TOWN OF APPLE VALLEY

ENVIRONMENTAL IMPACT REPORT FOR THE COMPREHENSIVE GENERAL PLAN AND ANNEXATIONS NO. 2008-001 AND NO. 2008-002

III. EXISTING ENVIRONMENTAL CONDITIONS, PROJECT IMPACTS AND MITIGATION MEASURES

A. Aesthetics and Visual Impacts

Introduction and Background
This section describes the existing visual resources of the planning area, including the Town, Annexation 2008-001 and 2008-002, as well as those of the region. It analyzes the potential impacts of the General Plan on these resources and sets forth mitigation measures effective in reducing impacts. The California Environmental Quality Act is prescriptive in how the Town must address issues related to visual/scenic resources.

Thresholds of Significance/Criteria for Determining Significance
The following thresholds or criteria are not those strictly recommended in 15064 of CEQA. Rather, they are derived from Appendix G of CEQA, which is used to determine the level of potential effect. Build out of the General Plan for the Town of Apple Valley would have a significant effect on aesthetics if it is determined that the project will:

a. Has a substantial adverse effect on a scenic vista.

b. Substantially damages scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.

c. Substantially degrades the existing visual character or quality of the site and its surroundings.

d. Creates a new source of substantial light or glare which would adversely affect day or night-time views in the area.

1. Existing Conditions

Regional Setting

The Town and two annexation areas are located primarily on alluvial slopes of the Mojave River floodplain, at the southern edge of the Mojave Desert. Elevations in the Town range from approximately 2,800 feet above sea level near the Mojave River, to approximately 3,200 feet above sea level at the northeast corner of Town. The topography gradually inclines towards the Juniper Flats foothills of the San Bernardino Mountains to the south, as well as to the scattered knolls and mountains to the north and east of the Town. Turtle and Black Mountains are located to the north of the planning area, Fairview Mountain to the northeast and the Granite Mountains to the southeast. From these elevated topographical features, panoramic vistas exist across Apple Valley.

The Town is located in the high desert between the City of Victorville and the communities of Lucerne Valley on the southeast and Hesperia on the southwest. Federal lands managed by the U.S. Bureau of Land Management (BLM) form the largest land blocks within the adjacent Sphere of Influence. These Federal lands are natural areas managed as open space, which both benefit and characterize the overall setting of the Town. Although considerable rural and residential development exists in the region, a sense of spaciousness prevails and expansive vistas occur in many directions across the planning area.

Planning Area Existing Conditions

Natural visual resources that provide the planning area with special character include uninterrupted expanses of 'wide skies' and panoramic vistas of distant mountains. Characteristic views of the Mojave River floodplain bluffs and terraces, and areas of riparian forest flora also occur. The low-lying landscape surrounding the Town allows unobstructed, distant views in all directions and these create a prevailing sense of openness and spaciousness. Although the visual character of most parts of the planning area have been impacted to some extent by residential, commercial and industrial development, many acres of undeveloped desert lands remain.

The aesthetic quality of existing development in the Town and vicinity is inconsistent, with the built form being representative of several different periods of time and various standards of development. However, parts of an approximately seven-mile-long corridor along Highway 18, include some interesting residential and commercial buildings that date from the early years of the present-day community of Apple Valley, and these buildings make an important visual contribution to local character.

2. Project Impacts

Implementation of the General Plan is expected to result in the continued development of a variety of residential, commercial and industrial structures, as well as additional recreational development. With the exception of certain specialty structures, development allowed by the

General Plan is expected to continue to be limited in terms of coverage, height and density. Some new low-density residential projects will be located within master planned communities and will benefit from consolidated open space, consistent architectural themes and limited building heights.

Regardless of the type of development that occurs, new structures, signage, parking lots, utility infrastructure, lights and other elements of the built environment will result in additional visual impacts which could adversely affect surrounding viewsheds, either partially or wholly. Continued urbanization in undeveloped areas will change the natural topography and appearance of the area to a man-made built environment.

Build out of the General Plan will generate increased light and glare resulting from residential, commercial and industrial activities, while increased traffic will result in additional headlights and increased levels of illumination on local roadways.

The General Plan addresses these potential impacts through a series of policies and programs that are directed at maintaining the Town's character and scenic views and vistas. The Plan either directly regulates development, or mandates the maintenance of zoning and other regulatory codes that assure detailed assessment of building coverage, setbacks and building heights, as well as other design features.

Annexation Areas 2008-001 and 2008-002

The proposed land-use plans for the two annexation areas have been designed to integrate into those lands surrounding them which occur in the Town's urban environment. However, build out of the annexation areas is nevertheless expected to have some impact on the visual and aesthetic resources, particularly since both areas are currently vacant desert lands. Although these potential impacts are not expected to affect the visual character of the annexation areas in the immediate future, they will gradually accumulate over time as new development takes place.

The conversion of rural land uses to industrial, commercial and residential uses will transform the open, semi-rural character of the area to that of a developed urban community. Existing viewsheds may be partially obstructed by buildings and other structures, and the present sense of open space will be diminished. Other elements of the built environment, including signage, utility infrastructure, and paved surfaces will also alter existing visual resources. The same policies, programs, and regulatory constraints applicable to all development in Town, however, will be applied to the annexation areas, thereby limiting building coverage and height to one and two story structures which will have limited impacts on viewsheds in either annexation area.

Light and Glare

The southwestern portions of the planning area are the most urbanized. These areas are presently impacted by light and glare emitted from vehicular headlights, street lights, accent lighting, building lights and external safety lighting for parking lots and other open spaces, as well as glare from reflective surfaces such as vehicles, building materials and windows. These areas will

continue to emit light, while build out of the General Plan will result in increased levels of illumination and glare impacting currently undeveloped portions of the planning area. Land that was previously undeveloped has been designated for residential, commercial and industrial uses. However, all future development proposals will be subject to review by Town staff to determine compliance with General Plan dark sky and lighting policies, as well as Development Code standards and requirements, designed to control light spillage and preserve night skies. The Town has also established development performance standards for exterior lighting in Chapter 9.70.020 of the Town's Municipal Code and these will be enforced to effectively reduce lighting and glare impacts to less than significant levels.

Summary of Impacts

Build out of the General Plan will result in some change to the existing visual character of much of the planning area. The conversion of vacant lands and rural land uses to industrial, commercial and more intense residential uses will change the open, semi-rural character that prevails in many parts of the area to that of a developed community. Existing viewsheds may be partially obstructed by buildings and other structures, and the present sense of open space will be diminished. Other elements of the built environment, including signage, utility infrastructure, and paved surfaces will also impact existing visual resources. However, implementation of the Town's General Plan policies and design performance standards, together with the mitigation measures set forth herein, are expected to reduce potentially detrimental impacts to visual resources to less than significant levels.

Build out of the General Plan will also result in increased levels of illumination and glare, as previously undeveloped land is developed for residential, commercial and industrial uses. The designation of new and more intensively developed industrial areas may also impact on sensitive neighboring residential developments. However, impacts resulting from light and glare are expected to be reduced to less than significant levels through implementation of the Town's General Plan policies and design performance standards.

3. Mitigation Measures

The General Plan enhances the Town's ability to regulate and prevent significant viewshed impacts from occurring as a result of future development, while also mandating continued protection of the Town's visual resources. In order to ensure that impacts to visual resources are reduced to less than significant levels, the following mitigation measures shall be implemented.

1. Signage shall be in compliance with the Town's sign ordinance and shall be limited to the minimum size, scale and number needed to provide functional information, thereby minimizing impacts on traffic safety, streetscape, scenic viewsheds and the aesthetic character of the area.

2. Compliance with the Town's performance and design standards for landscaping, building coverage and setbacks, building design and height, architectural finishes, walls, fences and utility structures will be required of all development and redevelopment projects.

3. The Town shall maintain and implement design standards which protect scenic viewsheds and enhance community cohesion. Development standards shall address signage, landscaping, setbacks, building facades, vehicular and pedestrian access and related issues.

4. The Town's performance and design standards for lighting shall be maintained and implemented.

5. In addition to being in compliance with the Town's lighting ordinance, supplementary lighting recommendations include:

   - External lighting shall be limited to the minimum height, fewest number and lowest intensity required to provide effective levels of illumination.
   - Every reasonable effort shall be made to reduce spillage, both to protect residential use areas from excessive levels of illumination and to preserve dark skies at nighttime.
   - Elevated lighting, including but not limited to parking lot lighting, shall be full-cutoff fixtures.
   - Lighting fixtures in the vicinity of the airport shall be compatible with airport operations.

6. Overhead utility lines shall be undergrounded to the greatest extent possible through the maintenance of an undergrounding program.

7. The Town shall coordinate with utility providers to assure that utility infrastructure, including water wells, substations and switching/control facilities, are effectively screened to preserve scenic viewsheds and limit visual clutter.

8. Planning and design of residential neighborhoods and street corridors shall provide distinctive and characteristic design elements, such as entry monuments and landscaping, which preserve and enhance viewsheds enjoyed from these areas

9. All development proposed within scenic viewsheds shall be regulated to minimize adverse impacts to views and vistas.

Mitigation Monitoring/Reporting Program

A. All development plans, including lighting, landscape and signage proposals, shall be reviewed by the Town to assure their substantial compliance with the Town's design and performance standards, the design parameters set forth in the above mitigation measures and the General Plan.
   Responsible Party: Planning Division, Planning Commission, Town Council

B. The Town shall maintain and implement a comprehensive Development Code and other regulatory documents which define the design perimeters to which public and private development projects must conform. Application packages shall be maintained to guide the

preparation of Specific Plans, Conditional Use and other permits, and to ensure a thorough review of all community design issues.
Responsible Party: Planning Division, Planning Commission, Town Council

C. The Development Code shall maintain neighborhood enhancing design standards for industrial, commercial and residential development areas that ensure a variety of complementary design, the provision of safe open spaces, adequate access and parking, appropriately designed and scaled walls/fences and comprehensive landscaping programs.
Responsible Party: Planning Division, Planning Commission, Town Council

B. Agricultural Resources

Introduction
This section of the EIR assesses the potential impacts to agricultural resources resulting from build out of the General Plan and annexations. As the Department of Conservation has identified Farmland of Statewide Importance within the Town boundaries, an assessment of the potential impacts associated with these lands is necessary. Appropriate mitigation is offered to reduce the potential impacts associated with implementation of the General Plan to less than significant levels. It is important to note that no State designated farmlands occur in either of the annexation areas.

Thresholds of Significance/Criteria For Determining Significance
The following significant thresholds or criteria are derived from Appendix G of CEQA, which is used to determine if and to what extent a project may have a potentially significant impact on agricultural resources. Build out of the General Plan and annexations would have a significant effect on air quality if it is determined that the project will:

a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.

b. Conflict with existing zoning for agricultural use, or a Williamson Act contract.

c. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use.

1. Existing Conditions

Agricultural activities in Town historically ranged from ranching to crop farming. In the last 50 years, however, agricultural activities have diminished considerably, due in part to the limited supply of irrigation water, and the pressures of urbanization in the community. The California Department of Conservation, Farmland Mapping and Monitoring Program, monitors the supply of farmland in the State, including San Bernardino County. The Department classifies four types of farmland:

Prime Farmland
These lands have the best combination of physical and chemical features to maintain long term agricultural activities. The quality of the soils, the level of moisture, and the length of the growing season are all ideal for the production of consistently high yields.

Farmland of Statewide Importance
This type of farmland is similar to Prime Farmland, but has some restrictions, such as slope or less soil moisture. These lands are designated if they have been used for agriculture in the four years preceding the preparation of the map.

Unique Farmland
This classification of farmland has lower quality soils, and usually requires irrigation, although irrigated orchards and vineyards can be included in the classification.

Farmland of Local Importance
Locally important farmlands has the soils which meet the requirements of Prime, Statewide Importance or Unique farmlands, but are not irrigated.

The Department has identified four areas in Apple Valley which it has designated as Farmland of Statewide Importance. Two are located north of Yucca Loma Road, and west of Apple Valley Road. Two are located south of Yucca Loma Road; one immediately east of Apple Valley Road, and one south of Bear Valley Road, in the Deep Creek area. Altogether, these lands represent approximately 130 acres.

There is one Williamson Act contract in effect in Town, located on the south side of Chickasaw Lane, east of Chamber Lane, and consisting of 1.8 acres. The parcel is owned by the Apple Valley Ranchos Water Company (AVR).

Within the lands identified by the State, approved projects occur. Specifically, the Town has on record approved Tentative Tract Maps for 37.5 acres at the southeast corner of Camber Lane and Chickasaw Lane; 42.3 acres at the southwest corner of Choco Road and Yucca Loma Road, and 37 acres at the southeast corner of Wren Road and Mockingbird Road. These approvals affect almost all of the lands designated by the State as farmland, and occurred prior to the current General Plan update, on lands designated for residential land uses in the current General Plan.

2. Project Impacts

Implementation of the General Plan has the potential to convert the lands designated by the State as Farmland of Statewide Importance to residential development. As stated above, all but about 15 acres are committed to development under the existing General Plan, although development has not occurred. These lands are in relatively small parcels of 40 acres or less, and not conducive to the long term production of agriculture.

The Land Use Element of the General Plan allows ranching and agricultural activities in the Very Low Density Residential, Low Density Residential, Estate Residential and Estate Residential ¾ land use designations. The parcels identified by the State occur in the Single Family Residential, Specific Plan, Public Facilities and Low Density Residential designations. The majority of these lands are designated for suburban land uses, and have existing approved residential development proposals under the current General Plan. These lands are also not currently farmed, nor have they been in several years. The latter designation applies to those lands located south of Bear Valley Road. These lands, therefore, may be developed as agricultural or ranching facilities under the General Plan, representing about 30 acres. The balance of the land use designations, however, will result in the elimination of these lands from potential agricultural production.

Lands in the Deep Creek area are designated Low Density Residential and Estate Residential in order to preserve the rural and agricultural/ranching activities which have occurred there in the past. Although these lands are not designated by the State as Farmland of Statewide Importance, they are likely to develop to include equestrian, ranching or hobby farm facilities. This area of Apple Valley has been identified in the General Plan for long term preservation in a semi-agrarian character, including policies and programs which protect this character.

The Williamson Act contract which currently occurs in Town applies to land owned by the Town's largest water company. The parcel is not currently farmed. Should AVR wish to develop the land, the Williamson Act contract will need to be removed from the parcel. AVR will be required to notify responsible agencies, including the Town, of its intent of non-renewal, and the change will be recorded with the County. Given that the parcel is only 1.8 acres in size, it is not of long term agricultural value, and will not represent a significant loss of agricultural land in the area.

As a result of implementation of the General Plan, it is likely that about 100 acres of land designated by the State as Farmland of Statewide Importance will be lost. None of the parcels represent viable long term agricultural production lands within Apple Valley, or for the region. The more likely agricultural, ranching and equestrian areas in Town occur surrounding the most southerly designated Farmland of Statewide Importance, in the Deep Creek area. These lands are designated to allow agricultural and ranching activities, and are able to support such activities through the policies of the General Plan.

3. Mitigation Measures

In order to protect lands in agricultural and equestrian activities in Town, the following mitigation measures shall be implemented.

1. The Town's Development Code shall include buffers between Very Low Density, Low Density and Estate Residential land use designations and more intense lands, in order to provide for the preservation or creation of ranching or animal raising activities in the Deep Creek area.

2. The Town shall coordinate with the Department of Conservation, Farmland Mapping and Monitoring Program, to accurately reflect farmed and farmable lands within the Town limits.

Mitigation Monitoring/Reporting Program

A. The Development Code shall include buffer standards for Very Low, Low and Estate Residential land use designations abutting more intense land use designations.
Responsible Party: Planning Division, Planning Commission, Town Council

B. The Planning Division shall annually work with the Department of Conservation to accurately map agricultural lands within the Town.
Responsible Party: Planning Division, Department of Conservation

C. Air Quality

Introduction

This section of the EIR describes the existing air quality conditions in the Town of Apple Valley, the vicinity, and regionally, and analyzes the potential health risks and emissions as the General Plan builds out. An evaluation of the potential impacts of the proposed General Plan and annexations relative to air quality conditions is contained herein. Mitigation measures that may be effective in reducing impacts are also set forth. A wide range of data and information, including regional air quality monitoring stations, local and regional scale planning and environmental documents, and consultation with the Mojave Desert Air Quality Management District, have been used in researching and analyzing the build out of the General Plan and annexations, and their potential air quality impacts.

Thresholds of Significance/Criteria For Determining Significance

The following significant thresholds or criteria are derived from Appendix G of CEQA, which is used to determine if and to what extent a project may have a potentially significant impact on air quality. Build out of the General Plan for the Town of Apple Valley would have a significant effect on air quality if it is determined that the project will:

a. Conflict with or obstruct implementation of the applicable air quality plan.

b. Violate any air quality standards or contribute substantially to an existing or projected air quality violation.

c. 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).

d. Expose sensitive receptors to substantial pollutant concentrations.

e. Create objectionable odors affecting a substantial number of people.

Sensitive receptors are persons or land uses that may be subject to respiratory stress and/or significant adverse impact as a result of exposure to air contaminants. The Air Resources Board designates people with cardiovascular and chronic respiratory diseases, children under 14, seniors over 65, and athletes as sensitive receptors. Accordingly, hospitals, nursing and retirement homes, schools, daycares, playgrounds, parks, athletic facilities, and residential and hotel/motel facilities are all considered sensitive land uses.

MDAQMD Thresholds[1]

In accordance with Mojave Desert Air Quality Management District (MDAQMD), any project will have significant air quality impacts if it exceeds those thresholds set forth in Table III-1 below:

Table III-1
Emissions Thresholds for MDAQMD

Criteria Pollutant	Annual Threshold (tons)	Daily Threshold (pounds)
Carbon Monoxide (CO)	100	548
Oxides of Nitrogen (NOx)	25	137
Volatile Organic Compounds (VOC)	25	137
Oxides of Sulfur (SOx)	25	137
Particulate Matter (PM10)	15	82

In addition, a project may be found to have significant air quality impacts if it generates a violation of any ambient air quality standard when added to the local background; and/or, does not conform with the applicable attainment or maintenance plan(s); and/or, exposes sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to 10 in a million; and/or a Hazard Index (HI) (non-cancerous) greater than or equal to one (1). It should be noted that the above mentioned significance thresholds are not applicable to all projects and the District individually determines whether a project should be evaluated under these thresholds.

It should be noted that the above Table is intended for specific projects and is not necessarily applicable to the General Plan level analysis presented in this programmatic EIR. Nonetheless, in order to make a significance determination, these thresholds are used.

Global Warming and Climate Change

Assembly Bill 32, signed in 2006, requires the Air Resources Board (ARB) to develop regulation on how the state will combat global warming. On December 6, 2007, ARB approved the statewide greenhouse gas limit for carbon dioxide equivalent in the amount of 427 million metric tons. Although this statewide standard has been established, criteria for determining project specific emission levels have not yet been defined. To date the ARB, Environmental Protection Agency (EPA), and other regulatory agencies have not adopted thresholds to analyze project level impacts on climate change. In the absence of published CEQA thresholds for emissions of greenhouse gases, impacts would be considered significant if it were determined that the project interferes with the goals of AB 32.

The Global Warming Solutions Act (AB 32) requires the state to cut GHG emission to 1990 levels by the year 2020. Therefore, for the purpose of the following analysis, impacts associated

[1] "California Environmental Quality Act (CEQA) and Federal Conformity Guidelines," prepared by MDAQMD in June 2007.

with GHG emissions would be significant if GHG levels emitted by the project interfere with the ability of AB 32 to achieve the intended reductions by 2020.

Conformity Impacts[2]
A project is non-conforming if it conflicts or delays implementation of any attainment or maintenance plan. A project is conforming if it complies with all applicable District rules and regulations, complies with all proposed control measures that are not yet adopted from the applicable plan(s), and is consistent with the growth forecasts in the applicable plan(s) (or is directly included in the applicable plan). Conformity with growth forecasts can be established by demonstrating that the project is consistent with the land use plan that was used to generate the growth forecast. An example of an inconsistent project would be one that increases the gross number of dwelling units, increases the number of trips, and/or increases the overall vehicle miles traveled in an affected area (relative to the applicable land use plan).

1. Existing Conditions

Air quality is one of the most important issues associated with public health and safety. In the Town of Apple Valley air quality has exceeded state and federal standards for some pollutants in the past. Continued implementation of air quality management programs and local commitment to reducing air pollutants will have long-term beneficial impacts on public health and safety.

Local development and population growth, traffic, construction activities, and various site disturbances in the Town contribute to the air quality. Although air pollution is emitted from various sources locally, some of the degradation of air quality can be attributed to sources outside of the Mojave Desert Air Basin (MDAB), in which Apple Valley is located, including air basins to the west in Los Angeles County, to the southwest in Riverside County and regionally in San Bernardino County.

Climatic Conditions and Air Quality

Within a particular locale, air quality is a function of the amount of pollutants emitted and dispersed as well as the climatic, meteorological, and geophysical conditions that reduce or enhance the formation of pollutants. Meteorological conditions in Apple Valley are largely attributed to its geographic setting. Surrounding mountains effectively isolate the Town from moderating coastal influences and create a hot and dry desert environment. Strong winds out of the west and southwest from 5 to 10 knots per hour are common and occur due to the buildup of a thermal low pressure area. Aeolian processes (erosion caused by wind) sweep up, suspend and transport large quantities of sand and dust, reducing visibility, damaging property and constituting a significant health threat.

Temperatures in the low lying areas of Apple Valley range from the lower teens during winter months to highs above 100ºF during summer months. In the Apple Valley area the average annual rainfall is approximately 7.5 inches, with higher mountain slopes receiving as much as 30

[2] "California Environmental Quality Act (CEQA) and Federal Conformity Guidelines," prepared by MDAQMD in June 2007.

inches of rainfall per year. Precipitation is often short and intense in the adjacent mountains; therefore, torrential run-off may occur, with considerable sediment deposition on the valley floor.

Natural vegetation in the Town and region is sparse and widely spaced, thereby exposing surface soils to wind. The area is frequently subjected to strong winds, causing sand and dust to become airborne. This condition, known as blowsand, poses an often destructive environmental hazard. In addition to health problems associated with the presence of dust particles in the air, dust storms reduce highway and air traffic visibility.

During the past few decades, the region has experienced a decline in air quality as a result of increasing development and population growth, traffic, construction activity and various site disturbances.

Air Quality Management and Regulation

Federal and state government air quality standards have been established to monitor and regulate a variety of air pollutants and to assure that people and the environment are not adversely impacted by poor air quality.

The federal Clean Air Act (CAA), initially passed by Congress in 1963 and subsequently amended, is a federal law intended to ensure that all Americans have the same basic health and environmental protections. The law establishes national ambient air quality standards (NAAQS) for six principal ("criteria") pollutants and requires that each state adopt a State Implementation Plan (SIP) that provides for the enforcement of ambient air quality standards within that state.

The California Clean Air Act (CCAA) was signed into law in 1988 and amended in 1992. It establishes ambient air quality standards and attainment dates that are more stringent than those established under the federal CAA. The California Air Resources Board (CARB) is the state agency responsible for implementing the CCAA. For areas in non-compliance with federal standards, a SIP may be prepared to help regional air quality management districts meet the federal and state ambient air quality standards by the deadlines specified in the CAA, and emission reduction targets of the CCAA. The severity of a region's air pollution determines required emission reductions and attainment deadlines.

The Air Resources Board (ARB) approved the State Area Designations for criteria pollutants and it became effective in July of 2007. ARB sets area designations for nine criteria pollutants: ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, sulfates, lead, hydrogen sulfide, and visibility reducing particles.

The Mojave Desert Air Quality Management District (MDAQMD**)** is responsible for regulating air quality within the Mojave Desert Air Basin (Basin), which includes the Town of Apple Valley, the Sphere of Influence, and neighboring communities within San Bernardino County and the northeastern portion of Riverside County. MDAQMD is responsible for leading the

regional effort to attain state and national air quality standards, and for the development and implementation of various attainment plans.

Primary and Secondary Pollutants

Air pollutants are generally classified into two categories: primary and secondary pollutants. Primary pollutants are a direct consequence of the combustion of petroleum and other fuels, and produce oxides of carbon, sulfur, nitrogen and a number of reactive hydrocarbons and suspended particulates. Primary pollutants typically affect only local areas, and do not undergo chemical modification or further dispersion. Pollutants that undergo chemical changes after emission are referred to as secondary pollutants. These pollutants disperse and undergo chemical changes under conditions of high ambient temperatures and high rates of solar insolation. Termed oxidants, principal secondary pollutants include ozone, peroxynitrates, nitrogen dioxide, and chemical aerosols.

Criteria Pollutants

Criteria pollutants are air contaminants for which air quality standards currently exist, including carbon monoxide, nitrogen dioxide, ozone, lead, particulate matter (PM10 and PM2.5), and sulfur dioxide. Following is a brief description of each pollutant and associated health impacts.

Carbon Monoxide (CO)
Carbon monoxide is a colorless, odorless, toxic gas and a byproduct from the partial combustion of fossil fuels, most notably from automobiles and other motor vehicles. Carbon monoxide passes through the lungs directly into the blood stream, reducing the amount of oxygen reaching the vital organs, such as the heart, brain and tissues. In high concentrations, carbon monoxide can contribute to the development of heart disease, anemia, and impaired psychological behavior.

Ozone (O_3)
Ozone is a pungent, colorless, toxic gas that is formed when byproducts of the internal combustion engine react in the presence of ultraviolet sunlight. Ozone is the main component of photochemical smog. Although some ozone is produced locally, most ozone pollutants and precursors enter the Basin via coastal winds from major metropolitan areas such as Los Angeles, and other areas within the South Coast Air Quality Management Basin (SCAQMB). Prolonged exposure to ozone can result in diminished breathing capacity, increased sensitivity to infections, and inflammation of lung tissue.

Nitrogen Dioxide (NO_2)
Nitric oxide (NO) and Nitrogen Dioxide (NO_2) are the primary oxides of nitrogen that are formed as a byproduct of combustion, thermal power stations, and pulp mills. These compounds act as the primary receptors of ultraviolet light initiating the photochemical reactions to produce smog. Nitric oxide combines with oxygen in the presence of reactive hydrocarbons and sunlight to form nitrogen dioxide and ozone. Oxides of nitrogen are contributors to other air pollution

problems including high levels of fine particulate matter, poor visibility, and acid deposition. Exposure to nitrogen dioxide can result in airway constriction and diminish lung capacity.

Lead (Pb)
Lead occurs in the atmosphere as particulate matter resulting from the manufacturing of batteries, paint, ink, and ammunition. In recent years, the elimination of leaded gasoline has reduced hazards associated with airborne lead. Exposure to lead can result in anemia, kidney disease, gastrointestinal dysfunction, and neuromuscular and neurological disorders.

Suspended Particulate Matter (PM_{10} and $PM_{2.5}$)
Suspended particulate matter consists of fine, suspended particles of soil and mineral dust, soot and smoke, and aerosols, many of which are byproducts of fuel combustion, tire wear, and natural wind erosion. Particulate matter of ten microns or smaller in diameter are referred to as PM_{10}, whereas $PM_{2.5}$ consists of particles smaller than 2.5 microns.

PM_{10} and $PM_{2.5}$ may be generated by direct particle erosion and fragmentation associated with the natural process of sand migration, as well as grading and other activities associated with construction. Eroded particles may be further pulverized by motor vehicles on roadways, where they are re-suspended in the air. Elevated PM levels are associated with an increase in respiratory infections and occurrences of asthma attacks. The elderly, children, and adults with respiratory or cardiovascular disease are most susceptible to the effects of suspended particulate matter.

Sulfur Dioxide (SO_2)
Sulfur dioxide results from the combustion of high-sulfur content fuels, such as coal and petroleum. Sources include motor vehicle fuel combustion, chemical manufacturing plants, and sulfur recovery plants. Sulfur dioxide is a colorless, pungent, extremely irritating gas that can result in airway constriction and severe breathing difficulties in asthmatics. High levels of exposure can cause fluid accumulation in the lungs and lung tissue damage.

State and Federal Air Quality Standards

The state and federal governments have each established ambient air quality standards for each of the above mentioned criteria pollutants. National standards established by the federal government include primary and secondary standards. Primary standards set limits to protect public health, including the health of sensitive populations, such as asthmatics, children, and the elderly. Secondary standards protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

The following Table describes state and federal (primary) air quality standards. State standards are generally more restrictive than federal standards.

Table III-2
State and Federal Ambient Air Quality Standards

Pollutant	State Standards		Federal Standards	
	Averaging Time	Concentration	Averaging Time	Concentration
Ozone	1 hour	0.09 ppm	1 hour	0.12 ppm
	8 hour	0.07 ppm	8 hour	0.08 ppm
Carbon Monoxide	1 hour	20.0 ppm	1 hour	35.0 ppm
	8 hours	9.0 ppm	8 hours	9.0 ppm
Nitrogen Dioxide (NO2)	1 hour	0.18 ppm	AAM	0.053 ppm
	AAM	0.030 ppm		
Sulfur Dioxide	1 hour	0.25 ppm	AAM	0.03 ppm
	24 hours	0.04 ppm	24 hours	0.14 ppm
Particulate Matter (PM10)	24 hours	50 $\mu g/m^3$	24 hours	150 $\mu g/m^3$
	AAM	20 $\mu g/m^3$	AAM	50 $\mu g/m^3$
Particulate Matter (PM2.5)	AAM	12 $\mu g/m^3$	AAM	15 $\mu g/m^3$
			24 hours	35 $\mu g/m^3$

Notes: ppm = parts per million ; µg/ m3 = micrograms per cubic meter of air;
AAM = Annual Arithmetic Mean;
Source: California Air Resources Board, March 2008

Regional Pollutants of Concern

The Mojave Desert Air Basin exceeds state and federal standards for fugitive dust (PM_{10}), is unclassified for $PM_{2.5,}$ and "Non-attainment; classified Severe17" for ozone. State and federal standards for carbon monoxide, nitrogen oxides, sulfur dioxide, and lead are in attainment within the Town of Apple Valley and the Mojave Desert Air Basin.

To determine whether existing ambient air quality complies with the standards shown above, MDAQMD operates and maintains regional air quality monitoring stations throughout its jurisdiction. The Victorville Monitoring Station is the closest air quality monitoring station in proximity to Apple Valley.

MDAQMD has general responsibility to control emissions of air contaminants and prevent endangerment to public health, in addition to meeting federal and state air quality standards for criteria air pollutants. Consequently, MDAQMD also regulates pollutants other than criteria pollutants including Toxic Air Contaminants (TACs), which are further discussed below.

Ozone
The Mojave Desert Air Basin, which has a history of exceeding state and federal ozone standards, is currently designated as a "Non-attainment; classified Severe17" ozone non-attainment area under the federal Clean Air Act. The 2008 MDAQMD Ozone Attainment Plan is intended to assure that the Basin achieves attainment of the federal 8-hour NAAQS for ozone by 2021.

Ozone in the MDAB is generated by a variety of local and regional sources. These include motor vehicles from regional and local roadways, as well as other local sources. In addition, the region is impacted by prevailing daytime breezes from coastal areas to the west that may transport ozone and its precursor emissions easterly from the nearby South Coast Air Basin into the Mojave Desert Air Basin.

According to the Victorville Monitoring Station, data from 2000 through 2008 indicate that ozone levels in the area were exceeded for the State 1-hour standard an average of 14 days a year. The Federal 1-hour ozone standard was exceeded on 8 days over the 9 year period from 2000 through 2007, and the Federal 8-hour standard was exceeded an average of 12 days per year.[3] See Table III-3 below.

Table III-3
Victorville Air Quality Trends
Exceedance of Ozone Standards

Monitoring Station	Year	Max. Concentration in 1 Hour	No. Days Standard Exceeded		
			Federal[1] 1hr/8hr		State[2]
Victorville	2000	0.114 ppm	0	12	15
	2001	0.114 ppm	0	12	15
	2002	0.127 ppm	3	27	30
	2003	0.145 ppm	2	19	22
	2004	0.111 ppm	0	4	8
	2005	0.131 ppm	2	12	16
	2006	0.136 ppm	1	6	9
	2007	0.107 ppm	0	6	7
As of June	2008*	0.109 ppm	N/A	10	6

[1] = > 0.12 parts per million in 1 hour; [2] = > 0.09 parts per million in 1 hour
* Less than 12 full months of data; may not be representative.
Source: Source: "Exceedances of Standards and Maximum Concentrations," prepared by Mojave Desert Air Quality Management District, 2008.

PM_{10} Emissions

The region has a history of elevated PM_{10} emissions, which are the result of both human activities, such as vehicle use and construction activity, and natural occurrences, such as windstorms. Particulate matter in the Town of Apple Valley is generated by vehicle emissions, construction, and fugitive dust. One of the state's largest contributors of particulate matter, Cemex, is located in the Sphere of Influence for Apple Valley.[4] Cemex operates the Black Mountain Quarry for the production of cement and aggregate. The facility is estimated to emit 277 tons per year of PM_{10} and 183 tons per year of $PM_{2.5}$.

[3] "Air Quality Management District: Exceedances of Standards and Maximum Concentrations," Victorville Monitoring Station, MDAQMD, 2000-2008.

[4] "High Emitting Facilities for the Mojave Desert Air Basin Appendix A," prepared by the California Air Resources Board, 2007.

The Town relies on applicable state code and AQMD Rules, including Rule 403 (Fugitive Dust), for authority to enforce fugitive dust compliance as needed, since it does not have its own fugitive dust ordinance. The Town's Municipal Code does include provisions for Off-Road dust generation by prohibiting nuisance dust or dirt emissions (Chapter 11.30, Section 020).

As seen in Table III-4 below, for the period between 2000 and 2007, the 24-hour state standards for PM_{10} levels were exceeded on an average of approximately 4 days per year. Although state standards are more stringent than federal standards, PM_{10} levels also exceeded federal standards, but only on one (1) day during the 9-year period. The Basin is currently designated as a PM_{10} non-attainment area for both state and federal standards.

Table III-4
Victorville Air Quality Monitoring
Exceedance of PM_{10} Standards

Monitoring Station	Year	Maximum Concentration ($\mu g/m^3$/24hours)	No. (%) Samples Exceeding 24-hr. Standards		Annual Average ($\mu g/m^3$)	
			Federal[1]	State[2]	AAM[3]	AGM[4]
Victorville	2000	82	0	6	33.7	30.7
	2001	53	0	1	29.1	26.7
	2002	98	0	9	34.5	31.3
	2003	181	1	5	32.5	27.9
	2004	56	0	1	28.5	25.3
	2005	61	0	1	28.9	24.6
	2006	63	0	7	33.8	30.9
	2007	359*	0	5	39.0	30.7

Source: "Exceedances of Standards and Maximum Concentrations," prepared by Mojave Desert Air Quality Management District, 2008.
* 2007 includes one Federal exceptional event on April 12, 2007 for Victorville.

$PM_{2.5}$ Emissions

Federal and state standards have been developed to regulate fine particulate matter smaller than 2.5 microns in diameter. To achieve federal attainment, a jurisdiction must provide the Environmental Protection Agency (EPA) with air quality monitoring data that does not violate the fine particle standards over a three-year period. In March of 2007 the EPA issued the Clean Air Fine Particle Implementation Rule, which describes the framework and requirements that state and local governments must achieve in developing their $PM_{2.5}$ implementation plans. The Rule requires that states meet the $PM_{2.5}$ standards by 2010, but may grant attainment extensions of up to 5 years. Therefore, the 2007 Rule requires that all states meet federal standards for attainment no later than 2015.

The Mojave Desert Air Basin and the Town of Apple Valley are classified as being in non-attainment for $PM_{2.5}$, based on the 2007 State Area Designations. Although the region is classified as being in non-attainment for the state standard, the region is classified as being in attainment/unclassifiable for the national standard, based on 2006 national area designations,

despite the air quality monitoring data from the Victorville station that shows zero (0) exceedances for either the state or federal 24 hour standard from 2000 through 2007.

