gas Emission Reduction Targets
- Low Carbon Fuel Standard (Title 17 CCR)
- Building Energy Efficiency Standards (CCR Title 24)
- Appliance Energy Efficiency Standards (CCR Title 20)
- Pavely Motor Vehicle Standards (AB 1493)
- California Water Conservation in Landscaping Act of 2006 (AB 1881)
- Statewide Retail Provider Emissions Performance Standards (SB 1368). R
- Renewable Portfolio Standards (SB 1078)

### 5.6.6 Level of Significance Before Mitigation

Upon implementation of regulatory requirements and standard conditions of approval, the following impacts would be less than significant: 5.6-2.

Without mitigation, the following impacts would be **potentially significant**:

- Impact 5.6-1 Buildout of the Town of Yucca Valley Pursuant to the maximum level allowed by the land use designations of the General Plan Update land use plan would generate a substantial increase in GHG emissions over existing conditions.

### 5.6.7 Mitigation Measures

#### Impact 5.6-1

6-1 The Town of Yucca Valley shall participate in the San Bernardino Regional Greenhouse Gas Reduction Plan being prepared by the San Bernardino Association of Governments (SANBAG). The Town shall achieve a 15 percent reduction in greenhouse gas emissions from baseline (2008) conditions. The Town shall implement the following local measures, as identified in the preliminary plan:

- Energy Efficiency for Existing Buildings (Energy-1): The Town shall promote energy efficiency in existing residential buildings and commercial buildings, and remove funding barriers for energy efficiency improvements through one or more of the following actions:

- Implementing a low-income weatherization program,
- Launching energy efficiency outreach/education campaigns targeted at residents and businesses
- Promoting the smart grid and funding and schedule scheduling energy efficiency tune-ups
- Promoting energy efficiency management services for large energy users

- Solar Installation for New Commercial (Energy-2): The Town shall reduce electricity consumption above and beyond the requirements of AB 1109 by requiring 50 percent of outdoor lighting fixtures use halogen bulbs and 100 percent of traffic signals use light emitting diode (LED) bulbs by 2020.

- Solar Installation for Existing Housing (Energy-7): The Town shall establish a goal to have 15 percent of existing homes be supplied with solar power.

### 5.6.8 Level of Significance After Mitigation

#### Impact 5.6-1

Buildout of the Town of Yucca Valley pursuant to the maximum level allowed by the land use designations of the General Plan Update land use plan would generate a substantial increase in GHG emissions over existing conditions. Goals and policies are included in the General Plan Update that would reduce GHG emissions. The San Bernardino Association of Governments (SANBAG) has initiated a Regional GHG Reduction Plan for the county and participating local governments. As part of the SANBAG proposed Regional GHG Reduction Plan, disaggregated existing and forecast GHG emissions inventories were prepared for each of the participating jurisdictions.[11] Each jurisdiction identified a goal to reduce their community GHG emissions from BAU levels by the year 2020. Each jurisdiction has selected their goal based on what each jurisdiction considers feasible given the local conditions.

The Town of Yucca Valley is a participant in the regional GHG reduction planning effort. Participation in the proposed Regional GHG Reduction Plan for the County would assist the Town in reducing local GHG emissions. The Town of Yucca Valley has proposed a goal of achieving a 15 percent reduction in GHG emissions from baseline (2008) conditions by 2020. Similar to the GHG emissions inventory identified above in Table 5.6-6, SANBAG's proposed Regional GHG Reduction Plan identifies that the Town would exceed their 2020 GHG goal with only state/county level actions. However, the Town has identified the following measures (in Mitigation Measure 6-1) that would be implemented at a local level to further reduce Town-wide GHG emissions:

- Energy Efficiency for Existing Buildings (Energy-1): The Town will promote energy efficiency in existing residential buildings and commercial buildings, and remove funding barriers for energy efficiency improvements. Actions may include: Implementing a low-income weatherization program, launching energy efficiency outreach/education campaigns targeted at residents and businesses, promote promoting the smart grid, and funding and schedule scheduling energy efficiency tune-ups and Promote promoting energy efficiency management services for large energy users.

- Solar Installation for New Commercial (Energy-2): The Town has identified that it will update the Municipal

[11] Note that GHG emissions inventories conducted for the SANBAG Regional GHG Reduction Plan were prepared using different inventory methodology.

Code's outdoor lighting standards to reduce electricity consumption above and beyond the requirements of AB 1109 and require 50 percent of outdoor lighting fixtures for new Town facilities and new non-residential developments use halogen bulbs and 100 percent of traffic signals use LED bulbs by 2020.

- Solar Installation for Existing Housing (Energy-7): The Town has identified a goal of 15 percent of existing homes be supplied with solar power to be achieved before 2020.

- Implement SBX7-7 (Water-4): In accordance with SBX7-7, urban per capita water use in the Town is anticipated to decrease by 20 percent per capita by 2020.

Specific General Plan Policies and Implementation Actions identified in the General Plan to achieve these goals include:

| | |
|---|---|
| Policy OSC 9-1 | Develop, promote, and implement long-term energy efficiency and demand management policies and standards for Town facilities, vehicles, and new development. |
| Policy OSC 6-3 | Require low water use, drought resistant landscape planting to reduce water demand. |
| Policy OSC 26 | Update water efficient-landscape guidelines, which address the use of drought-tolerant plant materials and irrigation standards in the Development Code in accordance with State law. |
| Policy OSC 9-9 | Promote building design and construction that integrates alternative energy systems, including but not limited to solar, thermal, photovoltaics and other clean energy systems. |
| Policy OSC 40 | Evaluate the Town's ability to create a program to waive or reduce the permit fees on solar installation projects and promote state, federal, and private rebate programs. |
| Policy OSC 45 | Establish a goal for solar installations on new and existing homes as well as new commercial/industrial development to be achieved before 2020. |
| Policy OSC 46 | Pursue partnerships with other governmental entities and with private companies and Southern California Edison to establish incentive programs for renewable energy. |

Compliance with these objectives, as identified in SANBAG's proposed Regional GHG Reduction Plan and integrated within the General Plan Update, would ensure that long-term GHG emissions from buildout of the General Plan Update are reduced to the extent feasible. However, because of the magnitude of emissions generated by the buildout of residential, office, commercial, industrial, and warehousing land uses in the Town, and because no statewide long-term strategy to reduce emissions beyond year 2020 are available that would reduce impacts below MDAQMD's thresholds at buildout of the General Plan, Impact 5.6-1 would remain **Significant and Unavoidable**.

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