Table III-5
Victorville Air Quality Monitoring
Exceedance of $PM_{2.5}$ Standards

Monitoring Station	Year	Maximum Concentration ($\mu g/m^3$/24hours)	No. (%) Samples Exceeding 24-hr. Standards		Annual Average ($\mu g/m^3$)	
			Federal[1]	State[2]	AAM[3]	AGM[4]
Victorville	2000	31	0	0	13.4	12.6
	2001	31	0	0	11.6	10.8
	2002	38	0	0	13.8	12.3
	2003	28	0	0	11.4	10.5
	2004	34	0	0	10.8	9.8
	2005	27	0	0	9.5	8.2
	2006	22	0	0	10.3	9.5
	2007	28	0	0	8.5	7.3

Source: "Exceedances of Standards and Maximum Concentrations," prepared by Mojave Desert Air Quality Management District, 2008.

Toxic Air Contaminants

Toxic Air Contaminants (TACs) generation and emissions are regulated in the MDAQMD through the Toxic Air Contamination Control Program. TACs include substances such as asbestos, benzene, beryllium, inorganic arsenic, mercury, vinyl chloride, and any other air contaminants not addressed by the national ambient air pollution program. They are generated by a variety of sources, such as electroplating and anodizing operations, gasoline distribution facilities, petroleum refineries, and others.

The primary health concern associated with TACs is their carcinogenic potential. Mobile source components comprise the dominant risk, with about 70 percent of the risk attributed to diesel particulate emissions, 10 percent attributed to 1,3-Butadiene,[5] and approximately 20 percent to other toxics associated with mobile sources.[6]

Certain areas of the Town are located in an area subject to substantial exposure to mobile source emissions, including diesel-fueled motor vehicles. Three roadway segments within Apple Valley are projected to carry more than 60,000 vehicle trips per day at build out. These include Dale Evans Parkway south of the proposed High Desert Corridor, Highway 18 west of Apple Valley Road, and Bear Valley Road west Apple Valley Road[7]. (Also see Section III-O, Traffic and Circulation).

5 An industrial chemical used as a binding agent in the production of synthetic rubber.

6 "Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles," prepared by CARB, October 2000.

7 "Town of Apple Valley General Plan Circulation Element Traffic Study," prepared by Urban Crossroads, November 10, 2008.

Climate Change and Global Warming

Air quality is a concern due to human health issues, and because air pollutants are thought to be contributing to global warming and climate change. Air pollution is defined as a chemical, physical or biological process that modifies the characteristics of the atmosphere. The primary contributor to air pollution is the burning of fossil fuels through the use of automobiles, power and heat generators, and industrial processes. The byproduct from the combustion of fossil fuels can contain a number of air polluting substances. These emissions are responsible for the poor air quality that is evident in industrial centers worldwide.

Some air polluting agents are also greenhouse gases (GHG), such as carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases (hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride), which are released into the atmosphere through natural processes and human activities. These gases are termed greenhouse gases due to their shared characteristic of trapping heat, and may be responsible for the global average increase in surface temperatures of 1.0-1.7°F that were observed during the 20th century[8]. The quantity of greenhouse gases in the atmosphere has increased drastically over a relatively short period. For example, by 2005 the concentration of CO_2 in the atmosphere had increased by 36%, methane by 148%, and nitrous oxide by 18% since pre-industrial times[9].

Carbon dioxide is the primary greenhouse gas that is stimulating concern, due to current and projected levels, and the highly correlated temperature regression curve; temperatures rise as carbon dioxide levels rise. Currently, carbon dioxide concentrations in the atmosphere are 382 parts per million (ppm). Comparatively, prior to the Industrial Revolution, about 250 years ago, CO_2 levels were 278 ppm; by comparison, over the past 650,000 years carbon dioxide levels have fluctuated between 180 and 300 ppm,[10] making present day CO_2 levels greater than at any point in the past 650,000 years.

There is much debate over what the effects of climate change will be, but there is a general consensus that the levels of emissions need to be reduced in order to minimize air pollution and limit the amount of carbon dioxide that is released. Carbon dioxide levels (382 ppm in 2006) are projected to increase to at least 540 ppm, and as much as 970 ppm, by the year 2100[11]. Currently, there are limited incentives for reducing emissions and few laws that require reductions. However, some regulations have been adopted.

California was the first state to establish regulations that require the reduction of emissions from motor vehicles. On September 24, 2004, the California Air Resources Board adopted a bill that requires all 2009 and later vehicles to reduce their greenhouse gas emissions by about 30% by

8 "Working Group III contribution to the Intergovernmental Panel on Climate Change Fourth Assessment Report,"; Climate Change 2007: Mitigation of Climate Change.

9 U.S. Environmental Protection Agency, Climate Change, Atmosphere Changes; http://www.epa.gov/climatechange/science/recentac.html

10 "Working Group III contribution to the Intergovernmental Panel on Climate Change Fourth Assessment Report,"; Climate Change 2007: Mitigation of Climate Change.

11 *Ibid*.

the year 2016[12]. In addition, the California Global Warming Solutions Act of 2006 has been passed in order to comprehensively limit GHG emissions at the state level by establishing an annual reporting program of GHG emissions for significant sources and sets emissions limits to cut the state's GHG emissions to 1990 levels by 2020. It is anticipated that additional regulations will be adopted in future years as the effects of global warming become more problematic. In the interim it is prudent to incorporate air pollution reduction techniques into project design and land use decisions.

The existing GHG emissions within the Town and Annexation areas are estimated in the Table below.

Table III-6
Existing GHG Summary

Emission Source	CO2 Equivalent Metric Tons	CO2 Equivalent Million Metric Tons	Pounds Per Day
Electricity	116,002.06	0.116	700,659.65
Natural Gas	127,447.76	0.127	769,792.39
Moving Source	357,771.29	0.358	2,160,960.72
Water Transport	48,408.88	0.048	292,392.64
Total	**649,630.00**	**0.650**	**3,923,805.40**

2. Impacts

The potential for air quality degradation in the Town of Apple Valley and region will increase with implementation of the proposed General Plan. Air pollutants will come from a variety of sources including mining operations, grading activities, off-road vehicle activity, construction, vehicle emissions and high winds. Pollutant emissions generated by vehicular traffic are expected to result in the most significant impacts. Operation of existing and new facilities, which require the utilization of natural gas and electricity, will also contribute to the degradation of air quality. Major sources of pollutants associated with build out of the General Plan are described below, and projected emissions are quantified where possible. Although the Town of Apple Valley is located within the Mojave Desert Air Basin, factors used to project air quality emissions are from the CEQA Air Quality Handbook, which was prepared by the South Cost Air Quality Management District. The MDAQMD accepts the use of emission factors as set forth and adopted by SCAQMD.

Mining Operations

Mineral extraction operations and associated processes generate fugitive dust and emit other criteria pollutants into the atmosphere, which adversely impact local and regional air quality. The Town of Apple Valley, Sphere of Influence, and the surrounding region have identified valuable mineral deposits, some of which are actively being mined. In order to minimize fugitive dust

[12] http://www.ucsusa.org/clean_vehicles/vehicles_health/californias-global-warming-vehicle-law.html

generation resulting from mineral extraction facilities operating within the Town's jurisdiction, a number of policies and programs have been developed to regulate extraction procedures and reduce impacts to air quality. Also see Section III-K, Mineral Resources.

Compliance with MDAQMD Ozone Attainment Plan

The Ozone attainment plan utilizes land use projections and associated growth rates from the previous General Plan land use plan (1998). The updated General Plan and associated land use designations result in increased residential densities, and greater commercial/retail and industrial development. It should be mentioned that the updated General Plan substantially increases the employment opportunities within Town limits, and the jobs to housing ratio (Please see Section III-P, Socio-Economic Resources). Nonetheless, build out of the updated General Plan may interfere or delay implementation of the Ozone attainment plan, since it increases densities and is therefore non-conforming. This represents a significant impact. There are no mitigation measures available to reduce this impact to less than significant levels. As a result, the build out of the General Plan, and of Annexations 2008-001 and 2008-002 will result in a significant and unavoidable impact to air quality management planning.

Fugitive Dust

Fugitive dust is generated and emitted into the atmosphere during grading and disturbance of undeveloped land and construction of new facilities. Factors that affect the amount of fugitive dust generated as a result of site disturbance include soil characteristics, the number of acres disturbed, duration of grading activities, and climatic conditions. Grading and construction equipment also generate fugitive dust. However, quantification of fugitive dust impacts from equipment will need to be analyzed on a per project basis.

A general estimate of future, long-term fugitive dust emission generated by grading activities on vacant, but developable, acres in the planning area is provided below. The calculation is based on a fugitive dust generation factor for grading activities of 26.4 pounds per day per acre, as provided by South Coast Air Quality Management District.

Table III-7
Fugitive Dust Potential at General Plan Build Out

Total Acres Disturbed at General Plan Build Out	Fugitive Dust Generation Factor	Total Potential Dust Generation
29,340.9 acres[1]	26.4 lbs./day/acre	774,599.76 lbs

[1] Includes all vacant acres in General Plan Study Area (32,161.5 acres), except vacant Open Space acres (2,820.6 acres), which will remain undeveloped and will not be graded.
Source: Table A9-9, "CEQA Air Quality Handbook," South Coast Air Quality Management District, April 1993.

The figures shown in Table III-7, above, represent a conservative estimate that assumes all vacant, but potentially developable acres, will be graded at once. Actual fugitive dust emissions are expected to be much less, as properties develop individually over time. Although fugitive dust will be produced over the course of General Plan build out, emissions from site grading and

disturbance are temporary and will be limited to the construction period. Compliance with dust control measures listed in MDAQMD Rule 403.2 will reduce air quality impacts from fugitive dust to meet established PM_{10} standards. Rule 403.2 requires several operating conditions to assure that fugitive dust emissions are minimized. A wide range of mitigation measures can be applied to reduce fugitive dust emissions, these are further discussed below, under Mitigation Measures.

Construction-Related Emissions

It is beyond the scope of this EIR analysis to project pollutant emissions generated by the construction of new buildings and improvements for project-specific activities. Such a calculation would require knowledge of development plans, building footprints, engineering strategies, phasing schedules, and other detailed criteria for each developable parcel. For most vacant parcels, such development plans have not yet been proposed, and the Town has no direct control over private sector development, local financing, or developer schedules. Air quality impacts resulting from construction activities could be significant and should be analyzed in detail, as each specific development is proposed and site-specific environmental documents are prepared. At that time, project-specific mitigation measures will be identified, as needed, to reduce potential impacts to acceptable levels.

Power Plant Emissions

Emissions from power plants consist primarily of combustion products, such as carbon monoxide, oxides of nitrogen, sulfur oxides, particulate matter and reactive organic gases (ROG). Electrical power plants that serve the Town of Apple Valley are located outside the Mojave Desert Air Basin (MDAB) and region. Therefore, most of the pollutants associated with energy production will be emitted outside the region.

An estimate of power plant emissions associated with annual electricity consumption for all residential dwelling units at General Plan build out is provided in Table III-8 below. On average, the amount of electrical energy necessary to power lights, appliances, and all other household equipment for a year is estimated at 5,626.5 kilowatt-hours, per the SCAQMD EIR Handbook.[13] The total annual electricity usage is then multiplied by the SCAQMD factor for each criteria pollutant to determine the projected annual and daily emissions.

It should be reiterated that emissions associated with the use of energy are produced outside of the MDAB. As quantification protocol become more standardized, accounting for these emissions locally may actually be double counting, since energy producers will have included energy demand generated by the Town as part of their overall energy production, which also recognizes the associated air quality emissions that will be produced. Nonetheless, the following Tables project the potential air quality emissions that may be generated as a result of energy production.

[13] Table A9-11-A, "CEQA Air Quality Handbook," prepared by the South Coast Air Quality Management District, April 1993.

Table III-8
Power Plant Emission Projections
For Residential Development at General Plan Build Out
(lbs. per 1,000 kwh)

Annual Electric Usage Factor (kwh/unit/year)	Total No. Dwelling Units	Total Annual Electricity Usage (kwh)
5,626.50	63,749	358,683,749

	Carbon Monoxide	Nitrogen Oxides	Sulfur Oxides	Particulates	ROGs
Factor	0.20	1.15	0.12	0.04	0.01
Lbs./Year	71,736.75	412,486.31	43,042.05	14,347.35	3,586.84
Lbs./Day	196.54	1,130.10	117.92	39.31	9.83

Based on per unit usage and emissions factors provided in Tables A9-11-A and A9-11-B, "CEQA Air Quality Handbook," prepared by the South Coast Air Quality Management District, April 1993. Assumes continued availability and use of natural gas in power plants and an average contribution from hydro-electric sources. Represents total pounds emitted per year by all residential development at buildout.

The following emissions tables for commercial and industrial electrical consumption are presented below. Electrical power usage factors are provided on a per square foot basis, depending upon land use type. For example, the "CEQA Air Quality Handbook" offers several electrical usage factors for commercial development; those used in this analysis include retail, restaurant, office, food store, and hotel/motel. It is assumed that retail uses will compose approximately 64%, offices 20%, food stores 8%, restaurants 4%, and hotels/motels 4% of all commercial development at General Plan build out.

Table III-9
Power Plant Emission Projections
For Commercial Development at General Plan Build Out
(lbs. per 1,000 kwh)

Estimated Annual Electric Usage for Commercial (kwh): 924,262,572

	Carbon Monoxide	Nitrogen Oxides	Sulfur Oxides	Particulates	ROGs
Factor	0.20	1.15	0.12	0.04	0.01
Lbs./Year	184,852.51	1,062,901.96	110,911.51	36,970.50	9,242.63
Lbs./Day	506.45	2,912.06	303.87	101.29	25.32

Source: Tables A9-11-A and A9-11-B, "CEQA Air Quality Handbook," prepared by the South Coast Air Quality Management District, April 1993. Assumes continued availability and use of natural gas in power plants and an average contribution from hydro-electric sources. Represents total pounds emitted per year by all commercial development at buildout including 33,190,890 s.f. of retail, 10,372,153 s.f. of office, 4,148,861 s.f. of food stores, and 2,074,431 s.f. each of restaurant and hotel/motel land uses.

Industrial electrical consumption at General Plan build out is estimated by applying the annual usage factors for "warehouse" and "miscellaneous" development. For the purposes of this analysis, it is assumed that warehouse development will account for approximately 25% of all industrial development in the Town, and the remaining 75% of industrial development will be

considered "miscellaneous." Projected emissions generated by electrical consumption for all industrial land use designations are described in the following table.

Table III-10
Power Plant Emission Projections
For Industrial Development at General Plan Build Out
(lbs. per 1,000 kwh)

Estimated Annual Electric Usage for Industrial (kwh):				**525,032,571**	
	Carbon Monoxide	**Nitrogen Oxides**	**Sulfur Oxides**	**Particulates**	**ROGs**
Factor	0.20	1.15	0.12	0.04	0.01
Lbs./Year	105,006.51	603,787.46	63,003.91	21,001.30	5,250.33
Lbs./Day	287.69	1,654.21	172.61	57.54	14.38

Source: Tables A9-11-A and A9-11-B, "CEQA Air Quality Handbook," prepared by the South Coast Air Quality Management District, April 1993. Assumes continued availability and use of natural gas in power plants and an average contribution from hydro-electric sources. Represents total pounds emitted per year by all industrial development at buildout assuming 43,935,780 s.f of miscellaneous industrial land use and 14,645,260 s.f of warehouse land use.

Natural Gas Emissions

The following Tables, III-10 through III-12, show estimates of air pollutant emissions resulting from the consumption of natural gas at build out of the proposed General Plan. Natural gas emissions are calculated based on average monthly consumption factors defaults as set forth in the URBEMIS 2007 Version 9.2.4 model. The pollutant factors vary for residential and non-residential users. The following natural gas emission assume that all indoor heating uses100% natural gas. The use of wood stoves, hearths, fireplaces, or alternative heating options for indoor heating would generate different emissions.

Table III-11
Natural Gas Emissions
for Residential Development at General Plan Build Out
(Lbs. per 10^6 cubic feet)

Unit Type	Natural Gas Factor (cf/unit/mo)	Total Dwelling Units	Total Monthly Natural Gas Consumption (cf/mo)
Single-family	6,665.00	36,619	244,065,635
Multi-family	4,011.50	27,130	108,831,995
	Total:	**63,749**	**352,897,630**

Pollutants	CO	NOx	SOx	PM10	PM2.5	ROGs	CO2
Factor	40.0	94.0	0.001	0.2	0.2	7.3	120,000
Lbs./Year	169,391	398,069	4.23	762	762	30,744	508,172,587
Lbs./Day	464	1,091	0.01	2.09	2.09	84.2	1,392,254

Source: Emission Factors are from Urbemis 2007 Version 9.2.4 default settings. Represents total pounds emitted per year by all residential development at build out as a result of natural gas combustion. Multi-family assumes medium density and mixed use only, single-family includes all other residential land uses.

Table III-12
Natural Gas Emissions
for Commercial Development at General Plan Build Out
(Lbs. per 10^6 cubic feet)

Unit Type	Natural Gas Factor (cf/unit/month)	Total Dwelling Units	Total Natural Gas Consumption (cf/month)
Retail/Commercial	2.90	39,414,182	114,301,128
Office Professional	2.00	10,372,153	20,744,306
Hotel/Motel	4.80	2,074,431	9,957,269
	Total:	**63,749**	**352,897,630**

Pollutants	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	ROGs	CO2
Factor	84.0	100	0.001	0.18	0.18	7.26	120,000
Lbs./Year	146,163	174,003	1.74	313	313	12,633	208,803,892
Lbs./Day	400	477	0.005	0.86	0.86	34.6	572,066

Source: Emission Factors are from Urbemis 2007 Version 9.2.4 default settings. Represents total pounds emitted per year by all commercial development at buildout as a result of natural gas combustion. Assumes that office space occupies 20% and hotel/motel occupies 4% of all commercial land use square footage. The remaining square footage (76% of all commercial land use) represents 33,190,890 s.f of retail, 4,148,861 s.f. of food stores, and 2,074,431 s.f. of restaurant land uses

Table III-13
Natural Gas Emissions for
Industrial Development at General Plan Build Out
(Lbs. per 10^6 cubic feet)

Unit Type	Natural Gas Factor (cf/unit/month)	Total Square Footage	Total Natural Gas Consumption (cf/month)
Industrial	4.8	58,581,040	**281,188,992**

Pollutants	CO	NOx	SOx	PM10	PM2.5	ROGs	CO2
Factor	84	100	0.001	0.18	0.18	7.26	120,000
Lbs./Year	283,439	337,427	3.37	607	607	24,497	404,912,148
Lbs./Day	777	924	0.01	1.7	1.7	67	1,109,348

Source: Emission Factors are from Urbemis 2007 Version 9.2.4 default settings. Represents total pounds emitted per year by all industrial development at buildout as a result of natural gas combustion. Assumes industrial use of natural gas is comparable to highest rate of retail use, at 4.8 cf per month.

Consumer Products

The use of consumer products such as air fresheners, automotive products, household cleaners, and personal care products generate ROG emissions from daily use. URBEMIS 2007 Version 9.2.4 sets forth a per person factor of 0.0171 pounds per day. Therefore, build out of the General Plan has the potential to result in a maximum of 3,333.32 pounds of ROG per day from the use of consumer products. The project-specific thresholds for ROG of 137 pounds per day would be exceeded. Thus build out of the General Plan would generate unavoidable significant impacts to air quality as a result of ROG emissions. See the summary discussion below, which addresses these unavoidable impacts.

Traffic Exhaust Emissions

Analysis of the potential traffic and circulation aspects associated with build out of the General Plan involved the preparation of a comprehensive traffic impact study prepared by Urban Crossroads (see Appendix F). The traffic study indicates that build out of the General Plan is expected to generate approximately 1,577,731 two-way vehicle trips per day.

Based on SCAQMD methodologies accepted by MDAQMD, emission factors were compiled by running the California Air Resource Board EMFAC 2007 (Version 2.3) Burden Model. Total vehicle emissions are calculated by first identifying the total vehicle miles traveled per day (number of trips times the trip length), and then multiplying this figure by the emission factors, which are given in pounds per mile. Emission factors account for emissions from start, running, and idling exhaust. In addition, the ROG emission factors include diurnal, hot soak, running and resting emissions, and the PM_{10} and $PM_{2.5}$ emission factors accounts for tire and brake wear.

Projections of the vehicle emissions associated with the build out of the General Plan are based on emission factors for passenger vehicles and delivery trucks for the year 2025. Improvements to combustion technology are expected to reduce vehicle emissions, including actual per mile

emissions, in both the near future and over the long-term. The following table provides the estimated daily emissions for year 2025, as a result of 17,039,495 miles traveled.

Table III-14
Moving Exhaust Emission for all Land Uses
at General Plan Build Out
(Lbs./day)

Trip Type	Total Vehicle Trips/Day	Average Trip Length (miles)	Total Miles/Day
Home-Work	288,977	11.5	3,323,236
Home-Other	469,940	6.02	2,829,039
Work-Other	420,540	9.07	3,814,298
Other-Other	398,274	5.66	2,254,231
Total	**1,577,731**		**12,220,803**

	CO	NOx	SOx	PM10	PM2.5	ROGs	CO2
Passenger Vehicles	41,048	3,455	128	1,159	769	5,215	13,303,199
Delivery Trucks	1,455	1,505	7	69	51	225	704,269
Total	**42,503**	**4,960**	**135**	**1,229**	**820**	**5,440**	**14,007,469**

Based on California Air Resources Board Highest EMFAC 2007 (Version 2.3) Emissions Factors for On-Road Vehicles, scenario year 2025. All the emission factors account for the emissions from start, running and idling exhaust. In addition, the ROG emission factors take into account diurnal, hot soak, running and resting emissions, and PM10 emission factor accounts for tire and brake wear. Passenger vehicles <8,500 pounds; delivery trucks >8,500 pounds. Vehicle mix accounts for 98% passenger vehicles and 2% delivery trucks.
Note: Total miles traveled per day are based on the 2-way trip estimates as set forth in the "Town of Apple Valley General Plan Circulation Element Traffic Study," Table 2-6: Town of Apple Valley Trip Generation Future Growth, prepared by Urban Crossroads, November 10, 2008. Average Trip Length assumes URBEMIS2007 Version 9.2 default setting for Southern California.

Greenhouse Gas Emissions

Build out of the General Plan has the potential to incrementally contribute to global climate change, primarily through the combustion of fossil fuels from automobiles as well as indirectly through the generation of electricity at power plants. These activities contribute to climate change and global warming by releasing air pollutants known as greenhouse gases (GHG).

Although CEQA has yet to establish significance thresholds for greenhouse gases, for the purposes of this analysis it was assumed that development activities and operations that interfere with the objectives of AB 32 would be considered to have a significant impact. As previously mentioned, AB 32 requires a coordinated effort to curb greenhouse gas emissions within the state of California. Specifically, the Bill requires the state board to adopt a statewide greenhouse gas emissions limit, so that by the year 2020 GHG emissions are at or below 1990 emission levels.

At build out of the General Plan, the annual CO_2 equivalent emission for indirect electricity use is estimated to be 660,713 metric tons, or 3.99 million pounds per day. Natural gas use is expected to average approximately 511,839 metric tons per year, or 3.09 million pounds per day.

Greenhouse gas emissions from moving sources are estimated to be 2.05 million metric tons of carbon dioxide equivalent per year, or 12.4 million pounds per day. In summary, build out of the General Plan is estimated to generate 3.2227 million metric tons of carbon dioxide equivalent per year, or 19.49 million pounds per day, as shown in Table III-15.

Table III-15
Annual GHG Summary
at Build Out of the General Plan

Emission Source	CO2 Equivalent Metric Tons	CO2 Equivalent Million Metric Tons	Million Pounds Per Day
Electricity	660,712.98	0.661	3,990,747.31
Natural Gas	511,838.54	0.512	3,091,536.47
Moving Source	2,054,443.56	2.054	12,408,966.31
Total	**3,226,995.08**	**3.227**	**19,491,250.10**

Source: Emission factors for electricity usage and moving source emissions for CH4 and N2O are from "California Climate Action Registry General Reporting Protocol: Tables C5 and C6," version 3.0 prepared by California Climate Action Registry, April 2008. Natural gas emission factors for CO2 and Moving Source emissions CO2 are from "Calculations and References," of the Greenhouse Gas Equivalencies Calculator, prepared by EPA and last updated on August 4, 2008, and for CH4 and N2O emission factors are from "California Climate Action Registry General Reporting Protocol: Equations III.8d," version 3.0 prepared by California Climate Action Registry, April 2008.
Note that CO2 Equivalent figures are based on SAR (1996) global warming potential of 21 for CH4 and 310 for N2O.

In comparison, the total carbon dioxide equivalent emissions in California for the year 1990 was estimated to be 427 million metric tons. At build out the Town of Apple Valley will contribute approximately 0.756% of the total California emissions limit for 2020 as established by ARB.

In 2005 the total carbon dioxide equivalent emissions for the United States was estimated at 7,260.4 million metric tons. The General Plan represents 0.044% of the total emissions for the U.S. as estimated in year 2005. As state and federal requirements are established in coming years to reduce and limit greenhouse gas emissions, project developers, owners, tenants, and residents will be obligated to follow applicable greenhouse gas regulations and quantification protocols. However, using the currently available methods to quantify GHG emissions, the build out of the General Plan will increase emissions over 1990 levels, resulting in a significant impact. Mitigation measures are included below. However, the reductions which these mitigation measures offer cannot be effectively quantified. Impacts associated with GHG emissions will therefore be significant and unavoidable.

Summary of Impacts

The following table summarizes potential pollutant emissions generated at build out of the proposed General Plan, including emissions from the use of consumer products, electricity, and natural gas, and emissions from vehicle exhaust for residential, commercial, office, and industrial land use designations as set forth in the General Plan Land Use Table.

Table III-16
Projected Daily Air Quality Emissions
At General Plan Build Out
(lbs./day)

	Stationary Source Emissions			Moving Source Emissions	Total Project Emissions	Threshold Criteria*
	Consumer Products	Power Plant	Natural Gas	All Vehicles	Lbs./Day	Lbs./Day
CO	-	991	1,641	42,503	**45,135**	**548**
NOx	-	5,696	2,492	4,960	**13,148**	**137**
SOx	-	594	0.026	135	**729**	**137**
PM10	-	198	4.61	1,229	**1,431**	**82**
PM2.5	-	-	4.61	820	**824**	**55**
ROGs	3,333	50	186	5,440	**5,676**	**137**
CO2	-	-	3,073,667	14,007,469	**17,081,136**	**N/A**

*Threshold criteria offered by the Mojave Desert Air Quality Management District for determining the significance of air quality impacts. Source: "CEQA and Federal Conformity Guidelines," MDAQMD, June 2007 and URBEMIS 2007Version 9.2.4 default emissions.

Projected emissions for air quality criteria pollutants shown in the table above summarize the worst-case operational emissions associated with build out of the proposed General Plan. It should be reiterated that for purpose of this analysis, temporary air quality emissions from demolition, grading, and construction activities are not quantified. While it is impossible to predict whether, and to what extent, new development will actually occur in the General Plan area over the long-term, this analysis assumes that all vacant parcels, with the exception of Open Space lands, will be developed.

All criteria thresholds are projected to be exceeded without the application of mitigation measures. Although emissions can be mitigated to a certain degree, significant and unavoidable impacts to air quality, including greenhouse gas emissions, will occur as a result of development of the General Plan. Therefore, as required under CEQA, Findings and a Statement of Overriding Considerations for emission that can not be reduced to levels below the MDAQMD thresholds must be prepared. Regardless of mitigation measures, development of the General Plan will contribute to cumulative air quality impacts locally and regionally.

Note that requiring project-specific proposals to implement mitigation measures, including but not limited to those set forth below, can be effective in reducing air quality impacts to the entire General Plan area by providing alternative transportation options, increasing the use of green building design and technologies into planned future and remodeled facilities, and incorporating the use of alternative energy sources both locally and regionally through individual and region-wide solar roof installation projects and region-wide wind farm development, among other possible programs. These measures will not only reduce emissions of criteria pollutants, but will also reduce emissions associated with the formation of greenhouse gases.

Annexation 2008-001

Also known as the Golden Triangle, Annexation 2008-001 will generate significant air quality emission at build out, due to operational use of electricity and natural gas and moving source emissions. In addition to these ongoing emissions, build out of Annexation 2008-001 will also generate temporary air quality emissions from grading, construction, and equipment deliveries. Temporary impacts are not quantified, since they are dependant on project specific parameters, which are unknown at this time. However, as required, each project will prepare the appropriate CEQA compliant document, which will quantify all emissions associated with development, including temporary and ongoing air emissions.

As described in the General Plan Land Use Element, Annexation 2008-001 has the potential to result in as much as 7,135,369 square feet of commercial space, 7,782,275 square feet of industrial space, and a total of 4,236 residential units at build out. All of these land uses would generate air quality emissions from electricity and natural gas use, and from transportation.

Table III-17 quantifies the maximum daily air quality emissions for all criteria pollutants at build out of Annexation 2008-001. Using the factors set forth in the CEQA Handbook prepared by SCAQMD, the following demands were estimated: total annual electricity 220.7 million kilo-watt hours; total annual natural gas 914.5 million cubic feet. In addition, build out is projected to result in 1.46 million miles a day traveled assuming an average trip length of 8.06 miles. The population within Annexation 2008-001, 13,238 persons, has the potential to generate as much as 226.4 pounds per day of ROG emissions from the use of consumer products.

Table III-17
Projected Daily Emissions within Annexation 2008-001
at General Plan Build Out
(Lbs./day)

	Stationary Source Emissions			Moving Source Emissions	Total Project Emissions	Threshold Criteria*
	Consumer Products	Power Plant	Natural Gas	All Vehicles	Lbs./Day	Lbs./Day
CO	-	121	183	5,068	**5,372**	**548**
NOx	-	696	247	591	**1,534**	**137**
SOx	-	73	0.003	649	**721**	**137**
PM10	-	24	0.45	16	**41**	**82**
PM2.5	-	-	0.45	146	**147**	**55**
ROGs	226.4	6	18	98	**348.4**	**137**
CO2	-	-	300,664	1,670,120	**1,670,120**	**N/A**

*Threshold criteria offered by the Mojave Desert Air Quality Management District for determining the significance of air quality impacts. Source: "CEQA and Federal Conformity Guidelines," MDAQMD, June 2007 and Urbemis 2007Version 9.2.4 default emissions.

Air quality emissions associated with stationary and moving source emitters will significantly exceed established thresholds for all criteria pollutants, as shown in Table III-17 above. Although mitigation measures will somewhat offset emissions, impacts associated with build out

of the annexation area will result in significant and unavoidable air quality impacts. As a result, Findings and a Statement of Overriding Considerations will need to be prepared.

Table III-18
Annual GHG Summary within Annexation 2008-001
at Build Out of the General Plan

Emission Source	CO2 Equivalent Metric Tons	CO2 Equivalent Million Metric Tons	Million Pounds Per Day
Electricity	80,671.16	0.081	487,258.81
Natural Gas	50,067.67	0.050	302,411.83
Moving Source	244,952.74	0.245	1,479,529.74
Total	**375,691.58**	**0.376**	**2,269,200.38**

Source: Emission factors for electricity usage and moving source emissions for CH4 and N2O are from "California Climate Action Registry General Reporting Protocol: Tables C5 and C6," version 3.0 prepared by California Climate Action Registry, April 2008. Natural gas emission factors for CO2 and Moving Source emissions CO2 are from "Calculations and References," of the Greenhouse Gas Equivalencies Calculator, prepared by EPA and last updated on August 4, 2008, and for CH4 and N2O emission factors are from "California Climate Action Registry General Reporting Protocol: Equations III.8d," version 3.0 prepared by California Climate Action Registry, April 2008.
Note that CO2 Equivalent figures are based on SAR (1996) global warming potential of 21 for CH4 and 310 for N2O.

Table III-18 illustrates the GHG emissions anticipated to occur as a result of build out of Annexation 2008-001. In comparison, the total carbon dioxide equivalent emissions in California for the year 1990 was estimated to be 427 million metric tons. At build out the Annexation will contribute approximately 0.088% of the total California GHG emissions limits established by ARB for year 2020. In 2005 the total carbon dioxide equivalent emissions for the United States was estimated at 7,260.4 million metric tons. The Annexation represents 0.005% of the total emissions for the U. S. as estimated in year 2005.

Annexation 2008-002

Annexation 2008-002 will generate significant air quality emission at build out, due to operational use of electricity and natural gas and moving source emissions. In addition to these ongoing emissions, development of Annexation 2008-002 will also generate temporary air quality emissions from grading, construction, and equipment deliveries. Temporary impacts are not quantified since they are dependant on project specific parameter, which are unknown at this time. However, as required each project will prepare the appropriate CEQA compliant document, which will quantify all emissions associated with development including temporary and ongoing air quality emissions.

As described in the General Plan Land Use Element, Annexation 2008-002 has the potential to result in 7,676,379 square feet of industrial uses at build out, which will result in the generation of air quality emissions from electricity and natural gas use, and from transportation.

Table III-19 quantifies the maximum daily air quality emissions for all criteria pollutants at build out of Annexation 2008-002. Using the factors set forth in the CEQA Handbook prepared by SCAQMD, the following demands were estimated: total annual electricity 68.8 million kilo-watt hours; total annual natural gas 36.8 million cubic feet. In addition, build out is projected to result in 359,121 miles a day traveled assuming an average trip length of 8.06 miles.

Table III-19
Projected Daily Emissions within Annexation Area 2008-002
at General Plan Build Out
(Lbs./day)

	Stationary Source Emissions		Moving Source Emissions	Total Emissions	Threshold Criteria*
	Power Plant	Natural Gas	All Vehicles	Total Lbs./Day	Total Lbs./Day
CO	38	102	1,249	**1,388**	**548**
NOx	217	121	146	**484**	**137**
SOx	23	0.001	160	**182**	**137**
PM10	8	0.2	4	**12**	**82**
PM2.5	-	0.2	36	**36**	**55**
ROGs	1.9	9	24	**35**	**137**
CO2	-	145,367	411,624	**556,992**	**N/A**

Source: Emission factors are from "CEQA Air Quality Handbook," South Coast Air Quality Management District, April 1993. *Threshold criteria as established by the Mojave Desert Air Quality Management District for determining the significance of air quality impacts.

Air quality emissions associated with stationary and moving source emitters will significantly exceed established thresholds for all criteria pollutants, except for particulates and ROG's, as shown in Table III-19 above. Although mitigation measures will somewhat offset emissions, impacts will be significant and unavoidable, and Findings and a Statement of Overriding Consideration will need to be prepared for CO, NOx, and SOx.

Table III-20
Annual GHG Summary within Annexation Area 2008-002
at Build Out of the General Plan

Emission Source	CO2 Equivalent Metric Tons	CO2 Equivalent Million Metric Tons	Million Pounds Per Day
Electricity	25,142.30	0.025	151,861.07
Natural Gas	24,207.13	0.024	146,212.59
Moving Source	60,372.03	0.060	364,650.78
Total	**109,721.46**	**0.110**	**662,724.44**

Source: Emission factors for electricity usage and moving source emissions for CH4 and N2O are from "California Climate Action Registry General Reporting Protocol: Tables C5 and C6," version 3.0 prepared by California Climate Action Registry, April 2008. Natural gas emission factors for CO2 and Moving Source emissions CO2 are from "Calculations and References," of the Greenhouse Gas Equivalencies Calculator, prepared by EPA and last updated on August 4, 2008, and for CH4 and N2O emission factors are from "California Climate Action Registry General Reporting Protocol: Equations III.8d," version 3.0 prepared by California Climate Action Registry, April 2008.
Note that CO2 Equivalent figures are based on SAR (1996) global warming potential of 21 for CH4 and 310 for N2O.

Table III-20 illustrates the GHG emissions anticipated to occur as a result of build out of Annexation 2008-002. For comparison, the total carbon dioxide equivalent emissions in California for the year 1990 was estimated to be 427 million metric tons. At build out Annexation 2008-002 will contribute approximately 0.026% of California's total GHG emission limits as established by ARB for year 2020. In 2005 the total carbon dioxide equivalent emissions for the United States was estimated at 7,260.4 million metric tons. The Annexation represents 0.002% of the total emissions for the US as estimated in year 2005.

3. Mitigation Measures

Federal, state and local agencies have developed a range of mitigation measures that, with implementation, will reduce pollutant emissions associated with General Plan build out. These include achieving or exceeding California Title 24 Building Code standards, which will reduce pollutant emissions generated by power plants and the consumption of natural gas. The use of alternative methods of electrical power generation can replace the need for additional fossil fuel-based generating capacity and substantially reduce air quality emissions by utilizing clean energy sources such as wind and solar. In addition, air quality emissions from moving sources can be reduced by promoting public transit and alternative transportation options, use of electric and natural gas vehicles, and other land use and planning designs that reduce overall vehicle trips.

A wide range of mitigation measures can be applied to new development and redevelopment projects to reduce project-related pollutant emissions at General Plan build out, including those described below.

General Measures

1. Grading and development permits shall be reviewed and conditioned to require the provision of all available methods and technologies to assure minimal air quality emissions from development. See Table III-21 below.

Table III-21
Available Emission Reduction Technologies

	Daily Emission Reduction Factors				
Diesel Equipment	CO	NOx	SOx	PM_{10}	ROG
Aqueous Fuel	0%	14%	0%	63%	0%
Diesel Particle Filter	0%	0%	0%	80%	0%
Cooled Exhaust Gas Recirculation	90%	40%	0%	85%	90%
Lean NOx Catalyst	0%	20%	0%	0%	0%
Diesel Oxidation Catalyst	0%	20%	0%	0%	0%
Worker Trips	CO	NOx	SOx	PM_{10}	ROG
Use of Shuttle or Ride Sharing	1.3%	1.3%	1.3%	1.3%	1%

Source: Urban Emissions Model (URBEMIS2002) version 8.7.0 April 2005; developed by the California Air Resources Board (CARB) as a modeling tool to assist local public agencies with estimating air quality impacts from land use projects when preparing a CEQA environmental analysis.

2. As part of the grading permit process, developers shall concurrently submit a dust control plan as required by MDAQMD in compliance with Rule 403 (see Table III-22 below).

Table III-22
Fugitive Dust Control Methods

Daily PM_{10} Reduction	
Apply Soil Stabilizers to Inactive Areas	30%
Replace Ground Cover in Disturbed Areas Quickly	15%
Water Exposed Surfaces 2 Times Daily	34%
Water Exposed Surfaces 3 Times Daily	50%

Source: Urban Emissions Model (URBEMIS2002) version 8.7.0, April 2005.

3. Prior to grading activities a wind erosion control plan that among other things addresses soil stabilization techniques shall be submitted to the Apple Valley Building Division to assure that dust control is realized for all projects.

4. The Town shall conduct an initial study for all projects that are expected to exceed any of the MDAQMD pollutant emission threshold criteria, and shall require detailed air quality analyses for all development applications that have the potential to adversely affect air quality including quantification of greenhouse gas emissions. Until new factors are developed the use of the CEQA Handbook prepared by SCAQMD or other appropriate modelling tools such as URBAMIS shall be utilized.

5. All construction activities within the Town of Apple Valley shall be subject to Rule 401 Visible Emissions, Rule 402 Nuisance, and Rule 403 Fugitive Dust in accordance with the Mojave Desert Planning Area PM10 Attainment Plan.[14]

6. Set backs and buffer zones shall be provided between sensitive receptors (residences, schools, daycare centers, playgrounds and medical facilities) and point source emitters, such as highways, hazardous materials sites, and industrial development. Projects proposed for sites located within the specified distance to an existing or planned (zoned) sensitive receptor land use shall be evaluated to determine impacts to sensitive receptors including a health risk assessment for the following projects:

   Any industrial project within 1000 feet;
   A distribution center (40 or more trucks per day) within 1000 feet;
   A transportation project with 50,000 or more vehicles per day within 1000 feet;
   A dry cleaner using perchloroethylene within 500 feet;
   A gasoline dispensing facility within 300 feet.

7. The General Plan Land Use Plan shall be routinely updated to assure that air pollution point sources, such as those described above, are located a sufficient distance residential areas and other sensitive receptors, to the greatest extent practical.

8. The Town shall encourage the phasing of development projects and the staging of construction equipment to assure the lowest construction-related pollutant emission levels practical.

9. The Town shall strive to maintain a balance between housing, commercial, and industrial development, and shall encourage mixed-use development to reduce the length of vehicle trips and associated moving vehicle emissions.

10. The Town shall promote the development of pedestrian-oriented retail centers, community-wide trails, and dedicated bike lanes to encourage alternatives to vehicle travel. These components shall be integrated and periodically updated in the General Plan Circulation Element.

11. The Town shall pursue programs that create a diversified transportation system that minimizes vehicle miles traveled and associated air quality emissions.

12. The Town shall encourage the incorporation of energy-efficient design measures in site plans, including appropriate site orientation to assure solar access, and the use of shade and windbreak trees to enhance the use of alternative energy systems and reduce the need for excessive heating and cooling.

[14] "Final Mojave Desert Planning Area Federal Particulate Matter (PM10) Attainment Plan," prepared by the Mojave Desert Air Quality Management District, July 31, 1995.

13. The Town shall encourage the use of clean burning energy sources for transportation, heating and cooling. Pilot studies and/or demonstration programs shall be initiated by the Town and/or local agencies to promote these uses. The following programs shall be pursued:

    - Replace Town and County vehicle fleet with alternative vehicles
    - Initiate ride sharing programs for employees and of telecommuter options
    - Utilize Town building rooftops for placement of Solar equipment

14. The Town shall continue to develop and coordinate mass transit services that link residential, commercial, shopping and industrial centers, and shall coordinate with regional transportation authorities to facilitate public transport outside Town limits.

15. As requested, the Town shall participate, through the San Bernardino Associated Governments and MDAQMD, in the routine monitoring of all pollutants of regional concern, and shall maintain records of regional air quality trends.

16. The Town shall create staff positions that emphasis the Town's commitment towards building a green and sustainable community including LEED certified personnel and interagency liaisons that work directly with the Town and utility providers to increase efficiency, initiate programs, and develop incentives for water and energy conservation and reducing air quality emissions.

17. The Town shall coordinate with MDAQMD and the nearby SCAQMD in providing air quality management training to staff and volunteers.

18. The Town shall review individual projects under CEQA using the control efficiencies provided on pages 11-13 through 11-32 of the 1993 SCAQMD "CEQA Air Quality Handbook" to determine the effectiveness of proposed air quality mitigation measures for specific projects.

19. A PM_{10} Management Plan for construction operations shall be submitted with all development proposal applications. Plans shall include dust management controls, which can reduce PM emission as shown in the table below:

Table III-23
Particulate Matter Emission Reduction Techniques

Mitigation Measure	Daily Reduction Factor for PM10
Apply non-toxic soil stabilizers to graded construction areas that are inactive for 10 days or more	30-65%
Replace ground cover immediately through seeding and watering	15-49%
Enclose, cover, water twice daily or apply soil binders to exposed piles with more than 5% silt content	30-74%
Water active site at least twice a day	34-68%
Water active site at least three times daily	45-85%
Cover soil haul trucks or maintain at least two feet of freeboard	7-14%
Conduct street sweeps at the end of each day	25-60%
Install wheel washers where vehicles enter and exist unpaved roads or wash off equipment leaving the site	40-70%
Enforce maximum speeds of less than 15 mph on all unpaved roads	40-70%
Pave construction roads that have more than 50 daily construction equipment trips or 150 total daily trips	92.5%
Pave construction site access roads at least 100 feet on to the site from the main road	92.5%
Pave construction roads that have less than 50 daily daily trips	92.5%
Source: "CEQA Air Quality Handbook," prepared by SCAQMD, 1993.	

20. To reduce construction-related traffic congestion, developers and contractors shall implement the following mitigation measures:

    - configure construction equipment parking to minimize traffic disturbance
    - minimize obstruction of through-traffic lanes
    - provide a flag person to ensure safety at construction sites, as necessary
    - schedule operations affecting roadways for off-peak traffic hours
    - provide rideshare incentives to construction personnel

21. To minimize construction equipment emissions, developers shall implement the following measures:

    - wash off trucks leaving the site
    - require trucks to maintain two feet of freeboard
    - properly tune and maintain construction equipment
    - use low sulfur fuel for construction equipment

22. To minimize indirect-source emissions, developers may:

    - implement energy conservation measures beyond state and local requirements
    - install low-polluting, high-efficiency appliances
    - install solar pool and water heaters, where feasible
    - landscape with appropriate drought-tolerant species to reduce water consumption and provide passive solar benefits
    - install energy-efficient street lighting

23. To minimize building energy consumption, developers shall be encouraged to implement the following:

    - improve the thermal integrity of buildings
    - utilize window glazing, wall insulation, and efficient ventilation methods
    - introduce efficient heating and appliances, such as water heaters, cooking equipment, refrigerators, furnaces, and boiler units
    - incorporate appropriate passive solar design and solar heaters
    - use devices that minimize the combustion of fossil fuels

Climate Change and GHG Reduction Measures

In addition to those mitigation measure listed above, the following measure will assure that specific action is taken to reduce emissions of greenhouse gases and combat the effects of global warming and climate change.

1. Design and implement land uses that encourage job/housing proximity or easy access to transit opportunities including high density development along transit corridors, compact mixed use projects, and urban villages that maximize affordable housing and encourage biking, walking, and the use of public transit. This can be accomplished through the implementation of the goals, policies and programs of the Medium Density Residential and Mixed Use land use designations and, as appropriate, implementation of specific plans in targeted areas where the opportunities for such development can be created through advance planning. Transit corridors to be focused on high density development are along Bear Valley Road, Highway 18, Dale Evans Parkway, Apple Vally Road, Navajo Road, Central Road, and Kiowa Road. Furthermore, high density development will be targeted for the future High Desert Corridor.

2. Encourage infill, redevelopment, mixed use, and higher density development in appropriate areas of the Town where existing development can serve as the foundation for the creation of new urban villages. . Such development would be focused around the southern portion of the Town near the major intersections of Bear Valley Road, such as its intersections with Apple Valley Road, Kiowa Road and Navajo Road. Other areas targeted for development include those along Highway 18 and Dale Evans Parkway.

3. In order to reduce vehicle miles traveled and greenhouse gas emissions, mixed use projects with a maximum density of 30 dwelling units per acre shall be developed in the core of Apple Valley on infill lots and/or adjacent to transportation corridors (such as Bear Valley Road, Highway 18, and Dale Evans Parkway) and existing and future job centers.

4. Incentive programs shall be offered for affordable Medium Density Residential infill projects (maximum 20 dwelling units per acre) within the core of Apple Valley and/or adjacent to transportation corridors and existing and proposed job centers. This will help to reduce the vehicle miles traveled and greenhouse gas emissions.

5. Infill in the Mountain Vista Neighborhood is encouraged and incentives shall be offered by the Town for projects greater than 20 units in size. Infill and higher densities in this existing neighborhood will reduce the amount of vehicle miles traveled.

6. Mobile Home Park development shall be encouraged through the creation of the Mobile Home Park Land Use Designation. This will encourage higher density residential development along transportation corridors and adjacent to existing and future job centers. As a result, this should help reduce vehicle miles traveled and greenhouse gas emissions.

7. The Town shall encourage and promote the development of the North Apple Valley Industrial Specific Plan to create a job center with productive industries, which will reduce the vehicle miles traveled of high desert residents that typically have to drive to employment centers in the San Bernardino Valley, as well as the Riverside City and County portions of the Inland Empire for work. The Town shall reduce the approval time for entitlements and permit process for industrial projects within this area. The industrial development also supports a broad-based economy and encourages a jobs housing balance.

8. The Town shall permit childcare facilities in single-family and multi-family residential zones, as well as, in the commercial and industrial areas where employment is concentrated. This will encourage the reduction of vehicle miles traveled.

9. New developments shall be encouraged to include housing, recreational, and retail amenities, so as to limit the number of vehicle miles traveled by providing accessible and desirable amenities onsite.

10. All new development shall be required to install infrastructure prior to occupancy, which will encourage a well planned, orderly development pattern.

11. Advanced technology systems and effective management strategies shall be employed in order to improve the operational efficiency of transportation systems and the movement of people, goods, and services including synchronization of traffic lights and signals. New development that requires roadway and/or intersection improvements will be required to install such improvements such that these advanced traffic management systems may be easily implemented by the Town.

12. New projects shall incorporate design parameters that allow for frequent, reliable, and convenient public transit.

13. The Town shall expand and develop an integrated and comprehensive bikeway, walking path and trail system. The expansion of a regional trail system shall be in consultation with neighboring communities to improve the overall Victor Valley system.

14. Street and travel corridors shall be monitored and maintained to assure that congested areas and intersections are rectified.

15. Idling time for commercial, delivery, and construction vehicles shall be regulated and limited.

16. Landscaping designs shall use trees and other vegetation to maximize the shading of buildings in order to reduce energy requirements for heating and cooling.

17. Planting and preserving existing trees shall be utilized as means of providing carbon storage. Preserving existing trees shall be encouraged during the development review of new projects. The Town shall formulate minimum tree planting standards to be applied during the development review of a project.

18. Tree planting in parks and open spaces will be encouraged. Tree planting programs shall be implemented by the Town. These programs shall include an educational component that emphasizes the importance of trees as means of providing carbon storage.

19. The Town shall promote the use of LEED (Leadership in Energy and Environmental Design) building practices for public and private development by considering the utilization of such building practices as a factor favoring project approval during the entitlement process. Sustainable or "green" building standards similar to LEED shall also be considered favorably. Alternative energy systems such as solar, thermal, photovoltaics and other clean energy systems shall be integrated in building design. Building design shall take advantage of shade, prevailing winds and sun screen to promote energy efficiency.

20. The Town shall encourage the use of energy saving measures beyond the requirements of Title 24 for residential and commercial projects. The incorporation of such measures shall be considered as a factor in favor of project approval during the entitlement process. An incentive program shall be developed for projects that exceed Title 24 requirements by 15% and/or achieve LEED certification or similar performance standards for building design. Incentives such as fee reductions or waivers of certain development standards shall be considered.

21. Promote the use of facilities for low/zero carbon fueled vehicles in new developments, such as the charging of electric vehicles from green electricity sources.

22. The Town will encourage and facilitate the exploitation of local renewable resources by supporting public and private initiatives to develop and operate alternative systems of electricity generation, using wind, solar and other renewable energies.

23. Promote educational programs directed at the public, schools, professional associations, businesses, and industries that offer strategies for reducing GHG emissions.

24. Initiate a program to replace existing traffic lights, street lights, and other electrical uses to energy efficient bulbs and appliances. Encourage new lighting to be energy efficient. The

Town shall require that lighting in all Town facilities be replaced with energy efficient fixtures as existing fixtures fail and require replacement.

25. Utilize Energy Star equipment and appliances for new development and encourage replacement appliances to be energy efficient. The voluntary commitment to such a requirement by project applicants shall be considered a factor in favor of project approval.

26. Promote the use of on-site renewable energy production including installation of photovoltaic cells or other solar options. The Town shall encourage the use of solar cells in private development and consider such project features favorably during project review. The Town shall investigate the cost effectiveness of installing such solar cells on Town buildings for the purposes of powering Town facilities and possibly selling excess "clean" energy back to the SCE power grid, pursuant to state law.

27. Consider an Energy Savings Performance Contract with a private entity to retrofit public buildings, which will allow the private entity to fund all energy improvements in exchange for a share of the energy savings over a period of time.

28. Utilize the Collaborative for High Performance Schools (CHPS) best practices for school design, building, and operation.

29. Replace or retrofit municipal water and wastewater systems with energy efficient motors, pumps, and other equipment, and recover wastewater treatment methane for energy production.

30. Capture and utilize landfill gas for use as an energy source including fuel for vehicles, operating equipment, and heating buildings.

31. Promote the use of vehicles and buses that use alternative fuels or technologies such as hybrids, biodiesel, and ethanol. The Town's vehicle fleet shall be transitioned to alternative fuels to the extent economically feasible.

32. The Town shall promote the use of mass transit services, coordinating with all agencies to link residential and commercial businesses and employment centers within the Town's residential neighborhoods and nearby communities. Mass transit services shall be expanded as needed within the context of economic feasibility.

33. Ride sharing, carpooling, flexible work scheduling, telecommuting and Park & Ride programs shall be encouraged for public and private employers.

34. The Town shall assess the local transportation system annually with a view to gaining greater efficiency in the movement of people and goods through the community. Opportunities to expand the public transit system, using buses equipped with bicycle racks and fueled by compressed natural gas or hydrogen will be maximized. Widespread use of pedestrian

pathways and alternative means of transportation, such as bicycles and electric hybrid vehicles will be facilitated and encouraged.

35. Offer incentives to private businesses for developing energy and water efficient features and building materials, such as expedited plan checks and reduced permit fees.

36. Offer rebates and low interest loans to residents that make energy saving improvements on their homes, including but not limited to the installation of solar cells and panels.

37. Incentives shall be provided for rehabilitation and remodeling of existing development. Assistance from the Town shall be provided through the Residential Rehabilitation Loan Program to improve energy efficiency of existing residences. Educational materials shall be provided to the public advising them of energy efficiency through available appliance programs and other energy conservation improvements that are eligible for the Residential Rehabilitation Loan Program.

38. The Town shall consider incentive programs, rebates and refunds for the use of energy efficient appliances, windows and building designs for new and remodeled structures. The incentive program could also include incentives for the use of recycled materials.

39. Encourage bicycle lanes and walking paths directed to the location of schools, parks, and other destination points. The provision of such facilities will be considered favorably during project review pursuant to the General Plan's Circulation Element.

40. The Town will implement a program to install photo voltaic systems on the buildings and carports located at the Public Works facility and Town Hall/Police Department, which will provide electricity for the Civic Center and the Public Works/Animal Control facilities. This will improve the energy efficiency of these facilities

41. Prior to July 15, 2010, the Town shall develop and adopt a Climate Action Plan ("CAP") that enhances the General Plan's goals, policies and programs relating to meeting the greenhouse gas emission targets established in the California Global Warming Solutions Act, including reducing emissions to 1990 levels by including an emissions inventory; emission targets that apply at reasonable intervals through the life of the plan; enforceable GHG control measures; monitoring and reporting; and mechanisms to allow for the revision of the plan, if necessary, to stay on target. The goal of the CAP shall be to reduce greenhouse gas emissions within the Town's control the achieve the emission reduction goals required by AB 32, as further developed and quantified by the California Air Resources Board. The CAP shall quantify the approximate greenhouse gas emissions reductions of each measure developed with the CAP, and shall consider the mechanisms, strategies and techniques included above.

Mitigation Monitoring/Reporting Program

A. The code enforcement division shall record and refer all complaints it receives regarding air quality degradation from vehicle emissions, industrial generators, and other sources to

MDAQMD. A report of air quality complaints and identified problems shall be provided in the annual review of the General Plan. Development may be temporarily halted until inadequate controls or unacceptable conditions are corrected to the satisfaction of the Town and/or MDAQMD.
Responsible Parties: Code Enforcement and MDAQMD

B. Continue to coordinate with MDAQMD regarding the implementation of local and regional air quality programs. Consider initiating a local air quality monitoring station.
Responsible Parties: Planning Division and MDAQMD

C. Grading and development permits, as well as required dust control plans, shall be reviewed and conditioned to require the provision of all appropriate methods and technologies to assure the minimal emissions of pollutants from the development, in accordance with existing standards established by the Town of Apple Valley.
Responsible Parties: Public Works, Engineering, Planning, and Building Divisions.

D. Building and landscape plans shall be reviewed for assurance of optimized energy efficiency and soil stabilization, respectively. California Code of Regulations Title 24 and other applicable energy efficiency codes and regulations shall be appropriately applied.
Responsible Parties: Public Works, Engineering, Planning, and Building Divisions.

E. The Town shall review grading plan applications to assure compliance with mitigation measures set forth in this EIR, as well as those otherwise conditioned by the Town.
Responsible Parties: Planning Division and MDAQMD.

D. Biological Resources

Introduction

This section of the EIR describes the existing biological resources in the Town of Apple Valley, the vicinity, and regionally, and analyzes the potential constraints, risks and opportunities associated with these existing conditions as the General Plan and annexations build out. It assesses the potential impacts of the proposed General Plan relative to biological issues and sets forth mitigation measures that may be effective in reducing impacts. A wide range of data and information, including regional biological field surveys, habitat conservation plans and related documents, as well as a biological resources study prepared for the General Plan, have been used to assess the potential effects on biological resources from implementation of the proposed General Plan and annexations.

Thresholds of Significance/Criteria For Determining Significance

The following significant thresholds or criteria are derived from Appendix G of CEQA, which is used to determine if and to what extent a project may have a potentially significant impact on biological resources. Build out of the General Plan would have a significant effect on biological resources if it is determined that implementation of the General Plan will:

a. Have a substantial adverse effect, either directly or indirectly, or through habitat modifications, on any species identified as a candidate, sensitive, or special status species (including species listed as threatened or endangered) in local or regional plans, policies, or regulations, or by the CDFG or USFWS;

b. Have a substantial adverse effect on any wetlands, riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the CDFG or the USFWS;

c. 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.);

d. 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;

e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or

f. Conflict with the provisions of any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan.

This section also considers standards and criteria established by the California Department of Fish and Game (CDFG), California Native Plant Society (CNPS), and the United States Fish and Wildlife Service (USFW), further discussed below.

1. Existing Conditions

The biological resources within the Town of Apple Valley and Sphere of Influence were assessed in a comprehensive study prepared for the proposed General Plan,[15] which is included in Appendix B of this document. To prepare the biological resources study, the consultant conducted a literature review that included the California Natural Diversity Data Base (CNDDB), San Bernardino County Museum records, California Department of Fish and Game staff, various botanical and wildlife references for the Apple Valley area, and the California Environmental Information Catalogue. Other documents reviewed were biological surveys prepared for development projects in the General Plan area and vicinity, which included species accounts, life histories, and distribution and status of covered species. A field survey of the General Plan and annexation areas was also conducted as part of the biological resources assessment. In addition to the Biological Resources Report, the Draft West Mojave Habitat Conservation Plan & Conservation Banking Program[16] was also referenced in order to describe existing conditions.

Regional Biological Setting

The Town of Apple Valley and vicinity are located in the High Desert north of the San Bernardino Mountains and west of the Mojave River, between the City of Victorville and the communities of Lucerne Valley to the southeast and Hesperia to the southwest. This region is within the southwestern portion of the Mojave Desert and is characteristic of desert environments, with hot dry summers and cool winters, including extreme fluctuations of daily temperature, strong seasonal winds, and less than 5 inches of annual precipitation.

Elevations in the Town and vicinity range from approximately 2,550 feet above mean sea level (MSL) near the Mojave River up to approximately 4,800 feet above MSL within mountain ranges to the north, east and south of Town. Drainages and streams associated with the Mojave River have contributed to the topography of the region, and are considered to be ephemeral in that they rarely contain overland water flow and generally have poorly defined banks. Watercourses in the planning area flow into the Mojave River, Apple Valley Dry Lake, or inland depression areas. The Mojave River and associated drainages support riparian habitat and provide wildlife movement corridors.

[15] "Town of Apple Valley General Plan Update Biological Resources," prepared by AMEC Earth & Environmental, Inc., February 21, 2008.

[16] "Draft Documentation and Analysis West Mojave Habitat Conservation Plan & Conservation Banking Program (WEMO HCP/CBP)," prepared by Solution Strategies Inc., September 2008.

Natural Communities

There are several natural communities represented in the Apple Valley General Plan Study Area, supporting a wide variety of plant and animal species and various types of habitats. These natural communities are discussed categorically, below.

Saltbush Scrub
This type of vegetation is found within the eastern portion of the Town limits and the Sphere of Influence. It is generally comprised of Saltbush, Allscale, and Shadscale. Joshua Tree, Cheesebush, Anderson Boxthorn, and Cholla are also sometimes a component of this vegetation type.

Mojave Riparian Forest
This habitat consists of small areas of water-dependent plants, including Cattail, and is supported by the Mojave River that flows through the western portion of the planning area. Specifically, the Upper Narrows portion of the River contains an extensive Mojave Riparian Forest. This community is dominated by Cottonwood, Willow, Olive, Saltcedar, Quailbush, Rabbitbrush, and Saltgrass.

Wash Vegetation
There are a number of small washes within the planning area. These washes support specific species, including Rabbitbrush, Cheesebush, and Brickellbush. This community type may be associated with Mojave Riparian Forest species and usually contains some non-native grasses and flowering plants. Both Mojave Riparian and Wash habitat types, although limited in size in the planning area, are valuable for the diversity of wildlife, especially birds, that they support.

Sandfield Plant Community
This community assemblage is found within the upstream area of the Mojave River where water flow is primarily subsurface, except during times of heavy rainfall. Vegetation is generally limited to short-lived annual plants, although intermittently occurring perennial species may also be present. Representative species include Sand Verbena, Tiquilia, Sandpaper Plant, Saltbush, and Ricegrass.

Joshua Tree Woodlands
Found on alluvial slopes with sandy/loamy soils, this community type often contains California Buckwheat, Green Ephedra, Desert Needlegrass, Paperbag Bush, and may contain Mojave Yucca. Although scattered Joshua Trees occur within the planning area, the densest growth is observed south of the Town limits, within the Sphere of Influence.

Creosote Bush Scrub
This community type is the predominant vegetation type within the planning area, and is composed of Creosote Bush, Burrobush, Golden Cholla, Pencil Cholla, Beavertail, Cheesebush, Boxthorn, Rabbitbrush, and may contain a minor component of Joshua Trees. The sub-shrub component of this community type is largely diminished, due to past livestock grazing and frequent disturbance from off-road vehicles.

Mojave Mixed Woody Scrub
This community assemblage is limited to small patches within the Town limits, although larger swaths of land occur in the easterly Sphere of Influence. It is usually supported by steep and rocky soils that are shallow and overly drained. Buckwheat, Bladderpod, Beavertail, Goldenbush, Cheesebush, and some cactus species such as Clustered Barrel Cactus and Hedgehog Cactus are representative of this vegetation type.

Montane Woodlands
Located southwest of the Town limits is a small community of this vegetation type, which extends south in the vicinity of the Sphere of Influence. This open woodland vegetation type is dominated by California Juniper, Joshua Tree, and a number of shrubs including Blackbush, Cliffrose, Turpentine Broom, and may contain an understory that is typical of Mojave Mixed Woody Scrub species.

Non-native Communities
The Town and Sphere of Influence contain non-native species interspersed within natural assemblages. Within urbanized areas, non-native species tend to be associated with landscaping, slope stabilization, and abandoned or vacant lots. These occur adjacent to the Apple Valley Airport as well as in disturbed land within residential areas of the Town, predominated by ruderal, or weedy, flora. Within these non-native communities, a few components of former native plant communities are also occasionally represented. Although not native, this community type provides open space and habitat and foraging opportunities for a variety of common species.

Common Species

The more common species found in the Town of Apple Valley and vicinity tend to be associated with disturbed Creosote, Saltbush, and Mojave Mixed Woody Scrub plant communities. They may be readily adaptable to urbanization and able to survive ruderal habitats, such as those adjacent to roadways. A variety of common native and non-native species are found in the planning area.

Common invertebrates include Harvester Ants, Crater-nest Ants, Creosote Bush Grasshoppers, Paper Wasps, Honeybees, Daddy Longlegs as well as venomous insects such as the Black Widow Spider and Sand Scorpions. Common amphibian species include the Western Toad, Pacific Tree Frog, and the Bullfrog, a non-native species that has become naturalized to the region. A variety of common reptiles occur, including the Western Whiptail Lizard, Side-blotched Lizard, Desert Iguana, and other lizard species. Snake species include venomous and

non-venomous varieties, such as the Western Patch-nosed Snake, Coachwhip, Gopher Snake, Mojave Rattlensnake, Sidewinder, and Speckled Rattlesnake.

A range of common bird species inhabit and nest in the area, while certain species are migratory, present seasonally for foraging. Approximately 301 bird species have been documented in the region. The Song Sparrow, Rufous Towhee, and Blue-gray Gnatcatcher are among the many bird species that use Mojave River riparian habitat. Many bird species use landscaping features or even occasionally human-built structures for nesting, including House finch, House Sparrow, and some hummingbird species.

Common mammal species in the planning area include Black-tailed Jackrabbit, Desert Cottontail, Kit Fox, Coyote, Kangaroo Rats, and several mouse and squirrel species.

The General Plan Biological Resources Element further discusses common species, and a complete listing of common species thought to occur in the planning area and vicinity is included in the Biological Resources Report in Appendix B.

Special Status Species

The Apple Valley General Plan area contains a wide range of significant biological resources, including special status species that are listed as threatened or endangered by federal and state governmental agencies. The U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG) maintain lists of these sensitive species and provide information about species ranges and occurrence probabilities. The California Native Plant Society (CNPS), a non-profit conservation organization, maintains a listing of native flora and makes a determination of the status as rare, threatened, and/or endangered for each species listed.

These agencies determine the status of qualified species based on the following three definitions; (1) “Endangered” species are those with such limited numbers that they are considered to be in imminent danger of extinction; (2) “Threatened” species are those likely to become endangered within the foreseeable future, particularly on a local scale; and (3) “Sensitive” and “rare” species are those that are naturally rare or have been locally depleted or put at risk by human activities, and although perpetuation of these species does not appear to be significantly threatened, they are considered vulnerable and may be candidates for future listing.

The following tables identify the listed sensitive species that have the potential to occur within the General Plan area and vicinity. The appendices section of this document, wherein the Biological Report is included, also provides a comprehensive listing of sensitive species associated with the Town of Apple Valley, Sphere of Influence, and vicinity. Each species thought to occur is described below.

Table III-24
Special Status Plant Species from the Vicinity of Apple Valley

Species Name	Habitat	Local or CDFG Status	Federal Status	Reported Within Planning Area (PA)
Camissonia boothii **ssp. *Boothii*** **Booth's Suncup**	Sandy habitats	CNPS List 2		Yes (West Edge PA)
Cymopterus Deserticola **Desert Cymopterus**	Sandy habitats	CNPS List 1B		Yes (Central PA along Hwy 18)
Yucca Brevifolia **Joshua Tree**	Creosote Bush, Saltbush, Mojave Mixed Woody, Scrub	Apple Valley Ordinance		Yes (PA)
Saltugilia Latimeri **Latimer's Woodland-gilia**	Creosote Bush Scrub	CNPS List 1B.2		No
Opuntia basilaris **var. *bracyclada*** **Short-jointed Beavertail**	Joshua Tree Woodland	CNPS List 1B.2		No
Scutellaria bolanderi ssp. austromontana **Southern Skullcap**	Meadows, riparian habitat	CNPS List 1B.2		Yes (Mojave River at Upper Narrows)
Symphyotrichum defoliatun **San Bernardino Aster**	Meadows, riparian habitat	CNPS List 1B.2		No

Table III-25
Special Status Invertebrate Species from the Vicinity of Apple Valley

Species Name	Habitat	Local or CDFG Status	Federal Status	Reported Within Planning Area (PA)
Plebulina Emigdionis **San Emigdio Blue [butterfly]**	Saltbush Scrub & riparian habitat			Yes (reported from west edge PA along Mojave River)
Helminthoglypta Mojaveana **Victorville Shoulderband**	Granite boulders base of Mojave River			Yes (reported from west edge PA along Mojave River at Upper Narrows)

Table III-26
Special Status Amphibian Species from the Vicinity of Apple Valley

Species Name	Habitat	Local or CDFG Status	Federal Status	Reported Within Planning Area (PA)
Rana aurora Draytonii **California Red-legged Frog**	Wetlands with deep water & adjacent Riparian habitat	Special Concern	Threatened	No (reported historically from Mojave River at Upper Narrows)
Bufo californicus **Arroyo Toad**	Streams with sandy banks	Special Concern	Endangered	No (historically southwest of PA within Mojave River)

Table III-27
Special Status Reptile Species from the Vicinity of Apple Valley

Species Name	Habitat	Local or CDFG Status	Federal Status	Reported Within Planning Area (PA)
Phyrnosoma coronatum (blainvillei population) **Coast Horned Lizard**	Friable, rocky or shallow sandy habitats with ants	Special Concern		No (reported southwest PA along dry portions of the Mojave River)
Sauromalus ater **Chuckwalla**	Rocky habitat, Creosote Bush Scrub			Yes (from Mojave River Narrows)
Gopherus Agassizii **Desert Tortoise**	Creosote Bush Scrub	Threatened	Threatened	Yes (from central west of Mojave River and north PA)
Actinemys marmorata pallida **Western Pond Turtle**	Wetlands & adjacent riparian areas	Special Concern		Yes (reported from west edge PA at Upper Narrows)

Table III-28
Special Status Mammal Species from the Vicinity of Apple Valley

Species Name	Habitat	Local or CDFG Status	Federal Status	Reported Within Planning Area (PA)
Lasiurus cinereus **Hoary Bat**	Dense foliage of large trees next to open habitats	Special Concern		Unknown (from west edge PA, exact location unknown)
Spermophilus Mojavensis **Mojave Ground Squirrel**	Creosote Bush & Saltbush Scrub	Threatened		No (1955 report just southeast of the PA)
Microtus Californicus Mojavensis **Mojave River Vole**	Wet herbaceous Habitat	Special Concern		Yes (reported from west edge PA along Mojave River)
Corynorhinus Townsendii Pallescens **Pale Big-eared Bat**	Crevices, Mineshafts, Creosote Bush Scrub near water	Special Concern		No (reported southeast of PA)
Chaetodipus fallax pallidus **Pallid San Diego Pocket Mouse**	Sandy habitats rocks/ coarse gravel, wash habitat, succulent scrub	Special Concern		Possibly (reported from west edge PA & Granite Mountains)

Table III-29
Special Status Bird Species from the Vicinity of Apple Valley

Species Name	Habitat	Local or CDFG Status	Federal Status	Reported Within Planning Area (PA)
Toxostoma Bendirei **Bendire's Thrasher**	Joshua Tree Woodland, Mojave Mixed Woody Scrub	Special Concern		Yes (reported from North PA)
Myiarchus tyrannulus **Brown-crested Flycatcher**	Riparian woodland	Special Concern		Yes (reported from Mojave River)
Athene Cunicularia **Burrowing Owl**	Burrows/abandoned foundation structures, Creosote Bush & Ruderal Scrub	Special Concern		Yes (reported throughout PA)
Accipiter cooperii **Cooper's Hawk**	Riparian habitat with large cottonwoods	Special Concern		Yes (west edge PA; Mojave River at Upper Narrows)
Vireo vicinior **Gray Vireo**	Dry chaparral, Pinyon-juniper Woodland, Mojave Desert Mountains	Special Concern		No (reported from north slope San Bernardino Mountains)
Vireo bellii pusillus **Least Bell's Vireo**	Riparian habitat, willow trees, seep-willow scrub	Endangered	Endangered	Yes (reported from west edge PA along Mojave River)
ToxostomaLecontei **Le Conte's Thrasher**	Shrubs, washes, Creosote Bush Scrub	Special Concern		Yes (reported throughout PA)
Asio otus **Long-eared Owl**	Riparian habitat next to open fields	Special Concern		No (reported south west of PA along Mojave River)
FalcoMexicanus **Prairie Falcon**	Cliff faces (nesting), Open habitats for Foraging	Special Concern		Yes (from northeast PA in spring/summer; throughout PA during winter)
Empidonax traillii Extimus Southwestern **Willow Flycatcher**	Riparian habitat	Endangered	Endangered	Yes (reported from west edge PA along Mojave River)
Piranga rubra **Summer Tanager**	Riparian habitat	Special Concern		Yes(reported from west edge PA along Mojave River)
Buteo swainsoni **Swainson's Hawk**	Riparian Habitat (Migration)	Threatened		Yes (from Mojave River Corridor)
Pyrocephalus Rubinus **Vermillion Flycatcher**	Riparian habitat	Special Concern		Yes (reported from west edge PA along Mojave River)
Coccyzus americanus occidentalis **Western Yellow-billed Cuckoo**	Riparian habitat with Large cottonwood and willow canopy	Threatened	Candidate for listing	Yes (reported from west edge PA along Mojave River)
Icteria virens **Yellow-breasted Chat**	Riparian habitat	Special Concern		Yes (reported from west edge PA along Mojave River)

Table III-29
Special Status Bird Species from the Vicinity of Apple Valley

Species Name	Habitat	Local or CDFG Status	Federal Status	Reported Within Planning Area (PA)
Dendroica Petechia brewsteri **Yellow Warbler**	Riparian habitat	Special Concern		Yes (reported from west edge PA along Mojave River)

Habitat: terrestrial natural community descriptions per Holland (1986) as modified by general observations of the planning area in 2007.

State of California and Local Status: Endangered, Threatened, Protected, Special Concern status per the California Fish and Game Code of 2007, as well as all species protected by local Town of Apple Valley Ordinance.

California Native Plan Society (CNPS) listing rankings (CNPS 2001) are described as follows:

List 1B: Plants considered rare and endangered in California and throughout their range. All of the plants constituting List 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code and are eligible for state listing. It is mandatory that these plant species be fully considered during preparation of environmental documents pertaining to the California Environmental Quality Act.

List 2: Plants considered rare, threatened or endangered in California but which are more common elsewhere.

Federal Status: Endangered, Threatened and Candidate for listing status per the Endangered Species Act of 1973 (as amended). It is mandatory that federally listed plant species be fully considered during preparation of environmental documents pertaining to the California Environmental Quality Act, or National Environmental Policy Act, or any federal authorization.

Reported within Planning Area: Includes observations by AMEC personnel, reports by knowledgeable individuals, a California Natural Diversity Database (CDFG 2007) and San Bernardino Museum records.

Sensitive Plant Species

Booth's Suncup

This annual herb species is a member of the Evening Primrose Family, and has a low potential of occurrence within the Town. Nonetheless, CNDD records identify the western portion of the Town just south of the Mojave Narrows Regional Park as potentially containing sandy loam habitats that may support this species. Booth's Suncup is generally detectable during surveys conducted in the spring season following a precipitation event.

Desert Cymopterus

This perennial herb species is a member of the Carrot Family, and has a low potential of occurrence within the Town. Records indicate the species has been observed in the northwest portion of the Town, immediately east of the Mojave Narrows Regional Park, and in the central portion of Town near State Route 18. The latter area has since developed extensively and populations of this plant have not been detected there in recent years. Desert Cymopterus is

generally detectable during surveys conducted in the spring season following a precipitation event.

Joshua Tree
This species is known to occur throughout the Mojave Desert on desert flats, slopes, washes, and riparian areas. Joshua Trees provide important shade, and foraging, breeding, and nesting habitat for a variety of species, particularly invertebrates and birds. Within Town limits Joshua Trees are protected by an ordinance that emphasizes the incorporation of these trees into landscaping, requires inspection of trees prior to site disturbance, and requires oversight of transplantation of candidate trees by an approved arborist or other native plant specialist. In Apple Valley, Joshua Tree occurrences are generally scattered and often comprise a sub-component of other plant communities. Denser stands occur southwest of the planning area near the foothills of the San Bernardino Mountains.

Southern Skullcap
Gravelly soils near streambanks and wetlands support habitat for this small herb. Flowers of this species bloom from June through August, but can be difficult to detect among dense meadow vegetation. Southern Skullcap has been known to occur in the western portion of the Town northwest of the Mojave Narrows Regional Park.

San Bernardino Aster
This sensitive plant species was not observed during site surveys but has been collected in the Mojave Narrows Regional Park. The flower of this perennial plant blooms from August to November and typically occurs in meadows and wet grasslands in proximity to the Mojave River. Wet ditches and drainages associated with the Mojave River may also support habitat for this species. Presence of this species can be more easily detected during late summer or fall surveys, when the San Bernardino Aster is in bloom.

Sensitive Invertebrate Species

San Emigdio Blue Butterfly
This species is found in association with Four-wing Saltbush and is known to occur in the western portion of the Town along the Mojave River.

Victorville Shoulderband
This species of snail is endemic to the Mojave River and can be found under rocks and at the base of rocky outcrops and cliffs. The Victorville Shoulderband has been identified within the Town's westernmost limits within the Mojave River at Upper Narrows.

Sensitive Amphibian Species

California Red-legged Frog
This species is primarily a pond frog found in streams and deep waters providing substantial riparian vegetation cover. Data indicates this species may migrate as much as two miles overland. It breeds in, and requires water for, larval development. Outside of breeding season it

may be found in upland habitats. It is a state species of concern and is federally listed as threatened. It was not observed during site surveys but has been observed in the planning area historically. It is considered to have a low probability of occurrence in the planning area.

Sensitive Reptile Species

Common Chuckwalla
This is the largest lizard species within the Mojave Desert and is most commonly found in Creosote Bush Scrub communities among rock outcrops, boulder piles, or scattered rocks. In the Town of Apple Valley the Common Chuckwalla has been reported adjacent to the Mojave River Narrows and downstream near Quartzite Mountain.

Desert Tortoise
This desert reptile species is found throughout the Mojave Desert region and has been reported from the northwestern edge of the Town to the northeastern portion of the Sphere of Influence. Habitat loss, degradation, fragmentation and disease have resulted in declines in Desert Tortoise populations. The Town of Apple Valley has been estimated to contain low densities of desert tortoise ranging from 0 to 20 individuals per square mile. In order to protect this state and federally listed threatened species, critical habitat has been designated north of the Town; a recovery plan was prepared in 1994 and is currently being revised. There are several measures that can be employed to protect this species, which are discussed in detail under Mitigation Measures below.

Western Pond Turtle
This turtle species is native to the Mojave River, with a small population in the western edge of the planning area at Upper Narrows. They forage for algae, plants, snails, insects, fish, and frogs. Recommended mitigation for this species includes protecting wetlands and adjacent riparian corridors up to 500 meters from the edge of pools inhabited by the Western Pond Turtle.

Sensitive Bird Species

Bendire's Thrasher
This migratory bird species breeds in the western Mojave Desert, is typically found in densely-vegetated areas in the northern portion of the planning area as well as the Sphere of Influence, and has been reported from Bell Mountain, Johnson Road, and Sidewinder Mountain. Bendire's Thrashers build open cup nests in cholla cactus, yucca, and various shrubs. Nest surveys conducted prior to site disturbance can identify the presence of this species.

Brown-Crested Flycatcher
This bird species is known to nest annually along the Mojave River between Victorville and Apple Valley from May through August. Riparian woodlands containing cottonwoods and willows may support the Brown-Crested Flycatcher. Preventing the decline of the water table, ensuring fire breaks along the Mojave River, and minimizing habitat destruction are expected to help protect this species.

Burrowing Owl
This diurnal owl is found throughout the Town and Sphere of Influence in open areas, such as grasslands, scrubs, and agricultural areas. Burrowing owls excavate nests in the ground, use small animal burrows, and man-made structures such as pipes, drains, culverts, asphalt, and cement, wood, and rubble piles. The species is vulnerable due to habitat loss, exposure to environmental toxins, and vehicles. Protection of this species includes presence-absence surveys and habitat replacement. Additional protection measures for Burrowing Owls are further discussed under Mitigation Measures below.

Cooper's Hawk
This migratory hawk species is found within the Mojave River at Upper Narrows and is dependent on open riparian vegetation and large trees. Cooper's hawks will forage throughout the planning area, including in residential yards. Conservation of the Mojave River Riparian Forest is critical in order to protect habitat for this species.

Least Bell's Vireo
This migratory songbird species is federally and state listed as endangered. It is dependent on dense riparian vegetation. It has been recorded along the Mojave River at the Lewis Center and at the Mojave Narrows Regional Park. Habitat loss, flood control activities, and parasites have caused a population decline. Habitat restoration and tapping of parasite-infected species are effective measures for protecting this species.

Le Conte's Thrasher
This endemic bird species is found throughout the southwestern United States, but is considered rare in desert scrub habitats. Le Conte's Thrashers have been observed throughout the Town of Apple Valley and in the southeast corner of the Sphere of Influence. Mitigation measures include protection of nests via pre-site disturbance surveys.

Prairie Falcon
This migratory raptor species is found year-round throughout the planning area and prefers open habitats for foraging. Prairie Falcons are threatened due to exposure to toxins and disturbance to nests. Mitigation measures include surveys prior to disturbance.

Southwestern Willow Flycatcher
This migratory bird species prefers dense riparian woodlands and has been observed within the Mojave Narrows Regional Park. The Southwestern Willow Flycatcher is typically present from May through September. Habitat loss, degradation, flood control activities, and livestock grazing has led to its listing as endangered by the federal and state governments. Protection of riparian habitat and the Mojave River Forest corridor is essential for preserving this species' presence within the Town and Sphere.

Summer Tanager
This songbird species prefers dense riparian habitat and has been reported at the Mojave Narrows Regional Park from April through September. Habitat loss, flood control, and invasive species have contributed to the listing of Summer Tanagers as Species of Special Concern. Protection of

the Mojave River corridor and minimizing cutting of large trees are important conservation measures for this species.

Swainson's Hawk
This hawk species nests almost exclusively in tress; often these trees are located on the edges of open space areas for foraging opportunities. In Apple Valley, Swainson's Hawks utilize Cottonwoods, Joshua Trees, and Creosote scrub habitat, and have been observed along the Mojave River. This species is state listed as threatened.

Vermillion Flycatcher
This bird species is found in scrub and riparian woodlands and is often associated with Cottonwood, Mesquite, or Sycamore trees. Vermillion Flycatchers prefer open habitats and avoid dense riparian growth. In the Town of Apple Valley this species is found along the Mojave River. It has been adversely impacted by habitat loss, degradation, and fragmentation of riparian habitats.

Western Yellow-billed Cuckoo
This migratory bird species frequents cottonwood-willow riparian habitat and is thought to breed within the Mojave River area at Upper Narrows. Western Yellow-billed Cuckoos prefer low woody vegetation, Willow trees, and high canopy closures. Habitat loss due to clearing for agricultural lands has been the primary reason for the state listing of this species as threatened. It is a federal candidate for listing. Pre-construction surveys can help to mitigate impacts to this species.

Yellow-breasted Chat
This migratory song bird nests along the Mojave River in the Town of Apple Valley and in the western portion of the Sphere of Influence. Yellow-breasted Chats prefer riparian habitats that contain shrubby Willow, Mulefat, Wild Grape, and Cottonwood species.

Yellow Warbler
This riparian-dependent bird species is found along the Mojave River within and adjacent to the western portion of the Town. These birds prefer dense thickets of riparian communities containing Wild Rose, shrubby Willow, and Mulefat. Parasitism and habitat loss have caused the population of Yellow Warblers to decline. Preserving riparian habitat will help to protect this species.

Sensitive Mammal Species

Mojave River Vole
This vole species is restricted to moist habitats occurring along the Mojave River and prefers meadows and marshes. The Mojave River Vole is a state species of special concern, due to habitat fragmentation, flood control, and urbanization. Protection of meadow and marsh communities within the Mojave River corridor will reduce impacts to this species.

Pallid San Diego Pocket Mouse

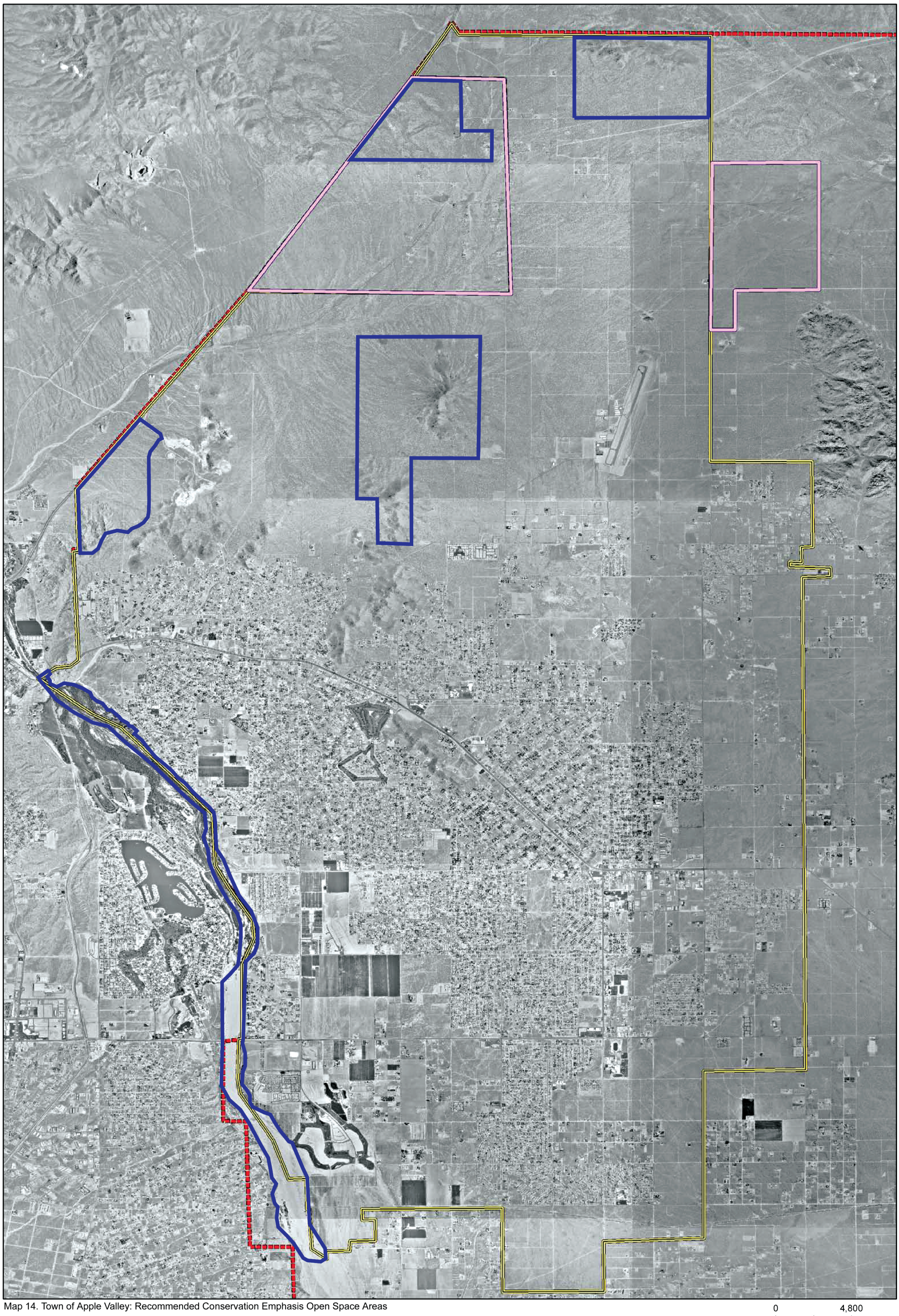
This pocket mouse prefers habitats such as Desert Scrub, mixed Mojave Scrub washes, and Pinyon-Juniper plant communities. Much of its preferred habitat within the Town has been eliminated by urbanization and cultivation, but there is small potential for this species to exist within the sandier portion of the Mojave River corridor.

Hoary Bat

The hoary bat, so called because of the frosted or "hoary" appearance of its fur, is generally solitary. It eats a variety of insects and is identifiable by its fast and direct flight. It roosts in trees. It has been historically reported in the western portion of the planning area at the Mojave Narrows Regional Park, but was not observed during site surveys. This species is jeopardized by loss of riparian habitat and pesticide use. Curtailing removal of riparian plant communities, limiting cutting of large trees, and controlling wildfires along the Mojave River in a timely manner are considered important to the conservation of this species.

Mojave Ground Squirrel

During rainy seasons, this species relies primarily on leaves and seeds of forbs and shrubs, on the fruit of Joshua Trees and sometimes eats insects. During dry seasons they eat mainly perennial stub leaves. This species is thought to forego breeding during dry years. This is a state listed threatened species, the historic range of which is thought to occur within the planning area. However, due to habitat fragmentation related to agriculture and urban development, this species appears to have been extirpated from the Victor Valley region.



Map 14. Town of Apple Valley: Recommended Conservation Emphasis Open Space Areas

0 4,800
Feet

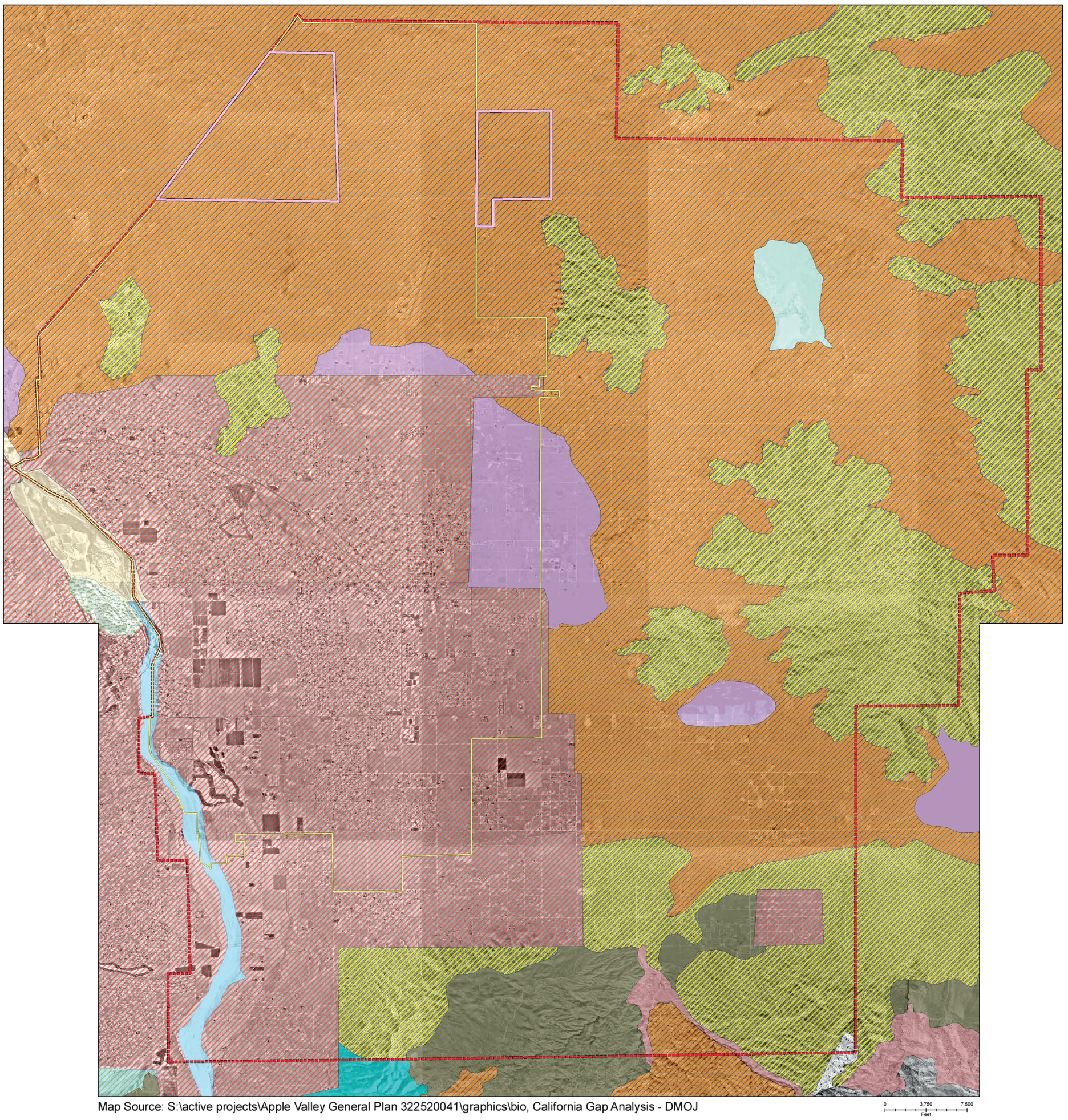
Apple Valley Town Limits
Apple Valley SOI
Apple Valley Annexation Areas
Open Space Areas

Source: AMEC 11.2007

TERRA NOVA®
Planning & Research, Inc.

Apple Valley General Plan Draft EIR
Habitat Areas Requiring Additional Biological Study
Apple Valley, California

Exhibit
III-1



Legend

- Apple Valley Town Limits
- Apple Valley SOI
- Apple Valley Annexation Areas

Regional VegetationType

- Pinyon-Juniper & Desert Wash
- Pinyon-Juniper
- Juniper
- Montane Hardwood-Conifer
- Annual Grassland & Saltbush Scrub
- Mojave Riparian Forest
- Mojave Mixed Woody Scrub
- Urban/Rural
- Saltbush Scrub
- Creosote Bush Scrub
- Lacustrine
- Mojave River Sand Fields

N

Source: AMEC 11.2007

TERRA NOVA®
Planning & Research, Inc.

Apple Valley General Plan Draft EIR
Natural Communities by Vegetation Type
Apple Valley, California

Exhibit
III-2

Habitat Protection and Connectivity

As previously discussed, the planning area and vicinity contain areas of valuable habitat that support special status species. These areas are illustrated in the Biological Resources Study in Appendix B. A number of plans have been or are being developed to address issues associated with impacts to these areas from development, including the West Mojave Habitat Conservation Plan (Bureau of Land Management) and the Apple Valley Multiple Species Habitat Conservation Plan (MSHCP) currently under development. These plans provide important guidelines and criteria for these habitats by establishing requirements for the preservation and maintenance of wildlife movement corridors within the Town and vicinity. Both plans are further discussed below.

Important linkage areas in the planning area and vicinity include the Mojave River corridor, which links a number of natural communities within the planning area, and other washes, which provide for movement between surrounding mountain ranges to the north/northeast and south/southeast. The General Plan includes policies and programs intended to ensure that habitat connectivity is preserved in the planning area. In addition, a number of special survey areas in the planning area are identified in the General Plan. Species for which surveys are required as part of development applications include Desert Tortoise, Mojave Ground Squirrel, Burrowing Owls, Joshua Trees, and/or Migratory/Nesting/Other Protected Birds.

West Mojave Habitat Conservation Plan

The West Mojave Habitat Conservation Plan, developed by the Bureau of Land Management (BLM) covers approximately 9.3 million acres of publicly owned land within San Bernardino, Kern, Los Angeles, and Inyo Counties. It is the largest habitat conservation plan to be developed in the United States. The Plan sets forth a comprehensive strategy for managing state and federally listed species, special status species, and their habitats on public lands. The plan mandates conservation of lands for specifically covered species, such as the Desert Tortoise, Mojave Ground Squirrel, Le Conte's Thrasher, Burrowing Owl, and others. Currently, the West Mojave Plan has achieved certification under the National Environmental Policy Act (NEPA) and therefore only applies to federally owned lands within its planning area.

Local, state, and federal entities are in the process of developing a private lands counterpart to the West Mojave Plan. Upon completion of the CEQA process for the plan by the County of San Bernardino, it is expected that future development on state, local government, and private lands will be covered and properly mitigated through the payment of a regional land development fee. At completion of the CEQA process it is likely that specific survey requirements and permitting parameters for public and private land actions will be required. An extension of the West Mojave Plan is the Draft West Mojave Habitat Conservation Plan and Conservation Banking Program, which identifies fourteen special status species.

Apple Valley Habitat Conservation Plan

As noted above, the Town of Apple Valley is in the process of preparing a comprehensive MSHCP that will address management for federally listed and other special status species occurring on private lands within the Town of Apple Valley. Currently individual development

projects with potential to impact a listed species must process separate state and/or federal permits to address compliance with the state and federal Endangered Species Acts.

The Town is preparing the Apple Valley MSHCP to address impacts to sensitive and listed species and ensure that the General Plan can be implemented. It will also enable the Town to streamline the development entitlement process and permitting while ensuring protection of sensitive environmental resources.

Native Plant Ordinance

The Town of Apple Valley has adopted an ordinance[17] aimed at protecting native plants, which makes special provision for Joshua Trees and other native species. The ordinance requires authorization from the Town prior to disturbing, removing or destroying Joshua Trees, and when removal is necessary, prescribes their relocation and transplant whenever feasible.

Public Land Agencies and Ecosystem Management

A number of public land agencies in the planning area and the region collaborate to manage open space lands. On a federal level, these include the National Park Service, the United States Forest Service, United States Fish and Wildlife Service, and the Bureau of Land Management. State agencies include the California Department of Fish and Game, State Water Quality Control Board, and the California Department of Parks and Recreation. Lands owned and managed by these agencies and organizations may, among other uses, provide for recreational uses, which has the potential to impact and disturb the land to varying degrees. The Bureau of Land Management manages open space areas within the area, located primarily in the northern portion of Apple Valley.

Regulation of Streambeds and Watercourses

Per California Fish and Game Code § 1600 et seq., the California Department of Fish and Game (CDFG) has authority regarding any proposed development activity that will divert, obstruct, or affect the natural flow, or change the bed, channel, or bank of any watercourse or body of water. On a federal level, Section 404 of the federal Clean Water Act grants the U.S. Army Corps of Engineers permitting authority for any project that will alter waters of the United States. The Town will continue to require that developers obtain the proper permits and authorizations from these and other appropriate agencies, including the California Regional Water Quality Control Board, as necessary. Exhibit III-3 shows the jurisdictional and non-jurisdictional waterways within the Town and Sphere of Influence.

Annexation 2008-001

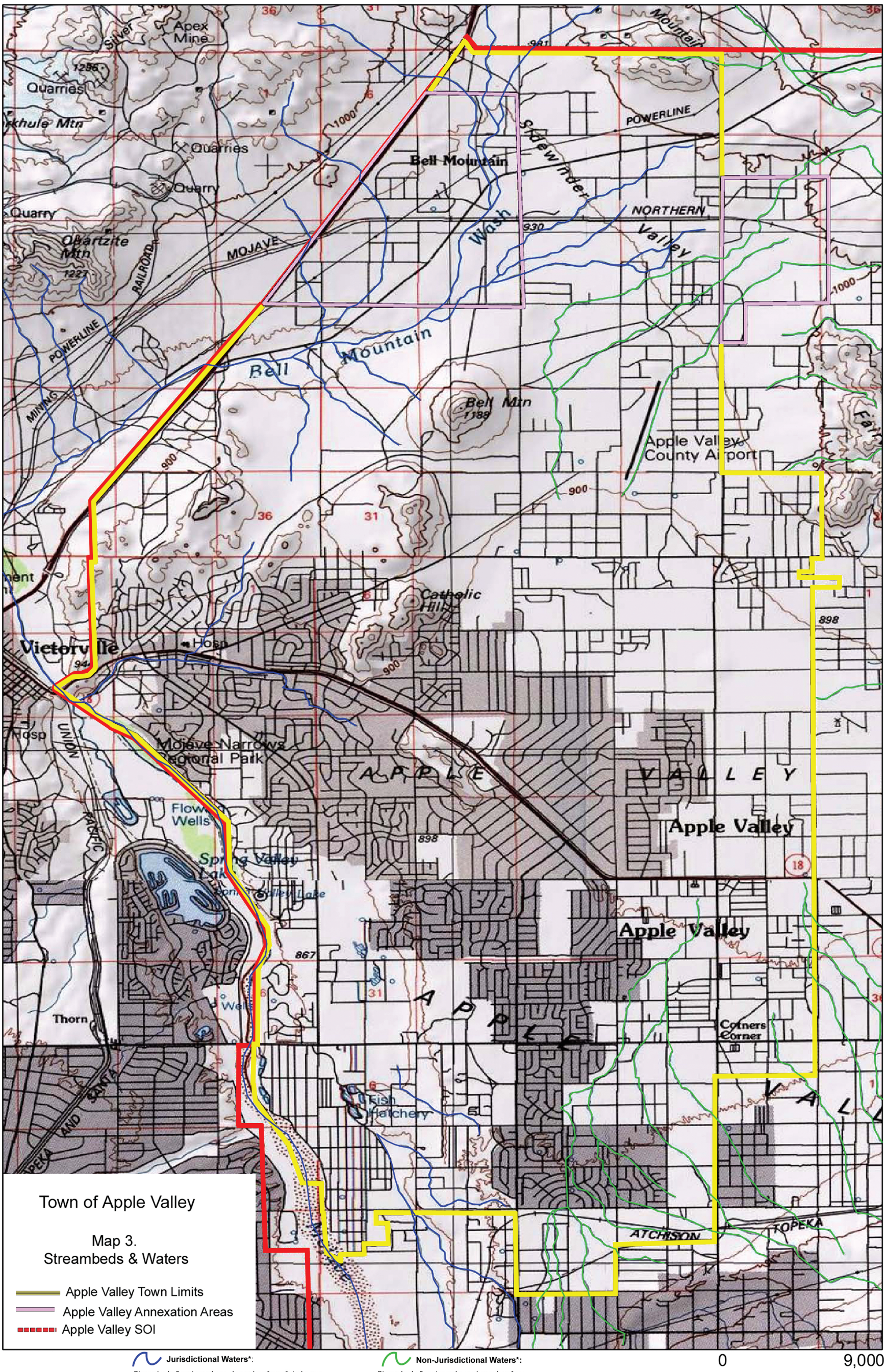
Currently this area is undeveloped and is occupied primarily by Creosote Bush Scrub habitat, which may support a number of common plant and animal species, as well as providing potential habitat for special status species. There are several ephemeral blue-line streams, which the

[17] Chapter 9.76.040, as amended., "Plant Protection and Management", Town of Apple Valley Development Code 2000.

biological resources study identified as jurisdictional, that intersect this annexation area in a north/south direction. These streams originate in the hills to the north and terminate at the Mojave River.

Annexation 2008-002

Currently Annexation 2008-002 is generally undeveloped, with the exception of a mining operation. The area contains creosote bush scrub habitat and is crossed by two ephemeral, non-jurisdictional waterways that trend in a northeast/southwest direction. These streams originate in the hills to the northeast and terminate at Reeves Dry Lake to the south.



Town of Apple Valley

Map 3.
Streambeds & Waters

- Apple Valley Town Limits
- Apple Valley Annexation Areas
- Apple Valley SOI

Jurisdictional Waters*:

Streambeds & waters where planned surface disturbance may be subject to permitting considerations associated with Waters of the United States & Section 404 of the Clean Water Act, administered by the U.S. Army Corps of Engineers; as well as those addressed by Section 401 of the Clean Water Act, administered by the Lahonton Regional Water Quality Control Board.

Non-Jurisdictional Waters*:

Streambeds & waters where planned surface disturbance may be subject to a non-Section 404/401 Clean Water Act General Waste Discharge Requirement Permit, issued by the Lahonton Regional Water Quality Control Board.

*Planned surface disturbance in these identified streambeds and waters may also be subject to permitting considerations associated with the Lake and Streambed Alteration Program administered by the California Department of Fish and Game; as well as those addressed by the Stormwater Construction Program administered by the Lahonton Regional Water Quality Control Board.

S:\active projects\Apple Valley General Plan 322520041\graphics\landuse

Source: AMEC 11.2007

TERRA NOVA®
Planning & Research, Inc.

Apple Valley General Plan Draft EIR
Streams, Washes and Waterways
Apple Valley, California

Exhibit
III-3

2. Impacts

This discussion focuses on biological resources that have the potential to be impacted by development of the General Plan. It is assumed that individual land development actions will require site-specific evaluations identifying potential impacts to biological resources.

There are a variety of land uses in the planning area, including highly developed urbanized areas within the Town, where habitat value has been significantly degraded. Within parts of the Town and the proposed annexation areas, there are areas of undeveloped lands with habitat supporting a range of common and special-status plant and animal species. In particular, development that occurs on vacant or undisturbed lands has the potential to result in direct and indirect impacts to biological resources that could be significant if not adequately mitigated. Implementation of mitigation measures set forth below will reduce impacts to biological resources to less than significant levels.

The most severe impacts to biological resources are those that result from habitat loss, fragmentation, and degradation. Impacts to wildlife species are particularly associated with loss of important breeding and/or foraging habitat, native plant communities, and riparian habitat as urban development encroaches into open space areas. The introduction of non-native species can disturb and overrun natural communities. As urban development grows it is often accompanied by increased use by off-highway vehicles and pedestrians, exposure of wildlife to domestic pets, and illegal trash dumping, which adversely affect biological resources. Fragmentation can contribute to instability of ecosystems and other adverse changes, such as an increase in predators, competitors and parasites. To minimize biodiversity losses associated with fragmentation, it is crucial that land use planning include provisions for an interconnected network with established wildlife corridors and linkages.

Potential Impacts to Plant Communities

Disturbances from grading and development of lands within the General Plan area have the potential to result in direct adverse impacts to the soil column, which can eliminate soil nutrients and restrict plant growth. Although temporary disturbances can result in regeneration and new growth, permanent disturbances can lead to the destruction of entire populations of common and sensitive plant species. The Desert Cymopterus and the Southern Skullcap are two special status plant species thought to occur within Town limits and are considered to be rare and endangered throughout their range (CNPS List 1B). Booth's Evening Primrose is thought to occur along the western edge of the Town and although it is considered to be rare, threatened or endangered in California, it is more common elsewhere (CNPS List 2). The Town of Apple Valley also protects and manages Joshua Trees, as set forth in the Town's Development Code.

Development of the General Plan also has the potential to indirectly impact plant species that occur within Town limits. Introduction of non-native plant species associated with landscaping could result in native plant species competing for water, nutrients and space. Habitat fragmentation from roads and fences can reduce the extent to which seeds disperse, thereby isolating plant communities.

Although build out of the General Plan has the potential to adversely impact special status plant species, implementation of mitigation measures set forth below, including but not limited to the requirement of site-specific surveys, species specific survey protocols, and land development fees, are expected to reduce impacts to biological resources to less than significant levels.

Potential Impacts to Invertebrates, Reptiles and Amphibians

Along the west edge of the Town, in association with the Mojave River and Upper Narrows, two special status invertebrates, one federally listed amphibian, and three special status reptiles are thought to occur or were historically recorded.

Special status and federal or state listed species that rely on the Mojave River habitat are protected in the General Plan, since the Mojave River corridor will be preserved as Open Space. Special status invertebrates thought to occur along the Mojave River include the San Emigdio Butterfly and the Victorville Shoulderband. Although not recently reported, one federally listed amphibian, the California Red-legged Frog, was historically reported along the Mojave River. There are two special status reptiles reported along the Mojave River, the Common Chuckwalla and the Western Pond Turtle. As shown in the land use plan, the Mojave River corridor will be preserved and maintained as open space, and will continue to provide valuable habitat for special status species and common species alike.

In addition to the important habitat associated with the Mojave River, the Town contains Creosote Bush Scrub habitat that may support the Desert Tortoise. This species has state and federal status as threatened, and therefore requires specific consideration. Although build out of the General Plan will impact any Desert Tortoises occurring within the planning area, implementation of mitigation measures including site-specific surveys and species relocation will reduce impacts to Desert Tortoises to less than significant levels.

Special status invertebrates, amphibians and reptiles are potentially affected by increased urbanization. Many of these species are most likely to occur in non-urbanized portions of the Town, including along the Mojave River, and within undisturbed Creosote Bush Scrub habitats. Urban development has the potential to destroy or fragment these habitats; impacts also include the depletion of surface water resources as urban water uses increase in the planning area. Individual species and entire populations will be impacted by permanent loss of this habitat. Off-highway vehicle traffic and grading and construction activities place reptiles and amphibians at particular risk. Adherence to mitigation measures will reduce impacts to these resources to less than significant levels.

Potential Impacts to Birds

Development in the Town of Apple Valley will result in habitat degradation and the direct loss of foraging and nesting sites for a variety of common and special-status bird species. Indirect impacts to special status bird species include increased exposure to and hunting by domestic pets, decreased availability of nesting sites, ingestion of pesticides, and the introduction of

parasites. It is thought that some bird species are disrupted by off-road vehicle activity, especially during the breeding season. Bird species that are capable of tolerating human disturbance will continue to inhabit developed areas.

As listed in Table III-29, there are several special status bird species that nest or forage within the Town, especially in association with the riparian habitat along the Mojave River. Preservation of the habitat along the Mojave River will protect those special status and listed species that rely on riparian habitat such as the Southwestern Willow and Vermillion Flycatchers, Western Yellow-billed Cuckoo, Swainson's Hawk, Long-eared Owl, and Least Bell's Vireo, as well as others.

The Prairie falcon is a species of special concern that is known to occur within town limits. This species tends to occupy cliffs and hilly or mountainous terrain, and may be particularly vulnerable to development that occurs within or adjacent to such terrain. The Town of Apple Valley has preserved steep slopes as open space, which should help to protect this species' nesting habitat.

Special status bird species that rely on creosote scrub habitat such as Le Conte's and Bendire's Thrashers and Burrowing Owls also have the potential to be adversely impacted by development of the General Plan and annexation areas. Undisturbed Creosote Bush Scrub habitat is largely located within the Sphere of Influence, outside of Town limits. Future development in the annexation areas will be required to specifically address special status bird species by conducting presence/absence surveys prior to development, in addition to other mitigation measures set forth below.

Potential Impacts to Mammals

The General Plan area is situated in the western portion of the Mojave Desert, north of the San Bernardino Mountains, providing a range of habitat types and supporting a variety of wildlife. Urbanization of the General Plan and annexations areas has the potential to adversely impact common and sensitive animal species. The Mojave River channel is thought to be one of the few possibilities for a connection between these mountain ranges to the south and the desert environment.

The Mojave River Vole is a species of special concern and has been reported along the Mojave River. As previously mentioned, the Mojave River corridor will be preserved as open space, thereby protecting this important habitat for the Mojave River Vole.

As listed by the State of California, the Mojave Ground Squirrel is a threatened species that prefers Creosote Bush and Saltbush Scrub habitat. Most of this habitat type within the Town has been highly disturbed and fragmented and is not thought to support this species presently.

The Hoary Bat and the Pale Big-eared Bat have been reported in the general vicinity of the planning area and have the potential to be impacted by development facilitated by the General Plan and annexation areas. In the Town of Apple Valley, bats may roost in abandoned buildings,

bridges over major drainages, and old mines in the northern portion of the planning area (See Exhibits III-16 and III-17, Mineral Resources/Mines and Prospects North and South), which should be surveyed prior to disturbance.

The Pallid San Diego Pocket Mouse has a low potential to occur within the Town since only a small area of its preferred habitat type, sandy washes, remains intact in association with the Mojave River corridor. More intact habitat that may support this species is found south of the planning area at the base of the San Bernardino Mountains.

Development of the General Plan will remove habitat and increase fragmentation, which will adversely impact mammal species occurring within the Town. However, the implementation of mitigation measures and adherence to the Habitat Conservation Plans currently being developed for the area will ensure that impacts to biological resources are limited to less than significant levels.

Annexation 2008-001 and 2008-002

As with other undeveloped portions of the Town, build out of the annexation areas has the potential to impact biological resources, including common and possibly special status species, in the annexation areas through direct disturbance from development, habitat loss, and fragmentation. In order to assure that impacts to special status species are mitigated, site specific evaluations of biological resources shall be required prior to site disturbance for any project occurring within the proposed annexation areas which has the potential to contain special status species.

Future development in the annexation areas may result in activities within and adjacent to ephemeral streams. Such activities may be subject to state and federal regulatory permitting requirements, to be determined at the time development proposals are reviewed by the Town.

3. Mitigation Measures

To ensure that impacts to biological resources are reduced to less than significant levels, the following mitigation measures shall be implemented.

1. (a) The Town shall aid the County of San Bernardino and other participating federal, state, and local agencies in the preparation of a private lands counterpart to the West Mojave Habitat Conservation Plan.
   (b) The Town shall participate in the provision of biological resources data and/or surveys relevant to open space areas within its jurisdiction and sphere of influence that may have biological resources value, and shall participate in the preparation of a Habitat Conservation Plan that addresses the needs of the Town with regard to regional biological resources.
   (c) If a Habitat Conservation Plan is formulated by the participating federal, state, and local agencies that allows for the conservation of biological resources, the Town shall implement it.

2. The Town shall complete the preparation of the Apple Valley MSHCP, in conjunction with the California Department of Fish & Game ("CDFG") and the U.S. Fish and Wildlife Service ("USFWS"). Upon the completion of the MSHCP to the satisfaction of all three parties, the Town shall proceed to implement it according to its terms and the authorization for take of special status species granted by CDFG and USFWS.

3. (a) The Town shall require that biological resources evaluations be performed prior to development actions, including site-specific surveys utilizing specified survey parameters as required for all special status species in identified habitat areas, and especially within or adjacent to linkage corridors or special survey areas and potential jurisdictional areas.
   (b) As required by CEQA, if biological resources are present that would be significantly impacted by a project, mitigation shall be imposed on the project to reduce the impact to a level of less than significant, to the extent feasible.
   (c) At the General Plan-level, it is not practical to formulate or list the entire range of specific mitigation measures that can be required for individual projects. Therefore, this identification can only be done at the project-level, based on the Town's judgment of the individual circumstances of the project before it as a lead agency under CEQA. However, it can be generally stated that the Town shall require mitigation pursuant to species- or resource-specific protocols established by CDFG, USFWS, and/or the U.S. Army Corps of Engineers. The Town can also require, as appropriate, transplantation or seed collection programs, trapping and removal of wildlife, preservation of offsite habitat, recreation of habitat, or participation in a mitigation bank.

4. The Town shall ensure that land actions require site-specific nest surveys for the presence of migratory birds in accordance with established protocols and requirements of the Migratory Bird Treaty Act, prior to site disturbance. If protected migratory birds and/or raptors are found to be nesting onsite, construction activities will not be allowed within a radius of the nest determined by a qualified biologist, until the young have fledged and left the nest.

5. Biological surveys for Burrowing Owls and Prairie Falcons shall be performed for any site proposed for development wherever sufficient open space and suitable habitat is present. Coordination with California Department of Fish and Game is required when survey results are positive.

6. Biological surveys for bats shall be performed prior to disturbance on projects involving reconstruction of bridges, demolition of abandoned buildings, and/or have the potential to contain old mines, in order to determine if significant roosts are present. If roosts are present, projects shall comply with applicable protocols of the Department of Fish and Game or US Wildlife Service, and the recommendations of qualified biologists.

7. The Town shall utilize land use designations that provide for Open Space in order to protect viable habitat within the Town. On lands not already designated as Open Space where viable habitat occurs, such lands shall be considered for an open space land use

designation as appropriate. Open Space lands shall be managed as warranted for the preservation and protection of their biological and natural resources.

8. The Town shall retain the Open Space designation along the Mojave River to ensure that important riparian habitat and linkages are conserved.

9. To conserve the natural state of existing hillsides and slopes, land greater than 15% slope shall not be built upon and shall be used as open space.

10. Open space land shall be protected in perpetuity.

11. Development proposals adjacent to open space lands shall provide buffers and linkages to maintain natural resource values.

12. Groundwater shall be conserved to reduce overdraft and retain or increase the depth of the water table along the Mojave River, which will help to preserve and restore plant communities within and adjacent to the waterway.

13. Development projects proposing to alter or impact major drainages (blueline streams) including ephemeral streams, shall consult with the appropriate state and/or federal regulatory agency. Such alteration may require permits from the U.S. Army Corps of Engineers, Lahonton Regional Water Quality Control Board, and/or the California Department of Fish and Game. Compliance with such permits will ensure that impacts to riparian habitat are mitigated by either restoration or replacement, and that impacts to water quality are avoided by compliance with Section 401 of the Clean Water Act requirements.

14. The Town shall promote the use of native vegetation for landscaping to enhance and create viable habitat for local species. The Town shall periodically update a comprehensive list of plant materials that are complementary with the local environment. This list shall include native and non-native, drought tolerant trees, shrubs and groundcover. The Town shall also maintain a list of prohibited plant materials. Both lists shall be made available to developers and residents. The use of native vegetation in project submissions shall be given preference over water-intensive landscaping during project design review.

15. The Town shall require developers to recover, preserve, or utilize native vegetation within their project or shall require that viable vegetation is transplanted to other appropriate sites in conformance with its Native Plant Ordinance. The Town shall make information on salvaging and transplanting native species available to developers.

16. The Town shall provide and maintain a comprehensive interconnected recreational trail system suitable for bicycles, equestrians and/or pedestrians. This will encourage the reduction of vehicle miles traveled and also provide corridors for animal migration between habitat areas. The Town shall encourage multiple use corridors through the

drainage channels and utility easements, thereby encouraging the connectivity of natural communities.

17. The Town shall continue to 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 bio resources.

Mitigation Monitoring/Reporting Program

A. Potential impacts to biological resources from development projects shall be evaluated and assessed on a project-by-project basis, through the Initial Study review process. Impacts shall be clearly documented and mitigation measures recommended as necessary.
Responsible Parties: Planning Division, Developer, Consulting Biologist.

B. Prior to the issuance of building permits, the Town shall assure that all required biological resource mitigation actions, including but not limited to pre-construction surveys, off-site mitigation and/or the payment of appropriate impact fees, have been satisfied.
Responsible Parties: Planning Division, Building Division, Developer, Consulting Biologist.

C. Town staff shall, on an annual basis, review biological resources reference materials and update records and inventories to ensure that resource databases are maintained on an ongoing basis.
Responsible Parties: Planning Division, Consulting Biologist.

D. Prior to issuance of grading permits, the Town shall assure that project developers have obtained all required state and federal regulatory permits related to biological resources, including impacts to stream beds and banks, have been obtained.
Responsible Parties: Planning Division, Developer, California Department of Fish and Game, U.S. Army Corps of Engineers.

E. he Town shall require that on-site inspections be conducted during development activities, including but not limited to grading and construction, in order to assure conformance with grading limits, and the preservation and integration of native and other appropriate landscape materials in accordance with approved landscape plans.
Responsible Parties: Planning Division, Developer, Consulting Biologist.

E. Cultural Resources

Introduction

Cultural resources are an integral part of a community and provide a meaningful sense of history and heritage. In the Town and Sphere of Influence, cultural resources include Native American sites and historical elements from the Town's early settlement and development.

A Cultural Resources Technical Report has been prepared in conjunction with the development of the General Plan and consideration of the two annexation areas[18]. The study included a records search, a historical background review of the planning area, and a reconnaissance-level field inspection. It is included in Appendix C of this document.

The Cultural Resources section of the EIR describes the existing condition of cultural resources within the planning area, analyzes the potential impacts of the General Plan on these resources and sets forth mitigation measures to reduce the impacts. Cultural resources include three types of resource: prehistoric or archaeological resources; historic resources; and paleontological resources.

Thresholds of Significance/Criteria For Determining Significance
The California Environmental Quality Act (CEQA) is prescriptive in how the Town of Apple Valley must address issues relating to cultural resources. The CEQA guidelines state that the term 'historical resources' applies to any such resources listed in or determined to be eligible for listing in the California Register of Historical Resources.

The following thresholds or criteria are derived from Appendix G of CEQA. The General Plan will have a significant effect on cultural resources if it:

a. Causes a substantial adverse change in the significance of a historical resource as defined in 15064.5

b. Causes a substantial adverse change in the significance of an archaeological resource pursuant to 15064.5

c. Directly or indirectly destroys a unique paleontological resource or site, or unique geologic feature.

d. Disturbs any human remains, including those interred outside of formal cemeteries.

The State of California's Public Resources Code (PRC) Section 5020.1 defines 'historical resources' as including but not limited to 'any object, building, structure, site, area, place record or manuscript' which is determined to be historically or archaeologically significant. Historical resources may also include those that are determined to be significant 'in the architectural,

[18] Cultural Resources Technical Report for the Town of Apple Valley General Plan Update, prepared by CRM Tech, September 21, 2007.

engineering, scientific, economic, agricultural, educational, social, political, military or cultural annals of California'. Similarly, the CEQA Guidelines state that the term 'historical resources' applies to any such resources listed in or determined to be eligible for listing in the California Register of Historical Resources. The relevant criteria for determining significance are briefly described below.

The California Environmental Quality Act (CEQA) Guidelines mandate that, in order for a resource to be considered historically significant, it must meet the criteria for listing on the California Register of Historical Resources (Title 14, California Code of Regulations (CCR) Section 15064.5(a)(1)-(3)[19]. Inclusion in the Register may occur if the resource meets any of the following criteria:

a. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.

b. Is associated with the lives of persons important in our past.

c. Embodies the distinctive characteristics of a type, period, region, method of construction, or represents the work of an important creative individual, or possesses high aesthetic value.

d. Has yielded, or may be likely to yield, information important in pre-history or history.

Criteria for the consideration of cultural resources of potential significance, and their appropriate disposition, are established in Section 15126.4(b)(3) of the CEQA Guidelines.[20]

Senate Bill 18 and Native American Consultation

The purpose of SB18 is to protect traditional tribal cultural places and in accordance with the Bill, the Town of Apple Valley is required to offer consultation with Californian Native American Tribes regarding proposed land use planning decisions involving General Plan adoption or amendment.

Based on a listing of Native American Tribes provided by the Native American Heritage Commission (NAHC), the Town of Apple Valley offered consultation to regionally active Tribes. No responses were received. The 90-day consultation period has ended, and no consultation was requested.

[19] Guidelines for Implementation of the California Environmental Quality Act, California Code of Regulations, Title 14, Division 6, Chapter 3. Section 15064.5(a)(1)-(3)

[20] California Environmental Quality Act – Statutes and Guidelines, prepared by the Governor's Office of Planning and Research, State of California, 1998.

1. Existing Conditions

Archaeological Resources in the Planning Area

Records on file show that most of the planning area has not been surveyed systematically for cultural resources. The older neighborhoods near the center of Town were developed long before federal and state regulations began to require such surveys as a part of the planning process. The natural landscape within Apple Valley has been displaced by these residential neighborhoods and commercial development, erasing surface evidence of prehistoric archaeological sites as well as early historic-period settlements at those localities. In comparison, the areas where new development occurred in recent decades have received much more survey coverage, especially along the Mojave River.

According to archaeological records, a total of 48 historical/archaeological sites have been identified within the planning area and recorded into the California Historical Resource Information System. These include 16 prehistoric (Native American) archaeological sites and 32 historic-period sites. Seven 'pending' sites, all prehistoric in nature, have also been reported. In addition, a total of 28 isolates (localities with fewer than three artifacts) have been discovered in the planning area.

At least six of the recorded prehistoric sites and five of the 'pending' prehistoric sites were identified as large Native American habitation areas/villages along or in close proximity to the banks of the Mojave River. Archaeological evidence for these sites included the presence of rock shelters, bedrock milling features, pictographs and/or petroglyphs on surfaces of boulders, human cremations and associated grave goods, aboriginal trails, and midden. Such clustering of large and extensive Native American living areas is indicative of a reliance on the Mojave River and its tributaries for the necessities of daily life.

Records on file indicate that approximately one-third of the total acreage within the Town and associated Sphere of Influence has been systematically and intensively surveyed for cultural resources. Many prehistoric and historic sites that remain unsurveyed may therefore be at risk through being unidentified and unrecorded.

During preparation of the Cultural Resources Technical Report for the Town of Apple Valley General Plan Update, the NAHC confirmed that according to a search of the Sacred Lands File, no sites are recorded within the Planning Area. However, the Commission suggested that local Native American organizations be contacted and CRM Tech initiated correspondence with nine representatives identified by the NAHC, as well as with two additional representatives of the Cahuilla. At the time of writing the Technical Report, only one response from the Morongo Band of Mission Indians had been received. The Cultural Resources Coordinator for the tribe advised that the tribe is aware of several cultural resource sites to the south and southeast of the planning area, and made recommendations regarding project review and protection of resources as development occurs.

Areas of sensitivity for archaeological resources are shown in Exhibit III-4.

Historic Resources in the Planning Area

Historic maps from the mid-1850s identified the only evidence of human activities in the vicinity of the Planning Area was the historic Mormon Trail, identified in the maps as "Road to Salt Lake City". At the nearest spot, the trail traversed in a north-south direction approximately 3.5 miles west of the north portion of the Planning Area. No man-made features of any kind were observed within or adjacent to the Town and Sphere of Influence at that time.

Based on the results of the historical background research, settlement and development of Apple Valley during the historic period occurred in three phases: the 1860s to the 1880s; the 1890s to the mid 1940s; and 1946 to present day.

Early Settlement in Apple Valley (1860s-1880s)
The first of these phases was the early settlement period, lasting from the 1860s to the 1880s. The best-known example of properties dating to this period was the Brown Ranch, later known as Rancho Verde, which once exceeded 3,000 acres and extended from present-day Apple Valley and Bear Valley Roads to the Upper Mojave Narrows.

The present-day Apple Valley area was first settled on a semi-permanent basis in 1860 by cattle herder Silas Cox, and the earliest permanent settlements to appear in and near Apple Valley were the Brown ranch, Atkinson's homestead, and McKenney and Taylor's supply station, all established around 1870. Other settlers undoubtedly also ventured into the area during the great southern California land boom of the 1880s. Unfortunately, due to later redevelopment, little physical remains of these early settlement activities can be found today.

Agrarian Development (1890s-1940s)
The second phase in the settlement and development of Apple Valley, set off by the Appleton Land and Water Company's activities in the 1890s, lasted into the 1940s. It was characterized by the gradually growing number of large ranches, including apple plantations, cattle ranches and, later, guest ranches. Among the ranches that predated the rise of the dude ranch industry were those owned and operated by Ursula Poates, who is credited with naming the town. None of these early ranches survived to the present time, but remains associated with their heyday may still be found in the less developed portions of the planning area.

Towards the end of this period, and partially due to the impacts of the Great Depression, a unique variation developed in the otherwise common agrarian theme in the area's growth, when many of the ranch owners began to take advantage of their isolated desert setting and marketed it to city-dwellers seeking health, relaxation, and recreation.

Birth and Growth of the Town (1940s-Present)
The third identifiable phase in the settlement and development of Apple Valley, starting in 1946, featured primarily the town-building efforts of Newton Bass, Bud Westlund, and the Apple Valley Building and Development Company. Several commercial and residential projects were overseen by Bass and Westlund, such as the construction of the Branding Iron, the Bank of Apple Valley, the Apple Valley Inn, and the Hilltop House, used for entertaining potential

buyers. Bass and Westlund stipulated that all development in the community should 'complement the natural beauty of the valley and of building of permanence'. Based on this idea, all new projects were reviewed by an Architectural Board as a means to prevent new construction from degrading or decreasing the value of older buildings. The majority of the buildings constructed during this period were typical for the early post-WWII era, featuring primarily the "rambling" California Ranch-style architecture.

A number of public facilities in the new community were built on land donated by Bass and Westlund, such as the James A. Woody Community Center, the Yucca Loma Elementary School, and St. Mary's Academy. Additional development during this time period included the El Pueblo Shopping Center, the Black Horse Motel, the Terri Lee Doll Company, and the Buffalo Trading Post. True to Bass and Westlund's original plan for Apple Valley Ranchos, the growth of the town has been largely driven by residential and commercial development. And finally, in 1988 the Town of Apple Valley was incorporated.

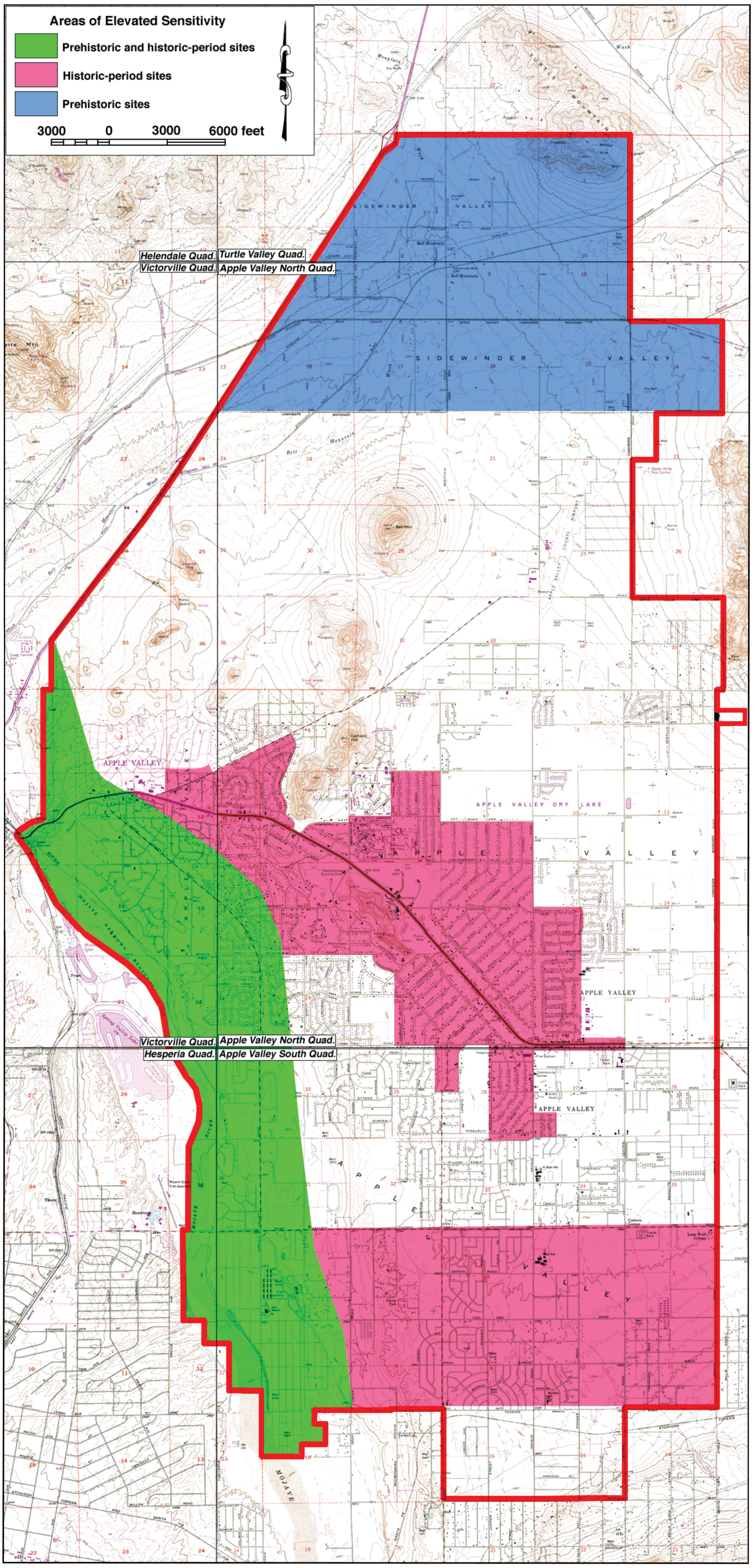
Areas of sensitivity for historic resources are shown in Exhibit III-4.

Paleontological Resources in the Planning Area

Paleontological sensitivity is based on the potential of geological formations to produce fossils based on what fossil resources have been produced in the past at other nearby locations of similar geologic composition. Any surface or subsurface Pleistocene-age (1,808,000 to 11,550 years ago) soils that are present in the planning area may have a high potential to contain significant nonrenewable paleontological resources (also see Geology and Soils, Section III-F). The older sediments along the Mojave River, and at unknown depth below the surface are given a higher priority. The more elevated portions of the Planning Area contain substantial exposure of Mesozoic-age (65,000,000 to 245,000,000 years ago) rocks that may be devoid of fossils. Similarly, grading of shallow excavations in the younger Quaternary alluvium exposed throughout most of the planning area is unlikely to uncover significant fossil remains.

Research indicates that most of the surface deposits in the planning area have a low potential for containing significant fossil remains due to their young age. Although these surface deposits can be just a veneer cover that in some areas rests directly on top of older sediments, based on local research, no reports of any fossil have been made in the planning area. However, reports nearby have identified localities with fossil resources in similar age soil deposits as those that occur in the planning area. In summary, the likelihood of encountering paleontological resources during future development projects within the boundaries of the planning area ranges from low to high, depending on the location and sediments encountered.

Areas of sensitivity for paleontological resources are shown in Exhibit III-5

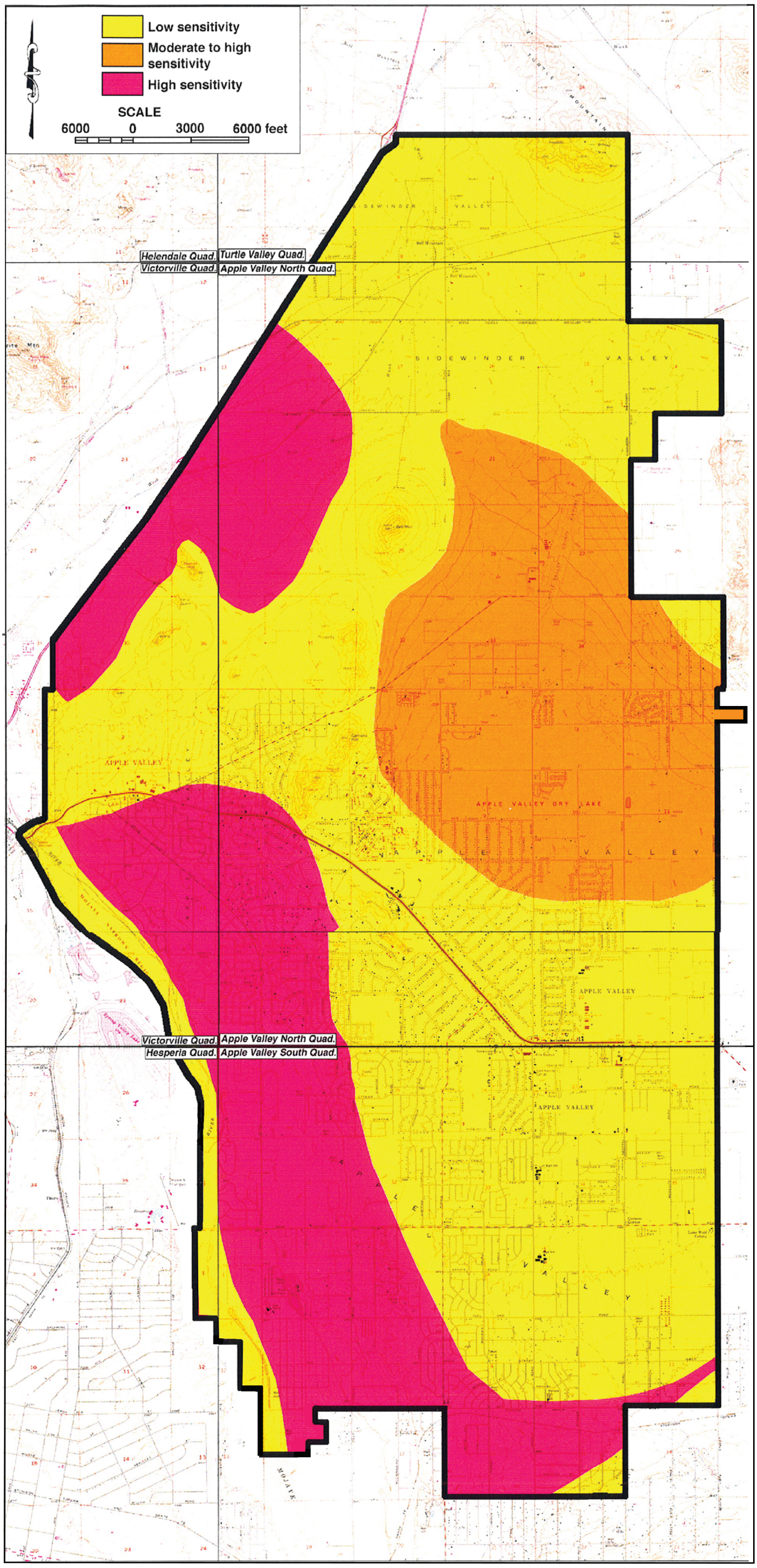


Source: CRM Tech 9/21/07

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Apple Valley General Plan Draft EIR
Cultural Resources Sensitivity Map
Apple Valley, California

Exhibit
III-4



Source: CRM Tech 9/21/07

TERRA NOVA®
Planning & Research, Inc.

Apple Valley General Plan Draft EIR
Areas of Sensitivity for Paleo Resources
Apple Valley, California

Exhibit
III-5

2. Project Impacts

Impacts on Cultural Resources

Based on the findings of the Cultural Resources Survey, the areas within one mile of the Mojave River appear to be highly sensitive for both prehistoric and historic-period cultural resources, including potential subsurface archaeological deposits. In addition, the northernmost portion of the Town and adjacent Sphere of Influence is also sensitive for prehistoric archaeological remains. Sensitive historic period sites exist across the southern parts of the planning area and are also concentrated within a corridor along Highway 18.

It is likely that additional sites and structures may be discovered in areas of cultural resource sensitivity during future development of the General Plan and annexation areas. Future development projects could potentially result in direct and/or indirect disturbance or destruction of sensitive archaeological and historic resources. Impacts may include grading activities, site excavation, construction, and increased foot and vehicular traffic. Site surveys should be conducted on all future developments on previously undeveloped land in areas identified as potentially sensitive for historic and prehistoric resources in Exhibit III-5, to determine the presence and significance of archaeological and historic resources, and to set forth appropriate mitigation measures to off-set potential negative impacts resulting from build out of the General Plan and annexation areas.

Impacts on Paleontological Resources

Future development in the Planning area could also impact paleontological resources, should Pleistocene-age soils be disturbed by grading or excavation activities resulting from build out of the General Plan. Since the depth of Holocene-age soils in the planning area is not known, Pleistocene-age soils may be sufficiently close to the surface to be disturbed by grading activities. Monitoring of grading activities by a suitably qualified expert should occur in areas where there is potential for disturbance to Pleistocene-age soils, in areas identified as potentially sensitive for paleontologic resources in Exhibit III-5 to determine the presence and significance of such resources.

Annexation 2008-001 and 2008-002

As described earlier in this section, human occupation of the Victorville-Apple Valley region has continued for thousands of years, and although the Town of Apple Valley is a relatively ‘new’ community, there is evidence that both prehistoric and historic resources exist within the western, northern and southern portions of the Town and Sphere of Influence. The majority of the 48 cultural resource sites presently recorded within the Planning Area are from the historic period and are reflective of the Apple Valley area’s past as a nexus of transportation arteries, its gradual transformation from a ‘frontier’ settlement to a rural retreat, and finally its development into a post-WWII boomtown.

The Annexation 2008-001 and the bulk of Annexation 2008-002 are located in an area previously identified as highly sensitive for archaeological resources. Build out of these areas could result in the disturbance and/or destruction of archaeological resources. Development activities, including grading, excavation, paving and building construction, as well as increased foot and vehicular traffic could damage or destroy sensitive artefacts.

Given that additional sites and resources may be discovered during future development, site surveys should be required as part of the initial project review process on all future development projects in sensitive areas. The mitigation measures described below are applicable to all lands within the planning area and both annexation areas.

3. Mitigation Measures

The following mitigation measures shall be implemented to reduce potential impacts to cultural and paleontological resources.

1. Cultural resource studies shall be required prior to development for all lands identified as having high potential for historic or archaeological resources, as identified in Exhibit III-4. The studies shall be reviewed and approved by the Town Planning Division prior to the issuance of any ground disturbing permit. The recommendations of the studies shall be made conditions of approval of the ground disturbing permits.

2. Paleontological resource studies shall be required prior to development for all lands identified as having high potential for paleontological resources, as identified in Exhibit III-5. The studies shall be reviewed and approved by the Town Planning Division prior to the issuance of any ground disturbing permit. The recommendations of the studies shall be made conditions of approval of the ground disturbing permits.

3. The Town shall establish and maintain a confidential inventory of archaeological and historical resources within the Planning area, including those identified in focused cultural resources studies.

4. The Town shall protect sensitive archaeological and historic resources from vandalism and illegal collection, to the greatest extent possible.

Mitigation Monitoring/Reporting Program

A. Site specific historic, pre-historic and paleontological surveys shall be prepared for new development projects in sensitive areas, and their results compiled in an inventory available only to qualified professionals.
Responsible Party: Planning Division; Developer; Consulting Archaeologist/Paleontologist.

F. Geology and Soils

Introduction

This section of the EIR describes the existing geological setting in the Town of Apple Valley, the vicinity and region, and analyzes the potential constraints, risks and opportunities associated with these existing conditions. It assesses the potential impacts of the proposed General Plan and annexations relative to geotechnical issues and sets forth mitigation measures to reduce impacts to acceptable levels. A wide range of data and information, including regional-scale soils and geological resource documents, have been used in researching and analyzing the General Plan and its potential effects. This section also utilizes information provided in the Technical Background Report to the Safety Element Update for the Town of Apple Valley[21], which was prepared for the General Plan. This report is included in its entirety in Appendix D of this EIR.

Thresholds of Significance/Criteria For Determining Significance

Standards and criteria have been drawn from a variety of sources, including but not limited to resources developed by the California Division of Mines and Geology, and Appendix G: Environmental Checklist Form of the California Environmental Quality Act (CEQA) Guidelines. Build out of the General Plan and annexation areas would have a significant effect on soils and geology if it is determined that the project will:

a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
   - 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.
   - Strong seismic ground shaking.
   - Seismic-related ground failure, including liquefaction.
   - Landslides.

b. Result in substantial soil erosion or the loss of topsoil.

c. Locate the project on a geologic units 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.

d. Locate structures or other improvements on expansive soil, as defined in Section 1802.3.2 of the 2007 California Building Code (CBC), creating substantial risks to life or property.

e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste disposal systems where sewers are not available for the disposal of wastewater.

[21] "Technical Background Report to the Safety Element of the Apple Valley General Plan," prepared by Earth Consultants International, October 2007.

f. Have soils incapable of adequately supporting the use of septic tanks or alternative waste disposal systems where sewers are not available for the disposal of wastewater.

Seismic Hazard Mapping Act
The Seismic Hazards Mapping Act (SHMA) was enacted by the State of California in 1990 for the purpose of protecting the health and safety of the public from seismically induced ground failure, including groundshaking, liquefaction, and slope stability. The California Division of Mines and Geology is responsible for implementing the Act and providing local governments with maps that identify areas susceptible to such hazards.

Alquist-Priolo Earthquake Fault Zoning Act
This Act was passed in 1972 to mitigate the hazard of surface faulting by identifying zones where surface fractures have occurred. Alquist-Priolo Zones are established to identify those areas that are at risk of surface fractures and prevent construction or development on these zones. The State Geologist is responsible for establishing regulatory zones around the surface traces of active faults and issuing appropriate maps that identify Alquist-Priolo zones.

1. Existing Conditions

The physical characteristics of the Town of Apple Valley and the safety of the community are examined in the Geotechnical Element of the General Plan and are considered in the following discussion. The geologic hazards portion of the Technical Background Report prepared for the General Plan is also summarized.

Geologic Setting

California is divided into geomorphic provinces, which are regions characterized by unique physical characteristics formed by geologic, topographic, and climatic processes. The Town of Apple Valley and Sphere of Influence are located near the boundary of two geomorphic provinces, the Transverse Ranges and the Mojave Desert.

The Transverse Ranges geomorphic province contains the southernmost portion of the Sphere of Influence. The Transverse Ranges include the San Gabriel and San Bernardino Mountains to the south of the planning area.

Most of Apple Valley, including its northern Sphere of Influence, is contained within the Mojave Desert geomorphic province. The geological characteristics of the Town are primarily representative of the Mojave Desert geomorphic province, containing arid climatic conditions, alluvial fans, desert plains, dry lakebeds, and scattered mountain ranges.

The Town of Apple Valley is generally bounded by the Turtle Mountains on the north, the Fairview Mountains and Granite Mountains on the east, and the Ord Mountains on the south. The Town of Apple Valley is situated on gently sloping alluvial fans that range in elevation from approximately 3,400 feet above sea level near the base of the Fairview Mountains in the northeast to nearly 2,700 feet above sea level along the Mojave River in the west. Within Town

limits notable geologic formations include Bell Mountain (3,897 feet above sea level) and Catholic Hill (3,645 feet above sea level). Other major features of the planning area include the Mojave River, a wide floodplain that runs along and defines a portion of Apple Valley's western boundary.

The geological character of Apple Valley and the surrounding region has been formed by its proximity to large active fault systems, including the Helendale Fault, San Andreas Fault, and the North Frontal Fault. Fault activity in the region results in ground rupture, major groundshaking, subsidence, uplift and mountain building, landform compression, and extension. Alquist-Priolo Zones, further described below, identify those faults that have surface fractures, such as the Helendale Fault. Mountains are composed of rocks that have been sheared and intensely fractured under the strain of tectonic movement. Valleys are formed by multiple generations of overlapping alluvial fans from erosion of local mountains.

Soils and Geologic Units

The Town of Apple Valley has a diversity of soil types, some of which contain valuable mineral deposits. The California Department of Conservation, Division of Mines and Geology conducted several land surveys in the early 1990's to identify mineral deposits, aggregate resources, and mines and prospects. The Energy and Mineral Resources Section of this EIR provides details on those mineral resources that have been identified within the Town.

There are six types of geologic deposits (see Exhibits III-6 And III-7, Geologic Units in Apple Valley & Geologic Units Legend) that underlie the Town of Apple Valley and vicinity. These consist of:

1. Artificial or man-made fill, typically associated with infrastructure (too small to identify on map);
2. Very young or recent alluvium deposits;
3. Young deposits;
4. Older alluvial fan deposits;
5. Sedimentary rocks; and
6. Crystalline Rocks.

The following section describes the general physical and engineering characteristics, from youngest to oldest, of the six types of geologic deposits that underlie the Apple Valley planning area.

<u>Artificial Fill/Disturbed Ground</u>
These recent deposits are from man-made activities including roadways, bridges, railway embankments, levees, and graded developments. Although this type of deposit is typically associated with infrastructure, recent and active mining operations can also be identified under this category. These deposits vary widely in size, age, and composition, and although some may cover a significant portion of the planning area, most are too small to identify on Exhibit III-6.

Very Young or Recent Alluvium (Map Symbols Qw, Qf, Qc, Qe, and Qp)
Deposition of very young or recent alluvium tends to be associated with active processes of erosion caused by wind or water. Very young wash and alluvial deposits (Qw and Qf) are comprised of unconsolidated sediments that lack soil development on the surface, including sand and gravel in the Mojave River; mixed sand, gravel, and boulders in Arrastre Canyon, Desert Knolls Wash, Bell Mountain Wash; and silt, sand, and gravel in the many unnamed washes and gullies that cross the planning area's alluvial fans.

Modern colluvium (Qc) is associated with erosion and weathering processes from hillsides and steep slopes. Colluvial deposits are characteristically massive and unconsolidated; they may include organic material.

Wind deposited sediment of fine- to medium-grained sand and silt (Qe) are scattered through the Town and vicinity. These deposits are typically thin, undissected, and unconsolidated, and recent deposits tend accumulate around desert vegetation. There is a large deposit of modern colluvium located north of the Ord Mountains, as seen in Exhibit III-6.

There are two dry lakes in the planning area and vicinity. Apple Valley Dry Lake is located within the Town limits, and Reeves Dry Lake is located to the east, in Fairview Valley. Dry lake deposits or playa deposits (Qp) are comprised predominantly of very fine-grained sediments such as silt and clay, with some fine- to medium-grained sand.

Young Alluvial and Landslide Deposits (Map Symbols Qyf, Qyw, Qya and Qyls)
These deposits are young in geological terms, typically ranging in age from the Holocene (0 to 10,000 years ago) to the Pleistocene (11,000 to 1.8 million years ago) epoch. The eastern portion of the Town are predominantly comprised of Alluvial fan deposits (Qyf), generally consisting of unconsolidated to moderately consolidated silt and sand with scattered gravel over most of the valley areas. These deposits may contain cobbles and boulders, as well as more deeply incised drainage channels, within and near the surrounding mountains.

Young wash deposits (Qyw), located in the southwestern portion of the Town, include unconsolidated and slightly consolidated silt, sand, and gravel deposits, are typically of low density, have very little soil development, and form a slightly elevated terrace adjacent to the Mojave River. Along the northern portion of the Mojave River, where this geological unit represents an older river floodplain, considerable soil development has occurred. The lower elevations of this deposit type are somewhat protected by sand levees along the river, however localized areas could experience flooding in severe storm events, or as a result of catastrophic failure of one of the dams in the area.

Young alluvial valley deposits (Qya) form an elevated terrace above the Mojave River floodplain consisting of slightly to moderately consolidated silt, sand, and gravel. This geologic unit has been incised by shallow to moderately deep drainages, and forms the relatively steep bluffs north of Yucca Loma Road in the southwest portion of Town.

Southeast of Town, within the western slopes of the Granite Mountains, two landslide deposits (Qyls) have been mapped. These deposits generally consist of blocks of intact bedrock and/or rubble, with the upper part of the slide typically composed of a mix of soil and bedrock fragments.

Older Alluvial Fan and Valley Deposits (Map Symbols Qof, Qoa, Qvof and Qvoa)
Deposition of this sediment type generally occurred between 11,000 to 1 million years ago. Older alluvial deposits (Qof and Qoa) typically consist of weakly to moderately well-consolidated silt, sand, and gravel that were deposited in the late to middle Pleistocene epoch (about 11,000 to 500,000 years ago). In Apple Valley, these deposits occur as scattered remnants on the flanks of the Ord Mountains, in the Desert Knolls area, and as isolated patches in the Black Mountain area. Typically, this geologic unit exhibits moderate surface soil development, with weakly stratified sub-surface materials.

Very old alluvial deposits (Qvof and Qvoa) consist primarily of silt, gravel, and medium- to coarse-grained sand. These deposits are about 500,000 to 1 million years old (mid-to early-Pleistocene). The Qvoa geologic unit is found in the northeast portion of the Town, north of Bell Mountain Wash, and as isolated patches southwest of the Black Mountains and within the Ord Mountains. This sediment type is moderately to well consolidated. In general, older alluvium is more consolidated than young alluvium, and may provide better structural support, although clayey soils, which can be expansive qualities, may develop on the surface of the fan.

Sedimentary Rocks (Map Symbol: Tcr)
Within the Town of Apple Valley and the vicinity, sedimentary rock deposits are found in the southwestern quadrant, in a fairly contiguous north/south tending band, as seen in Exhibit III-6. Deposition of sedimentary rocks are typical of the Miocene age and are estimated to be 10 to 26 million years old. Sandstone, pebbly sandstone, and siltstone deposits are exposed in narrow bands along the base of the Ord Mountains, and along the eastern side of the Mojave River. This sediment is highly susceptible to erosion and failure of surface soils on natural slopes.

Crystalline Rocks (Map Symbols: Mzp, Mzv, Mzm, and Pzw)
Crystalline rocks are formed in the molten (igneous) state and under extreme pressure and temperature conditions deep below the earth's surface (metasedimentary). These rocks generally range from 65 to 225 million years old. Where not highly weathered, they are very hard, and tend to form steep, rugged slopes, and deep canyons. Having been subjected to millions of years of tectonic activity, they are typically quite fractured and may be sheared near fault zones, which serve as planes of weakness where slope instability can occur.

Plutonic (Mzp), volcanic (Mzv), and metasedimentary (Mzm) rocks occur in the northwest portion of the Town. Regionally, crystalline rocks are associated with the surrounding mountain ranges, as seen in Exhibit III-6. Plutonic rocks (Mzp), which solidified deep within the earth's crust, have fine to coarse grains, and tend to weather into rounded, boulder shaped outcrops. Volcanic rocks (Mzv) solidified extremely rapidly on the ground surface (for instance from a lava flow) and are very fined-grained. These rocks occur as small isolated patches on Bell Mountain and Catholic Hill, where they form blocky outcrops, and are present in the Sidewinder

and Black Mountains, northeast of the Helendale fault. Metasedimentary rocks (Mzm) are found in small patches north of the Desert Knolls area and south of Town in the western part of the Ord Mountains.

Geologic Hazards in the Apple Valley Area

Geologic hazards are processes that occur on or near the surface of the earth and have the potential to cause loss or harm to the community or the environment. Given the geophysical composition of the region, the Town of Apple Valley and the vicinity are susceptible to several geologic hazards, as described below.

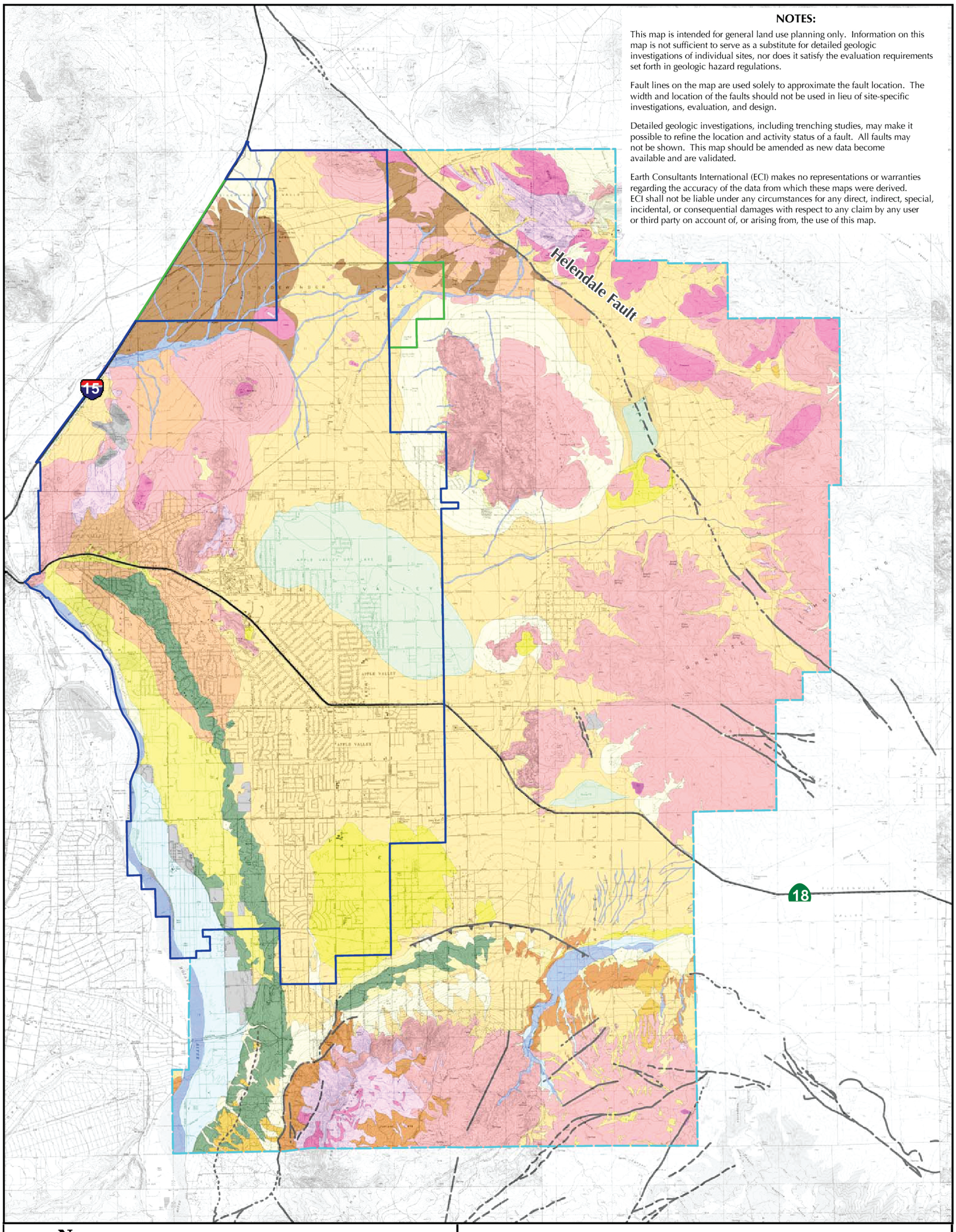
The predominant geological hazards in the area are directly or indirectly related to the San Andreas Fault Zone, which serves as the main boundary between the Pacific and North American tectonic plates, and has generated several other faults in the area.

Landslide and Slope Instability

In the Town of Apple Valley an estimated 1,792.4 acres consist of hillside terrain and mountains. Currently, the majority of hills and mountains are generally not developed, except for local mining operations. Development has occurred at the base of steep slopes, and scattered residential, commercial, and other land uses are at risk of slope failure, landslides, and rockfalls. Consequently, slope instability is a potential hazard in the Town and vicinity.

There are several factors that contribute to slope failure, including slope height and steepness, shear strength and orientation of weak layers in the geologic units underlying the slope and water pressure between soil particles. While slope failure can occur on natural slopes, man-made slopes can also fail due to poor engineering or poor construction.

The Town's natural hillsides are vulnerable to the types of slope instability mentioned above. Table III-30 is a summary of the geologic conditions in various parts of Town that are generally conducive to slope failures.



NOTES:

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, nor does it satisfy the evaluation requirements set forth in geologic hazard regulations.

Fault lines on the map are used solely to approximate the fault location. The width and location of the faults should not be used in lieu of site-specific investigations, evaluation, and design.

Detailed geologic investigations, including trenching studies, may make it possible to refine the location and activity status of a fault. All faults may not be shown. This map should be amended as new data become available and are validated.

Earth Consultants International (ECI) makes no representations or warranties regarding the accuracy of the data from which these maps were derived. ECI shall not be liable under any circumstances for any direct, indirect, special, incidental, or consequential damages with respect to any claim by any user or third party on account of, or arising from, the use of this map.

N
W E
S

9000 0 9000 18000
Feet

2000 0 2000 4000
Meters

Scale: 1:108,000

For Geologic Unit Descriptions See Exhibit III-7

Base Map: USGS Topographic Map from Sure!MAPS RASTER, 1997.
Sources: Morton and Miller, 2003; Dibblee, 1960; and CGS, 2007.

Source: Earth Consultants International, December 2008

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Apple Valley General Plan Draft EIR
Geological Units in Apple Valley Area
Apple Valley, California

Exhibit
III-6

Symbols

Fault; solid where location known, dashed where approximate, dotted where concealed. (For more information on faults refer to Exhibit III-?)

Geologic Contact

Apple Valley City Boundary

Apple Valley Sphere of Influence

Apple Valley Annexed Areas

Geologic Unit Descriptions

Very Young Deposits

Qaf Artificial Fill/ Disturbed Ground- Mainly larger fills and graded areas or mining operations. Many smaller areas, inluding both engineered and non-engineered fills, are present, but not shown.

Qw Very Young Wash Deposits- Unconsolidated sand, gravel, cobbles, and boulders in the Mojave River and active washes. Late Holocene.

Qf Very Young Alluvial Fan Deposits- Unconsolidated silt, sand, and gravel on active and recently active fans. Late Holocene.

Qc Very Young Colluvium- Unconsolidated silt, sand, and gravel in drainage swales and along the toes of natural slopes. Late Holocene.

Qe Very Young to Young Eolian Deposits- Fine-grained sand and silt. Holocene to late Pleistocene.

Qp Very Young to Young Playa/ Dry Lake Deposits- Sand, silty to sandy clay, and clayey silt. Holocene to late Pleistocene.

Young Deposits

Qyw Young Wash Deposits- Unconsolidated to slightly consolidated silt, sand, and gravel along the margins of the Mojave River and within Arrastre Canyon. Holocene to late Pleistocene.

Qyf Young Alluvial Fan Deposits- Unconsolidated to moderately consolidated silt and sand; locally with gravel. Holocene to late Pleistocene.

Qya Young Alluvial Valley Deposits- Slightly to moderately consolidated silt, sand, and gravel. Holocene to late Pleistocene.

Qyls Landslide Deposits- Young landslides consisting of displaced bedrock blocks and/ or rubble. Holocene and late Pleistocene.

Older Deposits

Qof Old Alluvial Fan Deposits- Moderately well consolidated silt, sand, and gravel. May contain boulders near the base of the mountains. Late to middle Pleistocene.

Qoa Old Alluvial Valley Deposits- Weakly consolidated silt, sand, and gravel. Pleistocene.

Qvof Very Old Alluvial Fan Deposits- Moderately to well consolidated silt, sand, and gravel. Middle to early Pleistocene.

Qvoa Very Old Alluvial Valley Deposits- Moderately consolidated sand and gravel. Early Pleistocene to late Miocene (?).

Sedimentary Rocks

Tcr Crowder Formation- Sandstone, pebbly sandstone, and siltstone. Pliocene to Miocene.

Crystalline Rocks

Mzp Plutonic Rocks- Predominately monzonite, quartz monzonite, monzogranite, and syenogranite. Mesozoic.

Mzv Volcanic Rocks- Predominately rhyolite and dacite. Mesozoic.

Mzm Metasedimentary Rocks- Marble, schist, quartzite, and gneiss. Mesozoic.

Pzw Wood Canyon Formation- Highly deformed schist and quartzite. Paleozoic.

Source: Earth Consultants International, December 2008

Table III-30
General Slope Instability Potential within Apple Valley

Location	Existing Geologic Conditions	Types of Potential Slope Instability
Mountain Areas	Moderate to very steep natural slopes, many in excess of 26 degrees. Fractured, sheared, faulted, and locally crushed bedrock; soils and loose debris at the toes of slopes and in drainage courses. Locally, small to large boulders perched on slopes.	***Most Common****:* 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. ***Less Common***: Large, deep-seated landslides.
Mojave River Area	Moderately steep bluffs underlain by geologically weak materials consisting of unconsolidated granular sediments, primarily sand and gravel; with undefined to crudely defined bedding; raveling slopes; erosion gullies in channel banks, loose soil and debris at the toes of slopes and in channels. Possible undercutting by flood waters at the base.	***Most Common***: Surficial soil slips; erosion and slumping of oversteepened bluffs; small to moderate debris/mudflows; sedimentation at the base. ***Less Common:*** Large, deep-seated landslides; large debris flows.

Source: Table 2-2, Technical Background Report to the Safety Element Update, Town of Apple Valley, California, prepared by Earth Consultants International, October 2007.

Although the bedrock underlying the mountains and hills of Apple Valley is generally not prone to landslides, areas of high topographic relief, such as steep canyon walls, have the potential to be impacted by rockfalls and rockslides, typically as a result of strong seismic shaking. In addition, seismic events can cause soil slips and mudflows during or after periods of intense rainfall. Exhibit III-8, Slope Distribution, illustrates the variable slope gradients within the Town of Apple Valley and Sphere of Influence.

Compressible Soils

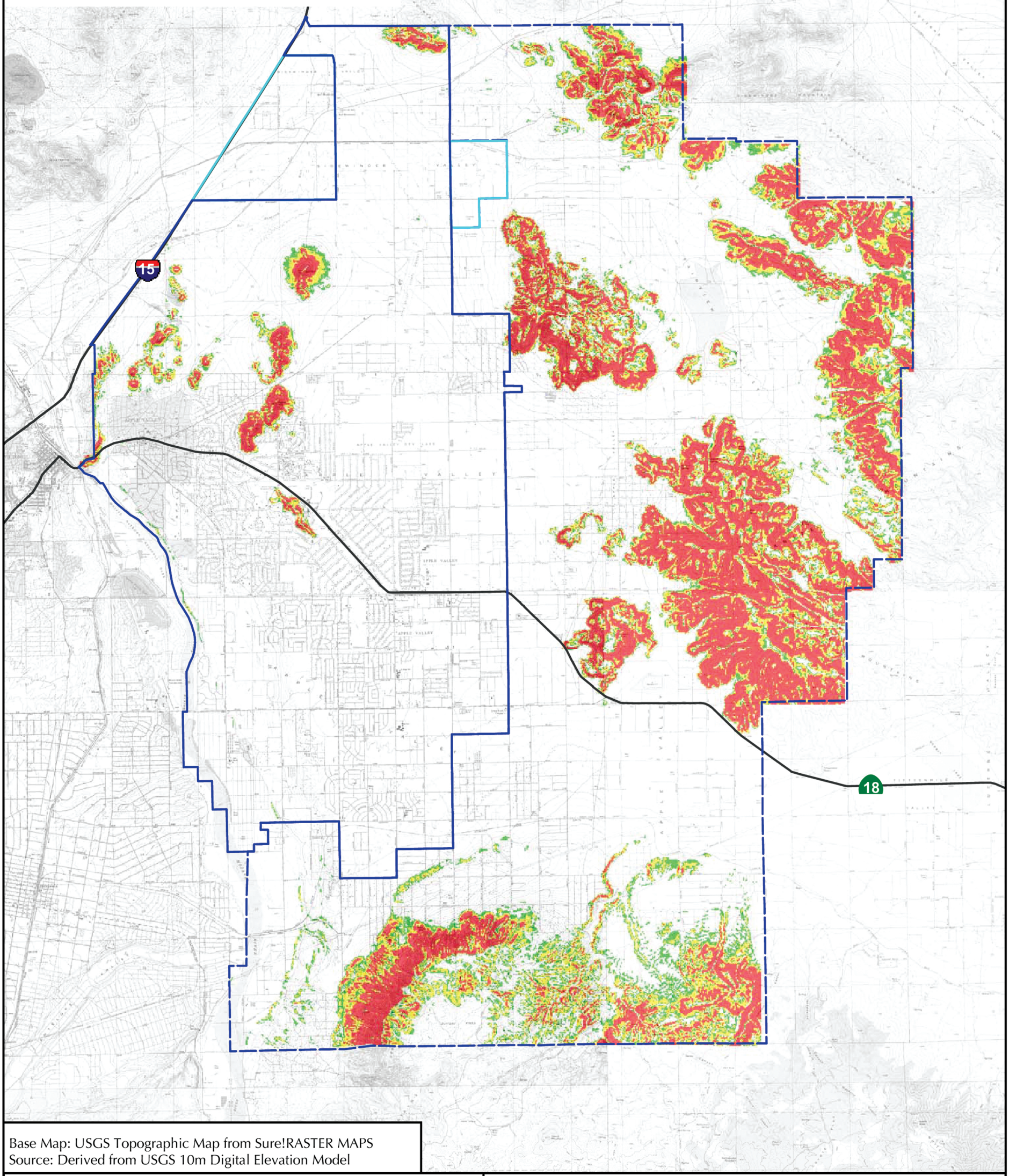
Geologic units that could compress under the weight of proposed fill embankments and structures are known as compressible soils. Although compressible soils usually involve geologically young (Holocene age) unconsolidated sediments with low density, weathered older alluvium, slope failure debris, and in some cases, very weathered bedrock can also be susceptible to compression or soil settlement. Soil texture, grain size, moisture, density, thickness, weight of the proposed load, the rate at which the load is applied, and drainage are among those characteristic that determine the settlement potential and the rate of settlement for each geologic unit.

In the Town of Apple Valley compressible soils are most likely to occur where Holocene-age deposits are present, as well as active and recently active stream channels. In addition, compressible soils are commonly found in canyon bottoms, swales, and at the base of natural slopes. Compression is also associated with landslide deposits particularly at the head and along the margins of the slide. Proper engineering and thorough geotechnical soils analyses can minimize potential hazards associated with compressible soils.

NOTES:

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, nor does it satisfy the evaluation requirements set forth in geologic hazard regulations.

Earth Consultants International (ECI) makes no representations or warranties regarding the accuracy of the data from which these maps were derived. ECI shall not be liable under any circumstances for any direct, indirect, special, incidental, or consequential damages with respect to any claim by any user or third party on account of, or arising from, the use of this map.



Base Map: USGS Topographic Map from Sure!RASTER MAPS
Source: Derived from USGS 10m Digital Elevation Model

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Scale: 1:108,000

9000 0 9000
Feet

2000 0 2000
Meters

Explanation

Slope (in % grade)

- 0-15%
- 20-30%
- 15-20%
- Greater than 30%

- Town of Apple Valley Boundary
- Apple Valley Annexed Area
- Apple Valley Sphere of Influence

Source: Earth Consultants International, December 2008

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Apple Valley General Plan Draft EIR
Slope Distribution in Apple Valley Area
Apple Valley, California

Exhibit
III-8

Collapsible Soils

Saturated soil results in changes to the soil structure such as loss of cohesion or cementation, which can result in settlement and compaction, or the collapse of the soil column. Soil collapse or hydroconsolidation can occur under relatively light loads and is generally associated with recently deposited Holocene-age soils that have accumulated in arid or semi-arid environments. Soils that are susceptible to collapse include wind-deposited sands and silts, and alluvial fan and debris flow sediments. In addition, irrigation, or a rise in the groundwater table could increase surface water infiltration, which when combined with the weight of a building or structure, has the potential to induce rapid settlement of the soil column. In Apple Valley young and very young alluvial sediments that are granular in nature may be susceptible to collapse.

Expansive Soils

Expansive soils are those that contain significant amounts of clay minerals resulting in the ability to give up water (shrink) or absorb water (swell), which allows these soils to expand (or shrink) as a result of changes in moisture content. The pressure differential induced by the shrinking or swelling of expansive soils can have significant harmful effects upon structures and other surface improvements.

In the Town of Apple Valley and the vicinity, expansive soils are primarily associated with areas underlain by older fan deposits containing argillic (clay-rich) soil profiles, which are in the moderately expansive range. In addition, the Apple Valley Dry Lake contains very fine-grained silts and clays that are potentially expansive. Alluvial fan sediments, composed primarily of granular soils, underlie the low-lying areas of the Town and the expansion potential ranges from very low to moderately low.

Ground Subsidence

The gradual settling or sinking of the ground surface with minimal horizontal movement is generally associated with oil, gas, or ground water extraction from below the ground surface and is commonly referred to as ground subsidence. Subsidence can result in earth fissures, sinkholes or depressions, and disrupt surface drainage patterns. In addition, ground subsidence has the potential to cause damage to canals, levees, underground pipelines, wells, buildings, roads, railroads, and other structures and improvements. Proper management of local water supplies, including the reduction in groundwater extraction from local wells, importing water, and the use of artificial recharge has mitigated subsidence in affected areas.

The Mojave River Groundwater Basin occupies approximately 1,400 square miles, has an estimated storage capacity of nearly five million acre-feet, and underlies the Town of Apple Valley and vicinity. Water extraction from the basin has historically occurred at rates that exceeded the natural replenishment, leading to an overdraft condition in the basin. Groundwater levels in the basin dropped more than 100 feet between the 1950s and 1990s, and approximately 30 feet in the last 20 years. Overdraft of the water basin can lead to ground subsidence.

Based on US Geological Survey and Mojave Water Agency studies of subsidence in the Mojave River Groundwater Basin, the closest subsidence area to the Town of Apple Valley is located approximately seven miles northwest. To date, subsidence has not been detected within Apple

Valley's town limits. The continued implementation of groundwater conservation and recharge activities in the Apple Valley area contributes to the management of ground subsidence. Preventive measures include monitoring groundwater and basin conditions and increasing the use of reclaimed water, storm water, or imported water.

Soil Erosion

Erosion is an ongoing natural process that is dictated by climate, topography, and geologic conditions including soil and rock types, vegetation cover, and slope aspect. The Town of Apple Valley and vicinity are subject to erosion, runoff, and sedimentation due to the extreme topographic relief between the valley and the surrounding hills and mountains. Human activities such as agricultural or land development accelerate natural erosion by disturbing the ground surface, which can expose sediment deposits to wind and water transport, alter natural drainage patterns, and increase the potential for erosion and sedimentation. Local modification to geological conditions, such as an increase in impermeable surfaces, can result in geological changes elsewhere, such as an increase in the potential for flooding and sedimentation downstream. It should be mentioned that natural events can also lead to accelerated rates of erosion. For example, wildfires that occur on hills and mountains can leave slopes vulnerable to aeolian (wind) and fluvial (water) erosion.

Wind erosion commonly occurs in flat, bare areas where dry, sandy soils are present, or anywhere the topsoil is loose, dry, and finely granulated. Wind erosion removes soil from one place and deposits it elsewhere resulting in deterioration of the soil structure, nutrient and productivity losses, and air pollution. Sediment transport and deposition induced by wind is known as wind-blown sand or blowsand events. Sand storms can affect air quality, reduce visibility, and can cause damage to buildings, vehicles, crops, and vegetation. The presence of air born sediment is also the source of several major health problems. Atmospheric dust causes respiratory discomfort, and may carry pathogens that cause eye infections and skin disorders.

Several physical factors determine the intensity and distribution of wind-blown sand in the Apple Valley area, including the alignment of the mountain passes, sand deposits from local flood events and natural erosion processes, lack of significant vegetation, and strong winds. The elevation difference between the Cajon Pass and the valley floor results in strong winds under certain climatic conditions. Strong winds combined with sandy surface soils commonly found in Apple Valley has the potential to result in wind erosion that poses an environmental hazard.

Major Faults Affecting the Town of Apple Valley and Vicinity

As previously mentioned, the Town of Apple Valley is located near the boundary of two tectonic plates: the North American and Pacific plates. It is the San Andreas fault that separates the two tectonic plates. While there are no faults zoned by the State of California within the corporate limits of the Town of Apple Valley, two faults are zoned within the Town's Sphere of Influence including an Alquist-Priolo Earthquake Fault Zone. The following discussion describes the faults in the region that are most likely to impact Apple Valley. Faults in proximity to the Town of Apple Valley are illustrated in Exhibit III-9.

North Frontal Fault

A rupture along the North Frontal fault has the potential to generate strong seismic shaking, due to the proximity of this fault to the Town. This fault is located along the eastern flank of the San Bernardino Mountains and consists of several fault splays that have a combined total length of approximately 40 miles. The west segment of the North Frontal Fault passes through the Town's Sphere of Influence and at its closest approach is less than 0.5 miles from the southeast corner of the Town limits. See Exhibit III-10.

Although the North Frontal Fault has not ruptured in recent years, it is thought to have moved in the past 10,000 years, making it an active fault. As seen in Exhibit III-10, Alquist-Priolo Zones, the western portion of the North Frontal Fault Zone, Apple Valley Highlands-Fault, is located within the Sphere of Influence and is designated as an Alquist-Priolo Earthquake Fault Zone. Similarly, the eastern portion of the North Frontal Fault Zone, White Mountains Fault and Sky High Ranch Fault, is also designated as an Alquist-Priolo zone. The North Frontal fault has an expected slip rate of about 0.5 millimeters per year, and is attributed to the 1 millimeter average annual uplift rate the San Bernardino Mountains. A rupture along the North Frontal Fault zone could generate a maximum magnitude earthquake ranging from 6.7 to 7.2 depending on where the rapture were to occur. Using the Modified Mercalli intensity index, shaking could range from very strong (0.14g to 0.26g) to extreme (0.4g to 1.1g).

Helendale Fault

The Helendale fault is the westernmost of several faults that combined are referred to as the Eastern California Shear Zone and are responsible for 9 and 23 percent of the total North American and Pacific plate boundary motions, respectively. The Helendale fault transect the Sphere of Influence immediately east of the Town's northeastern limits and is designated as an Alquist-Priolo Earthquake Fault Zone, which indicates the potential for surface rupture within the designated zone. Exhibit III-10, Alquist-Priolo Zones, shows that the Helendale Fault is designated as an Alquist-Priolo Earthquake Fault Zone that bisects the Sphere, immediately east of the Town.

As seen in Exhibit III-9, Faults in the Apple Valley Area, the Helendale fault is an extension of the South Lockhart fault. Without further studies of these two faults it is currently unclear how they would interact during a seismic event. In order to consider the greatest potential seismic event that could occur on the Helendale fault, it was assumed that both the Helendale and the South Lockhart faults would rupture simultaneously. In this event, a maximum magnitude earthquake of 7.3 could occur, which would result in horizontal peak ground acceleration of 0.3g to 0.75g, or violent to extreme shaking using the Modified Mercalli intensities.

San Andreas Fault

The San Andreas Fault zone is the longest fault in the state of California, extending approximately 750 miles from Cape Mendocino in northern California to the Salton Sea in southern California. Historically, movement along the San Andreas Fault zone has been the primary source of major earthquakes in southern California and continues to present serious seismic related risks and hazards. The San Bernardino Mountains segment and the Mojave segment of the San Andreas Fault zone pass within approximately 14 and 16 miles of the southern portion of Apple Valley, respectively.

Each segment is assumed to have a characteristic slip rate (rate of movement averaged over time), recurrence interval (time between moderate to large earthquakes), and displacement (amount of offset during an earthquake). The San Bernardino Mountains segment is estimated to have an annual slip rate of 24 ± 5 millimeters, a derived recurrence interval of 146 years, and displacement of 3.5 m ± 1.0 m, which could result in a maximum magnitude earthquake of 7.5, or peak ground acceleration of 0.17g to 0.36g. The Mojave segment is estimated to have an annual slip rate of 30±8 millimeters, a derived recurrence interval of 150 years, and displacement of 4.5 m ± 1.5 m, which could result in a maximum magnitude earthquake of 7.4, or peak ground acceleration of 0.15g to 0.3g.

The San Bernardino Mountains and the Mojave segments of the San Andreas Fault zone have a 28 percent and 26 percent probability of rupturing sometime between 1994 and 2024, respectively.

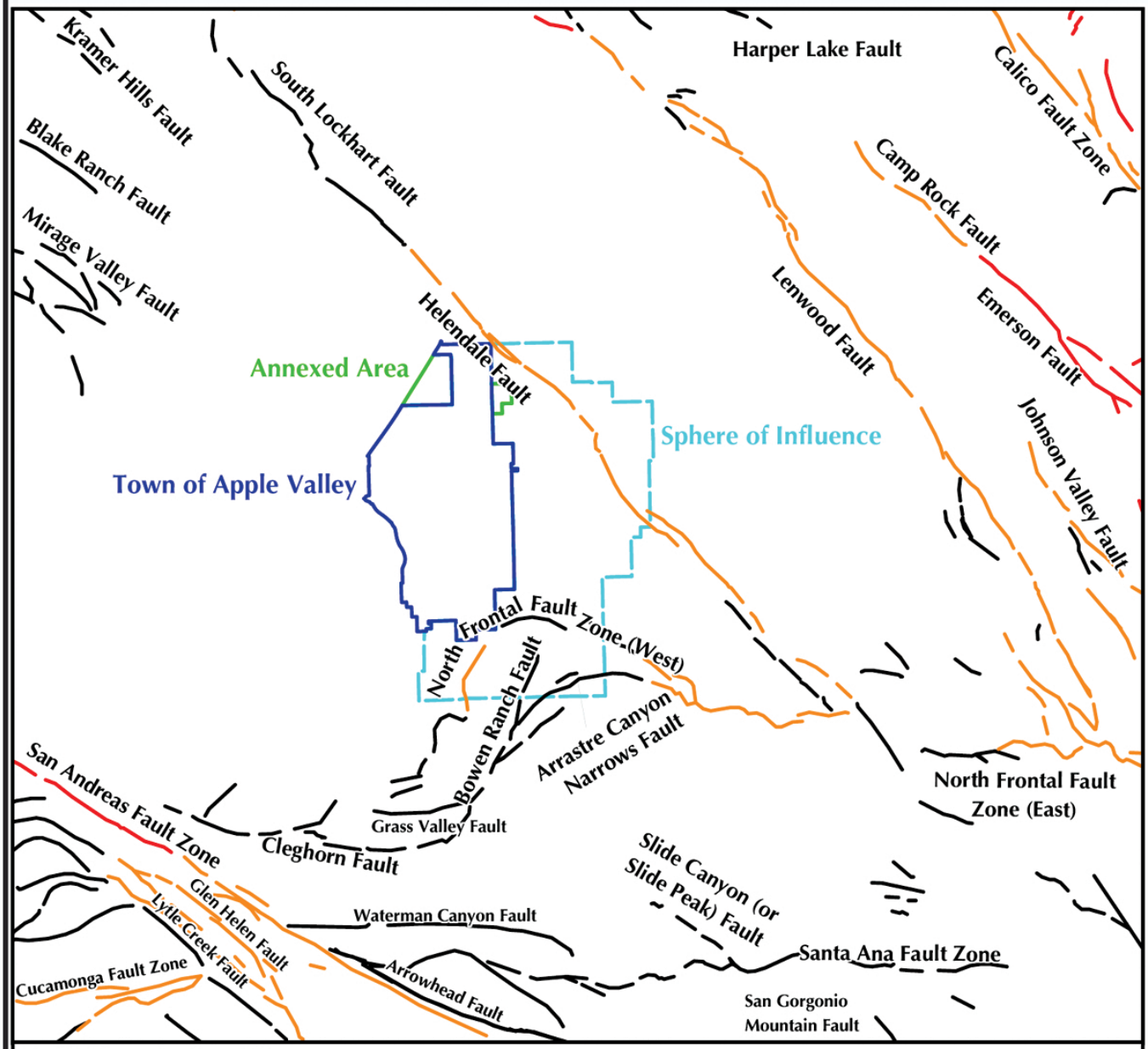
In addition to the San Bernardino and the Mojave segments of the San Andreas Fault zone, the Coachella Valley segment also has the potential to generate sizable ground motion in the Town and Sphere. This segment is located south of the Town of Apple Valley and extends from the San Gorgonio Pass south to the Salton Sea. The Coachella Valley segment is estimated to have an annual slip rate of 25 ± 5 millimeters, a derived recurrence interval of 220 ± 13 years, and a characteristic displacement of 4.0 m ± 1.0 m, which could result in a maximum magnitude earthquake of 7.7, or peak ground acceleration of 0.2g to 0.41g.

Lenwood – Lockhart – Old Woman Springs Faults

The Lenwood fault, like the Helendale fault is part of the Eastern California Shear Zone faults. There is evidence that this fault has ruptured three times within the last 8,300 years and has an estimated recurrence rate of 4,000 to 5,000 years. The slip rate for the Lenwood fault is about 0.8 millimeters annually.

The Old Woman Springs segment is the primary portion 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 ruptured within the last 10,000 years and is therefore defined as active.

The Lockhart fault forms a contiguous, 90-mile long fault system with the Lenwood fault. The interval between major surface-rupturing earthquakes on the Lockhart fault is estimated at 3,000 and 5,000 years. In the event that these three faults were to rupture simultaneously a maximum magnitude earthquake of 7.5 could occur, which would generate peak ground accelerations in Apple Valley of about 0.19g to 0.42g. Using the Modified Mercalli intensities index, such an event would result in severe (VIII) to violent (IX) shaking.



Modified from: Jennings, 1994;
www.scecd.scec.org/faults/mojfault.html
Refer to text for descriptions of these faults.

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).

N

Source: Earth Consultants International, December 2008

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Apple Valley General Plan Draft EIR
Faults in Apple Valley Area
Apple Valley, California

Exhibit
III-9

NOTES:

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, nor does it satisfy the evaluation requirements set forth in geologic hazard regulations.

Fault lines on the map are used solely to approximate the fault location. The width and location of the faults should not be used in lieu of site-specific investigations, evaluation, and design.

Detailed geologic investigations, including trenching studies, may make it possible to refine the location and activity status of a fault. All faults may not be shown. This map should be amended as new data become available and are validated.

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Helendale Fault

unnamed faults

North Frontal Fault

North Frontal Fault Zone

Ocotillo Ridge "Fold"

Ord Mountain Fault

Apple Valley Highlands Fault

Deep Creek Lineament

Bowen Ranch Fault

Arrastre Canyon

Narrows Fault Zone

Lovelace Canyon Fault

White Mountain Fault

Sky High Ranch Fault

Power Tree Canyon Fault

Base Map: USGS Topographic Map from Sure!MAPS RASTER, 1997.

Sources: Morton and Miller (2003); Alquist-Priolo Earthquake Fault Zones [Reproduced with permission CGS CD-ROM 2001-05 (2002)]; and Jennings (1994) [reproduced with permission CDMG, CD-ROM 2000-06 (2000)].

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Scale: 1:108,000

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Feet

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Meters

Explanation

Faults; solid where location is known, dashed where approximate, dotted where inferred.

- Fault. From Morton and Miller (2003).
- Alquist-Priolo Earthquake Fault. From CGS (2002).
- Alquist-Priolo Earthquake Fault Zone. From CGS (2002).
- Late Quaternary faults. From Jennings (1994).
- Pre-Quaternary faults. From Jennings (1994).
- Town of Apple Valley Boundary
- Apple Valley Annexed Area
- Apple Valley Sphere of Influence

Source: Earth Consultants International, December 2008

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Apple Valley General Plan Draft EIR
Alquist-Priolo Earthquake Fault Zones
Apple Valley, California

Exhibit

III-10

Cleghorn Fault

The Cleghorn fault is located to the southwest of the Town, is approximately 19-miles long, and is potentially active. The fault extends across Silverwood Lake, and therefore is also referred to as the Silverwood Lake fault. The Cleghorn fault zone is estimated to have an annual slip rate of 2 to 4 millimeters, and the potential to generate a magnitude 6.5 earthquake, which could generate horizontal peak ground accelerations in the Apple Valley area of 0.11g and 0.33g. Using the Modified Mercalli intensities index, ground shaking could range from very strong (VII) to violent (IX).

Cucamonga Fault

The Cucamonga fault zone is located to the southwest of the Town and Sphere and is considered active. This fault has a slip rate of approximately 4.5 to 5.5 ± 2.0 millimeters per year, an estimated average recurrence interval of 625 years, and rupture could result in a maximum magnitude 6.9 earthquake. Such an event would generate peak horizontal ground acceleration in the Apple Valley area of about 0.15g and 0.28g, with Modified Mercalli intensities in the very strong (VIII) to violent (IX) range.

Landers (or Kickapoo) Fault

The Landers fault or the Kickapoo fault is part of the Eastern Mojave Shear Zone. In 1992 the Kickapoo fault moved laterally nearly 9.5 feet, but the annually slip rate is usually negligible in part because the interval between major ruptures is estimated to be thousands of years. Individually, the Eastern Mojave Shear Zone faults could rupture in smaller earthquakes, but their combined lengths allowed for the magnitude 7.3 earthquake that shook southern California on the morning of June 28, 1992. Ground shaking in the Apple Valley area due to a Landers-type earthquake on these faults would cause horizontal ground accelerations of between 0.14g and 0.27g, with Modified Mercalli intensities in the very strong (VIII) to violent (IX) range.

Sierra Madre Fault

The Sierra Madre fault zone extends along the base of the San Gabriel Mountains from the San Fernando Valley to San Antonio Canyon, where it continues southeastward as the Cucamonga fault. The Sierra Madre fault is estimated to have an annual slip rate of 0.6 millimeter, a recurrence interval of about 8,000 years, and could generate a maximum magnitude 7.2 earthquake, resulting in peak horizontal ground accelerations of 0.14g and 0.21g.

Gravel Hills – Harper Lake Fault

The Gravel Hills segment is thought to have last ruptured in the last 10,000 years, and the Harper Lake fault in the late Quaternary. Therefore the Gravel Hills fault is considered active, whereas the Harper Lake fault is considered inactive. Slip rate on the Gravel Hills fault zone is estimated at 0.9 millimeters annually, with a recurrence interval between earthquakes of about 3,500 years. The combined fault segments are estimated to be capable of generating a 7.2 magnitude earthquake, which would generate peak horizontal ground accelerations in the Apple Valley area of 0.11g and 0.20g. Using the Modified Mercalli intensities index ground shaking in area would range from very strong (VII) to sever (VIII).

Calico – Hidalgo Fault Zone

This fault zone is also part of the Eastern California Shear Zone. The Calico fault is estimated to have an annual slip rate between 1.0 and 2.6 millimeters, a recurrence interval of 1,500 years, and the ability to generate a maximum magnitude earthquake of 6.5 to 7.1. The Hidalgo fault is estimated to have an annual slip rate of 0.5 millimeters, its recurrence interval is unknown, and it is expected to generate a maximum magnitude 6.4 to 7.1 earthquake. However, in the event that both faults were to rupture simultaneously, a maximum magnitude 7.3 earthquake could occur, which would generate peak horizontal ground accelerations in the Apple Valley area of 0.11g and 0.18g or using the Modified Mercalli intensities groundshaking would be in the very strong (VII) to severe (VIII) range.

San Jacinto Fault Zone

The San Jacinto fault zone extends from its junction with the San Andreas fault in San Bernardino, southeasterly, where it continues south of the international border with Mexico as the Imperial fault. The San Jacinto fault zone is divided into seven segments, the nearest segments to the Town of Apple Valley are the San Bernardino and San Jacinto Valley segments.

A maximum magnitude earthquake of 6.7 is expected in the event of a rupture on the San Bernardino segment of the San Jacinto fault, which has the potential to result in peak horizontal ground accelerations of 0.09g and 0.17g in the Apple Valley area. Similarly, a 6.9 earthquake on the more distant San Jacinto Valley segment would generate peak horizontal ground accelerations in Apple Valley of 0.09g and 0.14g.

Johnson Valley Fault

The northern portion of this fault is located east of the Town of Apple Valley and Sphere of Influence. Although the southern portion of the fault ruptured during the 1992 Landers earthquake, the northern portion did not. Trenching studies show that the last rupture on the north portion of the fault occurred between 5,800 and 7,500 years ago. The estimated maximum magnitude earthquake for the Johnson Valley fault is 6.8, but could be 7.0 in the event that several faults rupture concurrently.

Puente Hills Thrust Fault

This fault extends from northern Orange County to the Los Angeles metropolitan area, and is a blind fault since it does not extend upward to the surface. However, the Puente Hills serve as a visible indicator of the faults presence. Studies indicate that the Puente Hills rise 1 to 2 meters when the fault ruptures with a maximum magnitude of 7.2 to 7.5. A magnitude 7.1 earthquake on the Puente Hills thrust fault is estimated to generate ground accelerations in the Apple Valley area between 0.10g and 0.14g, with Modified Mercalli intensities in the very strong (VII) to sever (VIII) range; stronger shaking could be experienced if the fault breaks in a larger magnitude earthquake.

Blackwater Fault

The Blackwater fault extends from Barstow on the south to the Garlock fault on the north. The annual slip rate is estimated to be 2 millimeters, the recurrence interval is known, and the maximum magnitude earthquake that could be generated by a fault break is between 6.5 and 7.1.

Such a rupture would result in peak ground accelerations in the Apple Valley area of 0.09g and 0.14g, or a Modified Mercalli intensities ranging from very strong (VII) to sever (VIII).

Pinto Mountain Fault

The Pinto Mountain fault is located approximately 31 miles southeast of the Town of Apple Valley, just north of the Little San Bernardino Mountains. The fault is active, has an estimated annual slip rate of 1.1 to 2.3 millimeters per year, and could generate a maximum magnitude earthquake of 7.2. A rupture of this magnitude would cause peak horizontal ground accelerations in the Apple Valley area of 0.09g and 0.14g, or a Modified Mercalli intensities ranging from very strong (VII) to sever (VIII).

Pisgah-Bullion Mountain-Mesquite Lake Fault Zone

In the event that this fault zone were to rupture simultaneously a magnitude 7.3 earthquake could be generated, which would result in peak horizontal ground accelerations in the Apple Valley area of 0.09g to 0.13g. An individual rupture along any one of these three faults would result in a less intense earthquake and reduced ground acceleration.

Emerson South- Copper Mountain Fault Zone

This fault zone is located east of the Town of Apple Valley and the Sphere of Influence. The Emerson fault is estimated to have an annual slip rate of 0.5 millimeters, an interval recurrence of 9,000 years, and could generate a maximum magnitude 6.5 earthquake. The Copper Mountain fault estimated to have an annual slip rate of 0.5 millimeters, an unknown interval recurrence rate, and could generate a maximum magnitude 7.0 earthquake. In the event that these two faults were to rupture together, the maximum magnitude earthquake would be 7.3.

Seismically Induced Geotechnical Hazards

Ground Shaking

As demonstrated by the above discussion, there are numerous faults in the region that have the potential to cause substantial ground shaking in Apple Valley and the Sphere of Influence, making seismically induced ground shaking the most significant geotechnical hazard facing the Apple Valley area. The effects of ground motion on structures are difficult to predict, and depend on a variety of factors including the intensity of the quake, the distance from the epicenter to the site, the composition of soils and bedrock, building design, and other physical criteria. Based on these factors, ground shaking can result in minimal to significant damage.

In general, peak ground accelerations and seismic intensity values decrease with increasing distance from the earthquake. Local conditions, such as soft soils, shallow ground water, and the presence of ridge tops, could amplify the effects of seismic waves and result in higher localized accelerations. The Uniform Building Code, California Building Code, and Unreinforced Masonry Law are the primary tools used by agencies to ensure seismic safety in structures (see mitigation measures below).

Liquefaction

During liquefaction, soils behave like a liquid or semi-viscous substance, which can cause structural distress or failure. For liquefaction to occur loose, granular sediment must be saturated and exposed to prolonged ground shaking greater than 0.2 g. The alluvium that underlies Apple Valley is coarsely granular and well drained. Although the water table is not within 50 feet of the ground surface throughout most of the area, water-saturated sediment within 50 feet of the surface occurs locally within the Mojave River floodplain. These geological conditions exist or have the potential to occur within the Apple Valley area, accordingly there is a potential for liquefaction to occur in the event of a fault rupture.

Seismically Induced Settlement

Strong ground shaking can cause soil compaction, resulting in local or regional settlement of the soil column. This type of ground failure occurs when loose granular soils become tightly packed due to the collapse of air and water pockets in the soil column. Recently deposited alluvial sediments and artificial fills that are not properly compacted are especially susceptible to this hazard. Impacts can include damage to structures, and water, sewer, and other subsurface pipelines.

Seismically Induced Rock falls and Landslides

Landslides, rock slides, and rock falls can be triggered by strong ground motions and can be exacerbated where saturated ground conditions exist. In Apple Valley steep slopes, deeply incised canyons, rocks with inherently weak components such as silt or clay layers, and highly fractured and folded rocks are particularly susceptible to seismic activity. In addition, slope orientation relative to the direction of the seismic wave also contributes to the occurrence of landslides and rock falls. Although most of the Town is characterized by relatively level to gently sloping terrain, there are several natural slopes in the Sphere of Influence area that could be vulnerable to seismically induced slope failure. See Exhibit III-8, Slope Distribution, for areas that may be particularly susceptible to landslides and rock falls.

Deformation of Sidehill Fills

Sidehill fills are artificial fill wedges constructed on natural slopes to create a level foundation for roadways or buildings. Sidehill fills can be compromised by strong seismic ground shaking, which could cause minor to severe property damage. Cracking at the wedge contact area, differential settlement in the fill wedge, and bulging on the slope face can develop from strong ground shaking, and is typically associated with relatively thin fills of 27 feet or less placed near the tops of narrow ridges. This hazard is generally not expected to occur in the Apple Valley area, except potentially along the approaches to the two bridges that extend across the Mojave River, where sidehill fills exist in the nearby mountains and hills, and on lots where grading required artificial fill for a level building pad.

Ridgetop Fissures and Shattering

Ridgetop fissuring and shattering is the result amplified seismic energy due to local topographic features and geological conditions. Linear fault-like fissures and shattering of surface soils on the crests of steep, narrow ridgelines is a common occurrence in association with major historical earthquakes in southern California. This hazard can result in severe structural damage,

particularly if it occurs on 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 shattering may occur in the Town of Apple Valley and Sphere of Influence, particularly in the Granite Mountains, Fairview Mountains, and Ord Mountains.

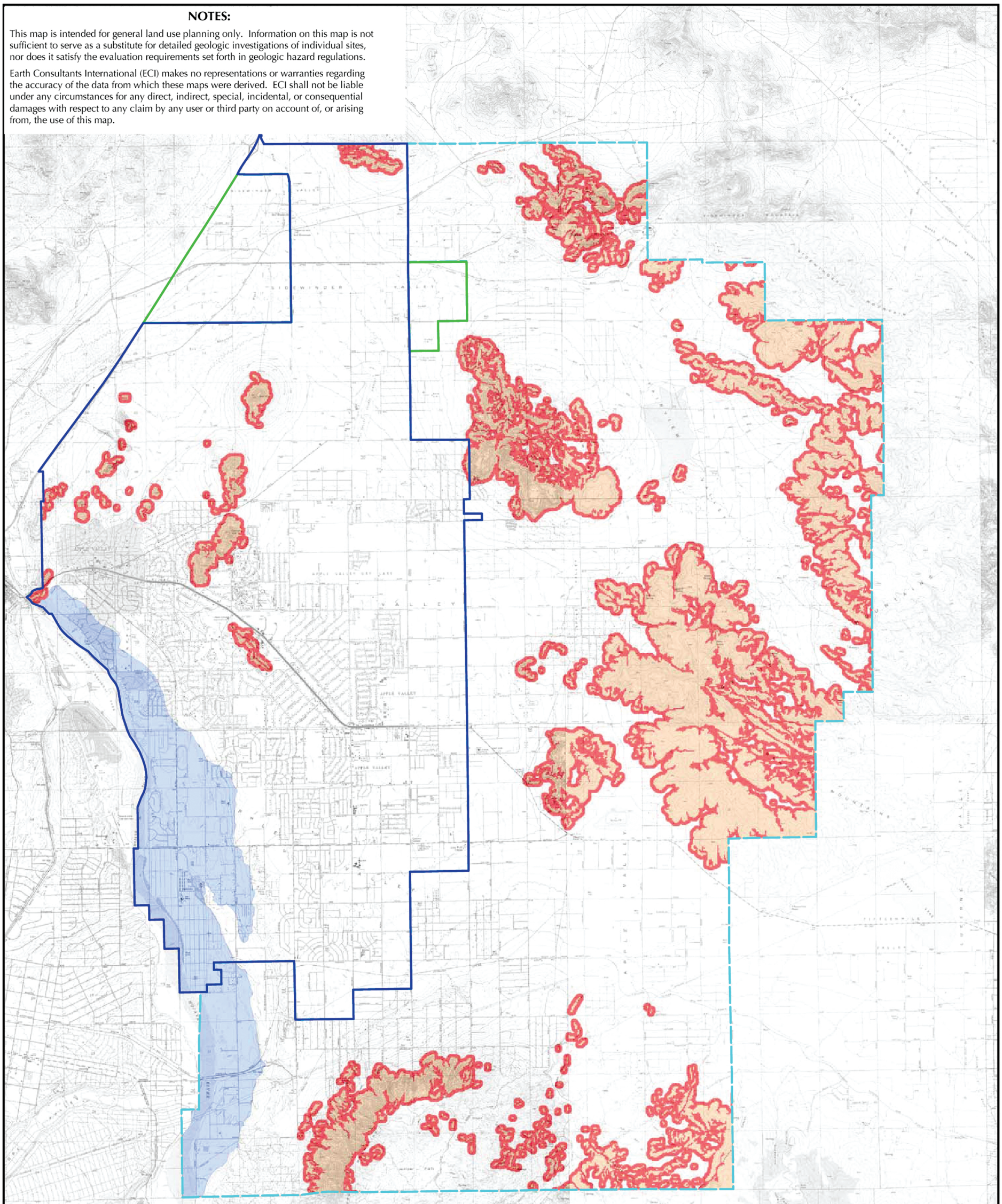
Seiches and Seismically Induced Inundation

Seiches are seismically-induced oscillation or sloshing of water contained in enclosed bodies of water such as lakes, ponds, reservoirs, and swimming pools. This hazard is dependent upon the frequency of seismic waves, distance and direction from the epicenter, and site-specific design criteria of the enclosed body of water. Ground shaking in the Town and Sphere could result in seismically induced seiches in Silverwood Lake, located to the southwest of Apple Valley, and in the shallow lakes present throughout the study area. In addition, water in swimming pools can slosh during earthquakes, but in most cases, the sloshing does not lead to significant damage.

NOTES:

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Base Map: USGS Topographic Map from Sure!MAPS RASTER, 1997.
Sources: Derivative map based on an analysis of geology as mapped by Morton and Miller (2003), and groundwater data from Sneed et al. (2003), and Schlumberger Water Services, 2004; slope analysis made from USGS 10m Digital Elevation Model.

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Scale: 1:108,000

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Meters

Explanation

- Areas where local geological and groundwater conditions suggest a potential for liquefaction.
- Hillside and mountainous areas where numerous rockfalls and landslides are expected to occur during an earthquake.
- Areas where local topographic and geological conditions suggest the potential for earthquake-induced landslides.
- Town of Apple Valley Boundary
- Apple Valley Sphere of Influence
- Apple Valley Annexed Areas

Source: Earth Consultants International, December 2008

TERRA NOVA®
Planning & Research, Inc.

Apple Valley General Plan Draft EIR
Seismic Related Hazards
Apple Valley, California

Exhibit
III-11

2. Project Impacts

Build out of the General Plan and annexation areas will increase the potential for a number of geologic and seismic hazards. Construction of structures and infrastructure could expose persons and property to geological hazards in the event of a seismic event. Potential geological impacts associated with build out of the General Plan and annexation areas are discussed below.

Geological Conditions

The San Andreas Fault Zone and associated faults in the area have the potential to cause moderate to extreme ground shaking and significant ground acceleration in the Town of Apple Valley and Sphere of Influence. Seismic activity of this magnitude has the potential to result in direct damage to structures, property, and infrastructure, and/or generate indirect hazards such as slope instability, liquefaction, settlement, landslides, and flood inundation, and can cause a variety of localized, but no less destructive hazards such as urban fires, dam failures, and toxic chemical releases.

Damage to infrastructure and utility systems could exacerbate post earthquake conditions. There are many roadways within the Town and surrounding area that could fail during an earthquake, which would impede traffic and restrict access to and from Apple Valley and the area by emergency response teams. In addition, disruption to utilities such as telephone, gas, energy, and water could substantially affect efforts to alleviate damage and provide support, including fire suppression, and access to heating and cooling, and potable water.

Seismic activity could also result in significant damage to smaller structures. The greatest hazard related to smaller structures is that of unreinforced masonry buildings, failure of which can cause foundations to shift and result in gas leeks, fires, and exposed power lines. The Town requires all new buildings to utilize reinforced masonry, as well as comply with the Uniform Building Code (UBC), which is expected to enable structures to resist major earthquakes without collapsing, although structural damage could occur. Unreinforced masonry buildings within the Town have been retrofitted in compliance with state law.

Another potential hazard associated with seismic activity is surface fractures. As shown in Exhibit III-10, although there are no Alquist-Priolo Earthquake Fault Zones located within the Town, two such zones are mapped within the Sphere and a third is located immediately southeast of the Sphere. In order to limit impacts associated with surface ruptures, the Town is mandated by law to require that geological investigations, including but not limited to fault trenching, be preformed if residential development is proposed in proximity to these zones.

Soil Characteristics

The Town of Apple Valley and the Sphere of Influence contain a variety of soil types, with a range of characteristics that influence geological hazards such as slope instability, collapsible, compressible, and expansive soils, ground subsidence, and erosion. In addition, the soil structure

influences drainage, percolation, and other hydrological processes, impacts of which are further discussed in Section III-H of this EIR.

Although the Town is predominantly situated on broad alluvial plains, scattered slopes, hillsides, and mountains surround the planning area and present potential geological hazards in the Town and region. Development at the base of slopes, hillsides, and mountains is susceptible to hazards associated with slope instability such as rock falls and landslides. As build out of the General Plan continues, development should be minimized or avoided in areas that have greater than 15% slopes to limit potential impacts associated with slope instability and failure. The Development Code includes specific requirements and prohibitions for the construction of structures on slopes. These areas can be maintained as open space for recreation or health and safety. Where development is proposed adjacent to slopes, hillsides, and mountains, site specific analyses that address the potential impacts of rock falls, landslides, and slope stability must be conducted to assess site specific impacts and provide appropriate mitigation measures.

Soil parameters dictate the potential for soil collapse, compression, and expansion. The Town is primarily underlain by young alluvium, see Exhibit III-7, Geological Units, composed of unconsolidated to moderately consolidated silt and sand, which makes this soil type (Qyf) potentially susceptible to collapse and compression. This potential is exacerbated when additional weight loads and/or pressure is applied.

Expansive soils also present hazards within the planning area, but are limited to finer-grained sediments that have a clay component. Collapsible, compressible, and expansive soils can have adverse impacts to structures and infrastructure if not properly managed. Site-specific studies must be conducted to evaluate soil parameters and determine the potential for soil collapse, compression, and expansion.

Ground subsidence in the planning area is closely associated with groundwater levels. Structures sensitive to slight changes in elevation, such as canals, sewers, and drainage improvements are particularly susceptible to the effects of subsidence and have the potential to be damaged if subsidence occurs. Proper management of groundwater supplies, creating water conservation programs, and promoting water efficient public education can help to ensure that groundwater levels are not significantly reduced. As discussed in Section III-I, Water Resources and Quality, the groundwater supply in Apple Valley is part of the regional groundwater aquifer and is managed accordingly. Therefore, a regional approach to groundwater conservation and recharge should be continued and encouraged in order to avoid the adverse impacts of subsidence.

In some areas of the Town and the Sphere of Influence, especially where dry and granular sediment are present, aeolian and fluvial erosion present potential hazards. Grading, site development, or other surface disturbances can result in loose sediment that can easily be picked up by wind or water. Strong winds can cause deposits to become airborne, which can result in adverse health conditions, degraded air quality, and can erode structures. The potentially adverse health impacts associated with suspended dust and blowsand are further discussed in Section III-C, Air Quality. Project-specific erosion control measures shall continue to be required and implemented to protect soils within the Town and Sphere.

Annexation 2008-001

Annexation 2008-001 will support a variety of land uses at build out, including residential, office, commercial, and industrial uses. Although build out will occur gradually over several years development of this annexation area has the potential to present geological hazards to people and structures. The soil underling Annexation 2008-001 is comprised of very old alluvial valley deposits (Qvoa) with moderately consolidated sand and gravel. This sediment type, due to its age, may be more compact, and therefore provide better structural support compared to younger sediment types. However, clayey soils may have accumulated on the surface, which could result in expansion when saturated.

This annexation area, like the rest of Apple Valley is situated in close proximity to several faults that have the potential to cause strong to sever ground shaking, which could result in damage to structures, infrastructure, and persons, or generate seismically induced hazards. Site specific analyses should be conducted prior to development that identify potential hazards, and set forth effective mitigation measures. Development standards that minimize impacts from structural failure and promote the health and safety of residents must also be maintained in the Development.

Annexation 2008-002

Annexation 2008-002 is located to the northeast of the Town, and is planned for industrial land use at build out. Like the rest of the Town and Sphere, this area has the potential to be subjected to geological hazards. The area contains several sediment types, but is dominated by younger alluvial fan deposits (Qyf and Qf). These soil types are unconsolidated to moderately consolidated and may be subject to wind erosion, creating blowsand conditions during high wind events.

Annexation 2008-002, like the rest of Apple Valley and the Sphere, is located in close proximity to several faults that have the potential to generate strong to sever shaking and ground acceleration. In addition, seismic induced hazards resulting from strong shaking could also impact the annexation area. Site-specific analyses should be conducted prior to development that identify potential hazards and set forth effective mitigation measures that minimize impacts to structures and assure that any potentially hazardous industrial materials are properly stored to avoid release during a seismic event.

3. Mitigation Measures

1. The Town shall establish and maintain an information database containing maps and other information that describes seismic and other geotechnical hazards occurring within the General Plan Area. Consult and coordinate with surrounding communities, the California Division of Mines and Geology, San Bernardino County, other applicable state and federal agencies, and professional engineering geologists to establish, improve, and routinely update the database.

2. Future development proposals shall require the preparation of a site-specific soils and/or geotechnical analysis that include an evaluation of seismic and soil conditions and provide recommendations that mitigate soils and geotechnical hazards or constraints.

3. Proper structural engineering, which takes into account the forces that will be applied to structures by anticipated ground motions, shall provide mitigation for ground shaking hazards. Seismic design shall be in accordance with the most recently adopted editions of the Uniform Building Code and the seismic design parameters of the Structural Engineers' Association of California.

4. Establish a cooperative agreement with the County Geologist, State Geologist, contract state-certified geologist, or contract geological engineer, to review and determine the adequacy of geotechnical and fault hazard studies prepared within the Town.

5. Design elements, such as baffles, shall be required to reduce the potential for seiches in tanks, open reservoirs, and ponds where overflow or structural failure may cause damage to nearby properties. Criteria for seismic design of water tanks shall be in accordance with the American Water Works Association (AWWA) Standards for Design of Steel Water Tanks.

6. New development shall not be placed within natural flow paths or result in substantial changes to drainage patterns offsite. (Also see Hydrology Section III-D)

7. Development on wind or stream-deposited sediment or young alluvium on the valley floor should include site-specific subsurface geotechnical investigations that address the potential for seismic settlement, collapsible and expansive soils, and liquefaction. These hazards can be mitigated by proper excavation, compaction, backfilling, and foundation design.

8. Site-specific geotechnical analyses shall be conducted where new development is proposed adjacent to or in close proximity to steep slopes. Analyses shall evaluate the potential for landslides, rock falls, and/or slope failure, and set forth mitigation measures to minimize these hazards such as the use of set backs, retaining walls, and vegetation buffers.

9. Retaining walls shall be constructed to adopted building code standards, include an adequate sub-drain system at the base to prevent excessive hydrostatic pressure, and be evaluated by the Building Inspector.

10. All existing vegetation and debris shall be removed from areas that are to receive compacted fill. Removal of trees shall include a minimum of 95% of the root systems. Excavation to depths ranging from 2 to 4 feet or more below the existing site grade may be required.

11. Encourage consultation and coordination between the Town of Apple Valley Public Works Division, Apple Valley Ranchos Water Company, Mojave Water Agency, U.S. Geological Survey, and other appropriate agencies in order to routinely monitor groundwater levels and surface elevations in the Town.

12. The Town shall actively support and participate in local and regional efforts to conserve water in an effort to mitigate potential ground subsidence resulting from over extraction of groundwater. Preventive measures include the use of water efficient appliances and faucets indoors, desert tolerant landscaping, and increased use of reclaimed water, storm water, or imported water. (Also see Water Resources in Section III-I)

13. Maintain working relationships and strategies between the Public Works Division, Apple Valley Fire Protection District, and other appropriate agencies to strengthen or relocate utility or service facilities including the expedient retrofitting of weak or damaged service structures, enforce fire and building codes, and take other appropriate measures to safeguard major utility distribution systems in preparation of a seismic event.

14. The Town shall coordinate and cooperate with public and quasi-public agencies to encourage education and earthquake preparedness so that residents can be self-sufficient after a seismic event.

15. All grading permit requests shall include a soil erosion prevention plan. Blowing dust and sand during grading operation shall be mitigated by maintaining moist surface soils, limiting the area of dry exposed soils, planting stabilizing vegetation, establishing windbreaks with non-invasive vegetation or perimeter block walls, applying chemical soil stabilizers, and adequately watering construction sites prior to and during grading and site disturbance. (Also see Air Quality in Section III-C)

16. Proposed development within a designated Alquist-Priolo Earthquake Fault Zone shall require site-specific geotechnical investigation including fault trenching and other Alquist-Priolo Fault Zoning Act guidelines.

17. The Town shall require that development applications include plans indicating the location of leach fields, seepage pits, drainage facilities, and water-dependent landscaping so that staff may evaluate the potential for ground saturation and assure that structural foundation are located an appropriate distance away to minimize the potential for localized soil collapse.

18. Imported and onsite fill soils for future development shall be approved by the project's soils engineer. Prior to placement as compaction fill the soils engineer shall assure that all fill materials are free of vegetation, organic material, cobbles and boulders greater than 6 inches in diameter, and other debris. Approved soil shall be placed in horizontal lifts or appropriate thickness as prescribed by the soils engineer and watered or aerated as necessary to obtain near-optimum moisture-content.

19. Fill materials shall be uniformly compacted to no less than 90% of the laboratory maximum density, by either over-filling and cutting back to expose a compacted core or by approved mechanical methods, as determined by American Society for Testing and Materials (ASTM) test method D-1557-78. The project soils engineer shall observe the placement of fill and take sufficient tests to verify the moisture content, uniformity, and degree of compaction obtained. In-place soil density measurements should be determined by the sand-cone method,

in accordance with ASTM Test Method D-1556-64 (74), or equivalent test method acceptable to the Town's Building and Safety Department.

20. In general, finish cut slopes shall not be inclined steeper than 2:1 (horizontal to vertical). Attempts to excavate near-vertical temporary cuts for retaining walls or utility installations in excess of 5 feet may result in failure of the slope, which has the potential to damage equipment and injure workers. All cut slopes must be inspected by the project engineer during grading to provide additional recommendations for safe construction.

21. Foundation systems that utilize continuous and spread footings are recommended for the support of one and two-story structures. Foundations for higher structures must be evaluated based on structure design and on-site soil conditions.

22. Positive site drainage shall be established during finish grading. Finish lot grading shall include a minimum positive gradient of 2% away from structures for a minimum distance of three (3) feet and a minimum gradient of 1% to the street or other approved drainage course.

23. Utility trench excavations in slope areas or within the zone of influence of structures should be properly backfilled in accordance with the following recommendations:

    (a) Pipes shall be bedded with a minimum of 6 inches of pea gravel or approved granular soil. Similar material shall be used to provide a cover of at least 1 foot over the pipe. This backfill shall then be uniformly compacted by mechanical means or jetted to a firm and unyielding condition.

    (b). Remaining backfill may be fine-grained soils. It shall be placed in lifts not exceeding 6 inches in thickness or as determined appropriate, watered or aerated to near optimum moisture content, and mechanically compacted to a minimum of 90% of the laboratory maximum density.

    (c) Pipes in trenches within 5 feet of the top of slopes or no the face of slopes shall be bedded and backfilled with pea gravel or approved granular soils as described above. The remainder of the trench backfill shall comprise typical on-site fill soil mechanically compacted as described in the previous paragraph.

Mitigation Monitoring/Reporting Program

A. During any project site preparation, the Town Engineer and/or Building and Safety Department staff shall visit the site to ensure compliance with applicable Town ordinances, conditions of approval, and erosion control plans.
   Responsible Parties: Town Engineer, Building Division, developer, and grading contractor.

B. Prior to grading and construction, but subsequent to preparation of final development plans and specifications, the Geotechnical Consultant and/or the Town Engineer shall review foundation plans to verify compatibility with site-specific geotechnical conditions and

conformance with the recommendations contained herein. The need for additional subsurface exploration shall be determined on a project-by-project basis.
Responsible Parties: Town Engineer, and Geotechnical Consultant.

C. As appropriate, rough grading shall be performed under geological and/or engineering observation by the Geotechnical Consultant and the Town Engineer, accordingly.
Responsible Parties: Town Engineer, and Geotechnical Consultant.

D. As determined appropriate, the Town Engineer and/or Geotechnical Consultant shall monitor the following onsite grading activities, and as necessary verify or modify conclusions and recommendations set forth in the project's geotechnical report:

1. Observation of all grading operations;
2. Geologic observation of all cut slopes;
3. Observation of all key cuts and fill benching;
4. Observation of all retaining wall back cuts, during and following completion or excavation;
5. Observation of all surface and subsurface drainage systems;
6. Observation of all backfill wedges and sub-drains for retaining walls;
7. Observation of pre-moistening of sub-grade soils and placement of sand cushion and vapor barrier beneath the slab;
8. Observation of all foundation excavations for the structure or retaining walls prior to placing forms and reinforcing steel; and
9. Observation of compaction of all utility trench backfill.

Responsible Parties: Town Engineer and/or Geotechnical Consultant.

G. Hazards and Hazardous Materials

Introduction

This section of the EIR describes the potential for hazardous and toxic materials and waste to occur within the planning area and the vicinity, analyzes the potential impacts associated with implementing the proposed project, and sets forth mitigation measures to minimize impacts. A wide range of data and information, ranging from research and analysis conducted for specific projects in the area, to regional-scale planning and environmental documents, have been used in researching and analyzing the project and its potential effects.

The California Health and Safety Code defines a Hazardous Material as "any material that because of its quantity, concentration, or physical or chemical characteristics poses a significant present or potential hazard to human health and safety or the environment if released into the work-place or environment." Hazardous and toxic "material" refers to substances that have a value or can be used, whereas hazardous "waste" is defined as a waste substance or byproduct of industrial, manufacturing, agricultural, and other sues, which can pose a substantial or potential hazard to human health or the environment when improperly managed.[22] Hazardous waste possesses at least one of these four characteristics: ignitability, corrosivity, reactivity, or toxicity; or appears on special U.S. EPA lists. This includes items such as used oil, mercury or products containing mercury, over the counter prescription drugs, and home medical waste. The most common type of hazardous waste is termed "universal waste," and includes many common items, such as fluorescent lights, cathode ray tubes, instruments that contain mercury, batteries, and others.

Responsibility for the regulation of these hazardous materials is shared across several county, state, and federal agencies. The use, storage and disposal of hazardous materials and wastes are regulated by a variety of state, federal, and regional agencies, based on the type and volume of these materials generated and stored. When federal regulation is warranted, such as for "large-scale" generators of hazardous materials and wastes. Such uses are regulated by the U.S. Environmental Protection Agency (EPA).

Thresholds of Significance/Criteria For Determining Significance

Standards and criteria have been drawn from a variety of sources, including Appendix G of the Environmental Checklist Form of the California Environmental Quality Act (CEQA) guidelines. Build out of the General Plan and annexation areas would have a significant effect from hazards or hazardous materials if it is determined that the project will:

a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous material.

[22] U.S. Environmental Protection Agency, http://www.epa.gov/

b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

d. Be located on a site, which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or environment.

e. Result in a safety hazard for people residing or working in the project area for a project located within an airport land use plan or, where such a plan has not yet been adopted, within two miles of a public airport or public use airport.

f. Result in a safety hazard for people residing or working in the project area for a project within the vicinity of a private airstrip.

g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

h. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

1. Existing Conditions

Regulatory Environment

Hazardous Materials Management

Hazardous materials are under the jurisdiction of various federal and state regulations and programs which regulate the use, storage, and transportation of hazardous materials. Regulations can be used to reduce or mitigate the danger that hazardous substances may pose to Apple Valley residents, businesses, and visitors, both in normal day-to-day conditions and as a result of a regional disaster, such as an earthquake or major flood. Several of the existing federal and state programs are summarized below.

The Resource Conservation and Recovery Act (RCRA) gives the EPA the authority to control hazardous waste from the "cradle-to-grave" and is the principal federal law which regulates generation, management, and transportation of waste materials. Hazardous waste management includes the treatment, storage, or disposal of hazardous waste. The 1986 amendments to RCRA enabled the EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. It should be noted that RCRA focuses only on active and future facilities and does not address abandoned or historic sites.

The federal Hazardous and Solid Waste Amendments (HSWA) are the 1984 amendments to RCRA that required the phasing out of land disposal of hazardous waste. Some of the other mandates of this law include increased enforcement authority for EPA, more stringent hazardous waste management standards, and a comprehensive underground storage tank program.

Other federal laws governing the production, use, storage, and disposal of hazardous waste include the Hazardous and Solid Waste Amendments Act (HSWA); the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); the Superfund Amendments and Reauthorization Act (SARA); and Emergency Planning and Right-to-Know (SARA Title III).

At the state level, California has a number of agencies that oversee management of hazardous materials. In many cases California State law mirrors or is more restrictive than federal law, and enforcement of these laws has been delegated to the state or a local agency. Collectively these Certified Unified Program Agencies (CUPA) regulate and implement law pertaining to hazardous materials. The two primary oversight agencies are the Department of Toxic Substances Control (DTSC) and the Regional Water Quality Control Board (RWQCB). The Office of Emergency Services, California Department of Fish and Game, Air Resource Board, Caltrans, State Office of Environmental Health Hazard Assessment, and California Integrated Waste Management Board are also involved in state management of hazardous materials. For industrial users and producers of hazardous materials, the Cal-OSHA Division of the California Department of Industrial Relations is the regulatory agency. For state transport of hazardous materials, the California Highway Patrol (CHP) and the California Department of Transportation (Caltrans) are the responsible agencies.

The California Regional Water Quality Control Board (CRWQCB), the Town of Apple Valley, Apple Valley Ranchos Water Company, and the Golden State Water Company maintain information concerning contaminated wells and groundwater. As mentioned above, the state and federal Environmental Protection Agencies (EPA) and the State Department of Health also supply information concerning specific hazardous waste sites and their locations.

The Department of Toxic Substances Control (DTSC) is a state department that provides assistance through an Emergency Response Program (ERP) for actual and potential releases of hazardous substances that pose a threat to public health or the environment.[23]

Commonly known as the Tanner Bill, AB 2948 (Chapter 1504, Statures of 1986) authorizes counties to prepare Hazardous Waste Management Plans (HWMP) in response to the need for safe management of hazardous materials and waste products. The County of San Bernardino prepared the Business Emergency/Contingency Plan (Business Plan) to meet the requirements of the aforementioned bill. The plan requires new and existing businesses that generate or use hazardous materials to obtain approval from the County or Town prior to onsite use of such materials. The Business Plan provides a management tool that requires each business to

[23] http://www.dtsc.ca.gov/SiteCleanup/ERP/index.cfm

individually address the disposal, handling, processing, storage and treatment of hazardous materials and waste products used.

Small-scale generators of industrial hazardous wastes qualify for the County's "Conditionally Exempt Small Quantity Generators" (CESQGs) program. The San Bernardino County Fire Department will collect hazardous waste, or businesses can deliver waste to the County's collection facility. Wastes are then transported to a state-permitted processing facility located in San Bernardino and further recycled or incinerated. Hazardous waste from businesses that generate more than the threshold amounts is collected by private contractors for disposal by County-approved hazardous waste disposal firms in accordance with state and federal regulations for such waste.

The Town of Apple Valley is a member of the Southern California Hazardous Waste Management Authority, a joint powers authority between Southern California Association of Governments (SCAG) member counties. The draft Regional Comprehensive Plan (RCP) addresses a number of areas of resource management. The RCP includes an overview of the current solid and hazardous waste management planning process in Southern California, and discusses potential strategies and actions for improving the SCAG region's solid and hazardous waste management system.

Standards established by the Town of Apple Valley's Development Code are intended to ensure that the use, handling, storage, and transportation of hazardous materials comply with all applicable requirements of the State Government Code Section 65850.2 and Health and Safety Code Section 25505, and Article 80 of the Uniform Fire Code.

The Town's Multi Hazard Functional Planning Guidance Document (Multi Hazard Plan) establishes contingency plans when an incident involving hazardous materials occurs. The Town works with the Hazardous Materials Division (HMD) of the San Bernardino County Fire Department, which has been designated by the State as the Certified Unified Program Agency for handling hazardous waste and materials in the High Desert. The Hazardous Materials Team, a unit of the Apple Valley Fire Department and a member of the San Bernardino County Hazardous Materials Team, responds to all calls received related to hazardous materials in Apple Valley, including fuel spills and the illegal dumping of unknown products in the Town and surrounding area, which are all part of the Fire District's service area. They also provide assistance in other jurisdictions as requested. Local businesses must certify any hazardous materials at their facilities with the County HMD on an annual basis. HMD performs compliance inspections of facilities that handle hazardous materials, which are defined by the California Code of Regulations (Title 22). The Apple Valley Fire District Duty Chief acts as the liaison with HMD in the event of a hazardous materials spill or leak.[24]

For the Town of Apple Valley, the Hazardous Material Division of the San Bernardino County Fire Department is the administering agency and the Certified Unified Program Agency (CUPA) responsible for the regulation of hazardous materials.

[24] "Apple Valley General Plan: Emergency Preparedness Element," prepared by Terra Nova Planning & Research, Inc., March 25, 2008.

In order to raise awareness and encourage emergency preparedness, Town and Fire District staff provide CERT (Community Emergency Response Teams) training throughout the community to help its citizens and visitors prepare for potential disasters. The CERT course is certified by FEMA and the State Office of Emergency Services (OES).

Hazardous Materials Transportation

There are three hazardous materials transportation corridors located in the Town of Apple Valley. The Atchison Topeka & Santa Fe Railroad, Interstate 15, and Highway 18 have the potential to be involved in the transport of hazardous wastes and materials. The California Highway Patrol (CHP) and the California Department of Transportation (Caltrans) are the two state agencies that have primary responsibility for enforcing federal and state regulations and responding to hazardous materials transportation emergencies. CHP enforces hazardous material and hazardous waste labeling and packing regulations to prevent leakage and spills of material in transit, and to provide detailed information to cleanup crews in the event of an accident. Vehicle and equipment inspection, shipment preparation, container identification, and shipping documentation are all part of the responsibility of the CHP, which conducts regular inspections of licensed transporters to assure regulatory compliance. Caltrans has emergency chemical spill identification teams at as many as 72 locations throughout the state that can respond quickly in the event of a spill.

The US Department of Transportation (DOT) regulates the transportation of hazardous materials between states and foreign countries. DOT regulations govern all means of transportation, except packages sent by mail, which are governed by U.S. Postal Service regulations. The State of California has adopted DOT regulations for the intra-state movement of hazardous materials. State regulations are contained in Title 26 of the California Code of Regulations.

Aboveground Storage Tanks

The Aboveground Petroleum Storage Act was enacted to protect the state's people and natural resources from aboveground petroleum storage tank spills. Facilities storing petroleum products (gasoline, diesel, lubricants, etc.) in aboveground tanks with a capacity greater than 1,320 gallons, or the total capacity for the facility greater than 1,320 gallons, are subject to the Act. Owners or operators of aboveground tanks are required to file a storage statement with the State Water Quality Control Board (SWQCB) and prepare and implement a Spill Prevention Control and Countermeasure Plan (SPCCP) in accordance with federal regulations.

Underground Storage Tanks

Federal laws and regulations relating to underground storage tanks used to store hazardous materials (including petroleum products) require that tank owners and operators register their tanks with the U.S. EPA or delegated agencies. Federal regulations require extensive remodeling and upgrading of underground storage tanks, including installation of leak detection systems. Tank removal and testing procedures are specified by the regulations.

State laws relating to underground storage tanks include permitting, monitoring, closure, and cleanup requirements. Regulations set forth construction and monitoring standards, release

reporting requirements, and closure requirements. Old tanks must eventually be replaced. All new tanks must be double-walled, with an interstitial monitoring device to detect leaks. All soil and groundwater contamination must be cleaned up. The regulations for this program are contained in Chapter 6.7, Division 20 of the Health and Safety Code and Subchapter 16 of Title 23 of the California Code of Regulations, California Underground Storage Tank Regulations, and are implemented by the Regional Water Quality Control Boards (RWQCB). Underground storage tank permitting is handled through local governmental agencies.

Polychlorinated Biphenyls (PCBs)

PCBs are organic oils that were formerly placed in many types of electrical equipment, including transformers and capacitors, primarily as electrical insulators. Years after their widespread and commonplace use, it was discovered that exposure to PCBs may cause various health effects, and that PCBs are highly persistent in the environment.

In 1979, U.S. EPA banned the use of PCBs in most new electrical equipment and began a program to phase out certain existing PCB-containing equipment. The use and management of PCBs in electrical equipment is regulated pursuant to the Toxic Substances Control Act (40 CFR). These regulations generally require labeling and periodic inspection of certain types of PCB equipment and set forth detailed safeguards to be followed in disposal of such items.

Pesticides

Pesticides contain chemicals formulated specifically to be toxic to certain living things. As the use of modern chemical-based pesticide products has grown, attention has been drawn to their potential adverse side effects. Legislative and regulatory efforts to regulate the use and application of pesticides have sought to retain the benefits while minimizing the potential harm to public health and the environment.

Pesticides are subject to federal and state legislation. The following major federal and state statutes and regulations control pesticides:

- Federal Insecticide, Fungicide, and Rodenticide Act;
- Pesticide Contamination Prevention Act; and
- Birth Defects Prevention Act.

Occupational Safety

Federal and state laws define occupational safety standards to minimize worker safety risks from both physical and chemical hazards in the workplace. The California Division of Occupational Safety and Health (Cal-OSHA) and the federal Occupational Safety and Health Administration (OSHA) are the agencies responsible for assuring worker safety in the workplace. OSHA regulations (29 CFR 1910 and 1926) contain requirements concerning the use of hazardous materials in the workplace and during construction that mandate employee safety training, safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, emergency action and fire prevention plan preparation, and a hazard communication program.

Hazardous Sites

In order to identify sources of hazardous materials, a database search of federal state, and local agency records must be conducted. There are a limited number of small quantity generators that use or produce hazardous materials in Apple Valley and surrounding areas. The County requires any such businesses to certify on-site hazardous materials annually with the County's Hazardous Materials Division (HMD). These facilities include waste-generating medical clinics, gasoline service stations, equipment and fuel storage yards, and waste haulers. These businesses are inspected and monitored to assure compliance with California Code of Regulation (Title 22).

According to the environmental records review prepared for the Town of Apple Valley[25], there are 15 properties within the planning area that are currently listed in environmental databases. Of those 15 properties, 11 are listed as a result of generating, using, and/or disposing relatively small quantities of potentially hazardous materials from their business location, with no material releases having been reported on these properties. Due to these findings, significant hazardous material releases into the underlying soil and groundwater are not suspected at these locations.

Currently, there are no large quantity generators of hazardous waste in the Town of Apple Valley. All businesses that use, generate, transport, or store hazardous waste are required to submit a hazardous waste management business plan to the County of San Bernardino. According to the search of available environmental records for the study area conducted by Environmental Data Resources, Inc. (EDR)[26], there is one transporter of hazardous waste listed by the EPA in the Town and its Sphere of Influence.

A search of the US EPA Envirofacts Data Warehouse for the Town of Apple Valley conducted on October 20, 2008 did not identify any Federal Superfund Sites (NPL), State Response Sites, Voluntary Cleanup Sites, School Cleanup Sites, Permitted Sites, or Corrective Action Sites. The search did identify 7 school investigation sites, all of which require no further action since no hazards were found.[27]

Other potential risks are those from leaks from underground storage tanks, which are typically located at service stations, maintenance yards, and at airports. These constitute the most significant hazards from these small quantity generators. A search for Leaking Underground Fuel Tank (LUFT) cleanup sites identified 15 spills within the Town of Apple Valley.

Approximately 560 acres within the NAVISP were previously used as a practice bombing range by the U.S. Army Air Force during World War II. This portion of the planning area, formerly referred to as Victorville Pre Bomb Range N-1, contained no building structures. The concentric rings and the transecting strips remain visible (in aerial photographs) south of the Wal-Mart Distribution Center. Potential hazards exist due to the presence of known or suspected military munitions and explosives of concern.

[25] "Apple Valley Study", prepared by Environmental Data Resources Inc., May 01, 2006
[26] Ibid.
[27] "http://www.epa.gov/enviro/html/toxic_releases.html" accessed October 20, 2008.

Fire Hazards

Fire hazards are based on a combination of several factors, which include fuel loading, slope, weather, dwelling density, wildfire history, and whether or not there are local mitigation measures in place, such as an adequate network of fire hydrants, fire-rated construction, and fuel modification zones. The Apple Valley Fire Protection District constantly monitors the fire hazard in the Town, and has ongoing programs for investigation and alleviation of hazardous situations. Section III-M, Public Services discusses in further detail fire protection, project impacts, and mitigation measures.

Medical Hazardous Waste

The Medical Waste Management Program (California Health and Safety Code, Section 117600) protects the public and the environment from potentially hazardous medical waste by regulating the generation, handling, storage, and disposal of medical hazardous waste through the implementation of the Medical Waste Management Act (MWMA). Under the MWMA the County of San Bernardino is the local enforcement agency for Apple Valley's medical hazardous waste generators. All medical hazardous waste generators within the Town and Sphere of Influence are required to abide by the MWMA, Title 22 and Title 8 of the California Code of Regulations, and any other pertinent laws that regulate medical hazardous waste.

Household Hazardous Waste

Household hazardous waste includes a number of common household products such as fluorescent lamps, batteries, pesticides and herbicides, paint, motor oil, mercury containing devices, medications, and electronic equipment. All household hazardous waste must be disposed of at specified disposal facilities. The County Fire Department coordinates and facilitates household hazardous waste disposal. Under the authority of the County Fire Department's Household Hazardous Waste program, the Town operates a collection center located at the Town's Public Works Yard at 22411 South Outer Highway 18. Materials accepted for disposal at this location include pesticides, wood preservatives and solvents, automobile batteries, and small electronic items such as television sets and computer monitors, as well as other materials. Approved County contractors categorize, sort, pack and haul wastes to approved facilities.

Airport Safety

The Apple Valley Airport, located at 21284 Corwin Road, has a moderate to high potential for hazardous material spills. The airport is permitted to discharge less than 1,000 gallons per day of treated sewage, which is considered a minor threat to groundwater. In addition, the site contains four underground fuel storage tanks, none of which have any reported spills or leaks.

Emergency Response

EPCRA requires detailed planning to ensure that hazardous materials are properly handled, used, stored, and disposed of to prevent or minimize adverse effects to human health or the environment in the event such materials are accidentally released. California has developed an emergency response plan to coordinate emergency services provided by federal, state, and local governments and private agencies. Responding to hazardous materials incidents is one part of this plan. The plan is administered by the State Office of Emergency Services, which coordinates the responses of other agencies, including Cal EPA, CHP, Department of Fish and Game, Los Angeles RWQCB, Apple Valley Fire Protection District and San Bernardino County Environmental Health Services.

The California Emergencies Services Act requires each city to prepare and maintain an Emergency Plan for natural, manmade, or war-caused emergencies that result in conditions of disaster or in extreme peril to life. The County is currently developing mass evacuation plans within each region. The high desert region plan has not yet bee completed. The Town shall continue to coordinate with Caltrans, the Federal Highway Administration, adjoining cities and communities and San Bernardino County to provide the highest functional reliability of major roadways and the public transportation system serving the Town and the region.

2. Project Impacts

As a result of policies of the General Plan update, uses and activities may be proposed or undertaken within the Town of Apple Valley that could result in the use of hazardous materials or create a hazardous condition within the Town or annexation areas. Hazardous materials transport, storage and handling, as described above, are highly regulated at the federal, state, regional and local level. The long-term build out of the General Plan and annexation areas is expected to continue to be regulated by multiple agencies.

Releases, leaks, or the disposals of chemical compounds, such as petroleum hydrocarbons, on or below the ground surface, can lead to the contamination of underlying soil and groundwater. Disturbance of previously contaminated areas could, through grading or excavation operations, expose the public to health hazards from physical contact with contaminated materials including potential airborne hazards. Although various local state, and federal regulations govern the proper storage, handing, and transport of hazardous materials, the improper handling or storage of contaminated soil and groundwater can further expose the public to these hazards, or potentially spread contamination through surface water runoff or airborne dust. Contaminated groundwater can also spread down gradient, potentially contaminating subsurface areas of surrounding properties.

Demolition of older buildings for redevelopment can expose people and the environment to hazardous materials such as asbestos and lead-based paint. During demolition and construction operations, hazardous materials associated with the on-site uses could also be present. Demolition debris generated may include asphalt paving, dirt, concrete, asphalt, and other building materials. The General Plan includes policies and programs to assure that activities

which require the handling of hazardous building materials are properly undertaken, with the appropriate agencies' oversight.

The Atchison Topeka & Santa Fe Railroad, Interstate 15, and Highway 18 may be used in the transfer of hazardous wastes and materials within the Apple Valley planning area. Therefore, potential exists for spills and leaks from moving sources along these corridors, including within the Town and its Sphere of Influence. As previously noted, the California Highway Patrol (CHP) and the California Department of Transportation (Caltrans) are the two state agencies designated with primary responsibility for enforcing federal and state regulations and responding to hazardous materials transportation emergencies. The CHP is responsible for cleaning up hazardous waste spills that occur in or along freeways, and coordinate with Caltrans and the local sheriff and fire departments for additional enforcement and routing assistance. These two agencies' regulations will continue to govern the transport of hazardous materials through Town and the region.

Although no "large scale" hazardous waste producing industries are planned for the planning area, there are a number of businesses that have the potential to use hazardous materials and produce hazardous wastes. Commercial and industrial service providers such as dry cleaners, film processors, mechanics, and others have the potential to use and produce hazardous materials and wastes. As noted above, these hazardous material users and hazardous waste generators are regulated by county, state, and federal law, and are required to comply with the California Hazardous Waste Control Law (California Health and Safety Code, Division 20, chapter 6.5) and the California Hazardous Waste Control Regulations (California Code of Regulations, Title 22, Division 4.5). These regulations help ensure a level of safety, in which no persons are exposed to hazardous materials or waste.

An increase in the residential population will lead to an associated increase in the use of common household cleaners, batteries, fluorescent tubes, mercury-containing devices, and electronics. All of these products, termed universal wastes, are considered hazardous materials since they could harm people or the environment if they are not disposed of properly. In order to safely dispose of these wastes, the San Bernardino County Fire Department maintains a collection facility, located at 22411 Highway 18, that accepts a wide variety of household wastes. This facility, or similar facilities, are expected to continue to operate through the build out of the General Plan and annexation areas.

As previously noted, approximately 560 acres in the west-central portion of the study area was formerly used as a practice bombing range by the U.S. Army Air Force during World War II. Based on the Environmental Records Review of the Phase I Environmental Assessment prepared for the Town of Apple Valley[28], a formerly used defense site (FUDS) summary reports that this property contains a high risk due to unexploded ordnances. The report therefore strongly recommends further background study for the former bombing range prior to development. Such investigation, and associated disposal of any identified ordinance, will reduce the potential impacts at this location to less than significant levels.

[28] "Environmental Records Review", prepared by Black Rock Geosciences, of the Phase I Environmental Assessment conducted for the Town of Apple Valley by Environmental Data Resources, Inc., May 01, 2006.

The San Bernardino County Department of Airports provides for the management, maintenance, and operation of the Apple Valley Airport[29]. Two primary hazards derived from aviation activities include noise and aviation safety. Noise issues relating to airports are addressed in the Noise Element Update Technical Study, which can be found in its entirety in Technical Appendix L. Particularly hazardous land uses should be prohibited in all designated airport overlay zones, including those which would cause smoke, water vapor, or light interference impeding the pilot's ability to see the airfield. Uses which cause electrical interference with aircraft navigational and communications equipment also should be prohibited in the airport vicinity. Other inappropriate uses include those attracting large numbers of birds, including landfills and some types of food processing plants involving outdoor storage of grant and other raw materials or food by-products.[30]

Annexation 2008-001

Annexation 2008-001, also known as the Golden Triangle, has the potential to result in as much as 7,135,369 square feet of commercial space, 7,782,275 square feet of industrial space, and a total of 4,236 residential units at build out. Growth and development of this annexation area would result in an increase in the frequency of transport, use, and disposal of hazardous materials associated with residential, commercial, and industrial growth. In that the area is undeveloped, it is unlikely that contaminated or potentially contaminated sites occur within this annexation area currently; however, site-specific analyses should be conducted to determine potential areas of known and/or potential soil and/or groundwater contamination.

While businesses are required by federal, state, and local regulations to properly transport, use, and dispose of hazardous materials in the Town and its Sphere of Influence, it is possible that upset or accidental conditions may arise which result in the release of hazardous materials into the environment. However, compliance with the Town's Multi Hazard Plan and the implementation of the uniform regulations to manage the risk associated with transportation of hazardous materials will function to minimize the hazard risks that may occur.

Annexation 2008-002

As described in the General Plan Land Use Element, Annexation 2008-002 has the potential to result in 7,676,379 square feet of industrial space at build out, which in turn could result in greater quantities of industrial hazardous waste being generated, stored, and transported. As with Annexation 2008-001, although Annexation 2008-002 is currently undeveloped land, site-specific studies will be required to determine areas of soil or groundwater contamination. Project proponents for future development within Annexation 2008-002 will, as is the case with the entire planning area, be required to comply with applicable federal state, and local requirements concerning hazardous materials.

[29] County of San Bernardino General Plan, Safety Element, adopted April 12, 2007.

[30] "Town of Apple Valley Development Code, Chapter 9.65 Airport Overlay Districts", adopted October 2000.

While businesses are required by federal, state, and local regulations to properly transport, use, and dispose of hazardous materials in the Town and its Sphere of Influence, it is possible that upset or accidental conditions may arise which result in the release of hazardous materials into the environment. However, compliance with the Town's Multi Hazard Plan and the implementation of the uniform regulations to manage the risk associated with transportation of hazardous materials will function to minimize the hazard risks that may occur.

3. Mitigation Measures

The following mitigation measures will reduce the number and severity of hazardous materials incidents within the Town of Apple Valley and its Sphere of Influence, and help to ensure the protection of future residents, visitors and lands from exposure to such materials. Impacts will be less than significant.

1. The Town will cooperate with regulators and encourage the enforcement of laws that require all users, producers, and transporters of hazardous materials and wastes to clearly identify such materials, and notify the appropriate county, state and/or federal agencies as required by law.

2. The Town shall maintain appropriately managed access routes to facilitate the transport of hazardous and toxic materials.

3. The Town will work with the County Sheriff's Department, Caltrans, and CHP, to regulate the transport of hazardous materials along local roadways, state highways and routes, and interstates in the Town or the vicinity.

4. The Town will coordinate with the Apple Valley Fire Protection District and the San Bernardino County Environmental Health Department to assure improved response to, and capability for, handling hazardous materials incidents.

5. Future development within the General Plan area shall be required to comply with all applicable federal, state, and regional permitting requirements for hazardous and toxic materials generation and handling, including but not limited to the following:

    a. If it is determined that hazardous wastes are, or will be, generated by any proposed operations, the wastes must be managed in accordance with the California Hazardous Waste Control Law (California Health and Safety Code, Division 20, chapter 6.5) and the Hazardous Waste Control Regulations (California Code of Regulations, Title 22, Division 4.5). If so, the proposed facility shall obtain a United States Environmental Protection Agency Identification Number by contacting (800) 618-6942.

    b. If hazardous wastes are (a) stored in tanks or containers for more than ninety days, (b) treated onsite, or (c) disposed of onsite, then a permit from the Department of Toxic Substances Control (DTSC) may be required. If so, the proposed facility shall contact DTSC at (818) 551-2171 to initiate pre-application discussions and determine the permitting process applicable to the facility.

6. Developers shall submit for approval a detailed description of any hazardous materials use, as well as detailed plans for location of any hazardous materials storage and management facilities to the Apple Valley Fire Protection District.

7. The Town shall thoroughly evaluate development proposals for lands directly adjacent to sites known to be contaminated with hazardous or toxic materials or sites that use or contain potentially hazardous or toxic materials.

8. During project construction and implementation, the handling, storage, transport, and disposal of all chemicals, including herbicides and pesticides, runoff, hazardous materials and waste used on, or at, the project site, shall be in accordance with a project's BMP/Integrated Pest Management Plan, other relevant regulatory plans, and applicable County, state, and federal regulations.

9. The Town shall require all business that use, store, or produce hazardous material to comply with the County's Business Plan in addition to all Town regulations.

10. The Town shall annually update the SEMS Multihazard Functional Plan to ensure that emergency shelters and emergency evacuation routes are responsive to changing community needs.

11. The Town shall maintain documentation of known hazards to public health and safety and shall make this information available to government officials and organizations, emergency response personnel, and the general public.

Mitigation Monitoring and Reporting

A. Development plans and permits for uses, which may include or involve the production, storage, dispensing, or disposal of hazardous or toxic materials shall be concurrently submitted, reviewed, and properly conditioned or regulated.
Responsible Parties: Apple Valley Fire Protection District, Planning Division, Environmental Health, California Regional Water Quality Control Board, Caltrans.

H. Hydrology

Introduction and Background

This section of the EIR describes the existing hydrological setting in the planning area, the vicinity and region, and analyzes the potential constraints, risks and opportunities associated with these existing conditions. It assesses the potential for hydrological risks associated with implementation of the proposed General Plan and annexation areas, including the generation of storm runoff and associated infrastructure needs, and sets forth mitigation measures that will be effective in reducing impacts to levels that are less than significant. A wide range of data and information have been used in researching and analyzing the build out of the planning area, and its potential effects and impacts. In addition to regional-scale hydrological resource documents and the two Town Master Drainage Plans, a hydrology analysis was prepared for the proposed General Plan.[31] It is presented in its entirety in Appendix D of this EIR.

Thresholds of Significance/Criteria For Determining Significance

Standards and criteria have been drawn from Appendix G: Environmental Checklist Form of the California Environmental Quality Act (CEQA). The following factors should be considered to assure that potential flooding and hydrology impacts that may arise from build out of the proposed Apple Valley General Plan and annexations are adequately addressed. Potential project impacts to water resources and water quality are also addressed in Section III-I of this EIR:

a. Violate any water quality standards or wastewater discharge requirements;

b. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in flooding on- or off-site;

c. Substantially alter the existing drainage pattern of the state or area, including through the alteration of the course of a stream or river, or substantially increase the rate of surface runoff in a manner, which would result in flooding on- or off-site;

d. Create or contribute runoff water, which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;

e. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazards Boundary or Flood Insurance Road Map or other flood hazard delineation map;

f. Place within a 100-year flood hazard area structures, which would impede or redirect flood flow;

g. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of a levee or dam;

h. Inundation by seiche, tsunami, or mudflow.

[31] "Seismic, Geologic and Flooding Sections of the Technical Background Report to the Safety Element of the General Plan," prepared by Earth Consultants International, 2007.

1. Existing Conditions

Hydrology refers to the distribution and circulation of water in a given area, and in the context of this EIR, it is associated with the management of floodwaters and surface runoff. Hydrology is significantly influenced by geography and climate of a particular locale. Because the local microclimate affects the amount and intensity of precipitation, it also plays an important role in local hydrology.

The planning area is located in the southern portion of the Mojave Desert. The planning area climate is characteristic of a high desert ecosystem, which experiences extreme fluctuations of daily temperature, strong seasonal winds, and receives less than 5 inches of annual precipitation.

Elevations within the Town of Apple Valley and its vicinity range from 2,550 to 4,800 feet above MSL. In general, terrain within the boundary of Apple Valley ranges from 2,550 to 3,186 feet above MSL. Higher elevations occur on isolated hills such as Bell Mountain, which peaks at 3,645± feet above MSL and Catholic Hill, at approximately 3,897 feet above MSL. The lowest elevation within the planning area is associated with the Mojave River, located on the west side of Town.

The Town's Sphere of Influence contains elevated terrain as high as 4,800 feet. Mountain ranges to the north and northeast of the planning area include the Sidewinder, Black, and Turtle Mountains. The Fairview and Granite Mountains occur to the east. The Ord Mountains and the San Bernardino Mountains are located to the south. The north face of the San Bernardino Mountains constitute some of the highest elevations in the region, and have a strong influence on the local climate and potential for flooding hazard in the planning area.

The region and the Town are impacted by winter storms, local thunderstorms, and summer tropical storms, all of which have the potential to produce substantial precipitation. Winter storms, which usually occur between November and April, are responsible for most of the precipitation recorded in Apple Valley and southern California. These storms may discharge heavy and sometimes prolonged precipitation over a large area. Local thunderstorms, which usually impact relatively small areas and can occur at any time, are usually most prevalent in the higher mountains during the summer, but also common in the Mojave Desert region. Tropical rains originate in the warm, southern waters off Baja California in the Pacific Ocean, and move northward into southern California. Tropical storms typically occur in the summer or early fall, especially in the desert areas.

The mountain drainages and ephemeral streams associated with the Mojave River have contributed to the topography of the region. The Mojave River is a federally regulated waterway that flows along and generally defines of much of the western boundary of Apple Valley. The headwaters of the River are formed by streams on the north flank of the San Bernardino Mountain, which occur south of Apple Valley. There are two flood control structures along the west fork of the River; these are the Cedar Springs Dam, and the Mojave Forks Dam, a major flood control structure. The Mojave River leaves the mountains flowing northward along the

western edge of Apple Valley, from whence it trends eastward towards Barstow and ends at Soda Lake in Kern County. While most of the River's flow is underground, surface water may occur along the entire length of the river during large storms. It has been one of the most significant sources of destructive flooding in the high desert region.

In the planning area, the Mojave River is fed by several tributary dry washes, the largest of which, the Bell Mountain Wash, is a natural channel that collects runoff primarily from the north and west. The Desert Knolls Wash, which contains a partially lined concrete drainage basin, is a smaller wash that drains the area west of Catholic Hill. There are also several small, unnamed drainages that channel flows from the western part of the Ord Mountains towards the Mojave River. Other watercourses in the planning area flow into the Apple Valley Dry Lake. Most of these watercourses are considered to be ephemeral, in that they rarely contain surface water flow and generally have poorly defined banks.

The Town has historically been subject to flooding and associated hazards, such as mudflows, during severe summer storm events. The winter rainfall in February and March of 1938 stands as the benchmark for damaging storms in the Apple Valley area; during this event, peak stream flow for Deep Creek was estimated at more than 46,000 cubic feet per second, and flows in the Mojave River increased to more than 70,000 cubic feet per second. Other notable historic peak flows reached about 23,000 cubic feet per second in 1969 and 1978, and more than 37,000 cubic feet per second in 1910.

The planning area is primarily a high desert area, and as such is typified by rugged mountain ranges and dry lakes, or desert playas, where most of the drainages from the surrounding hills and mountains in area terminate. The aforementioned Apple Valley Dry Lake is the largest playa in the area, collecting runoff from most of Apple Valley. The Reeves Dry Lake, a smaller playa to the east of the planning area in the central part of Fairview Valley, collects runoff from the adjacent mountains. Drainages emanating from the Ord Mountains include the Juniper Flats, Arrastre Canyon, and Lovelace Canyon watersheds; these drain into the Rabbit Dry Lake in Fifteen Mile Valley, located to the southeast of Apple Valley. Drainages from the Granite Mountains, located to the east of the planning area, flow eastward to Lucerne Dry Lake in Lucerne Valley. Locally, drainage channels in Apple Valley become less defined on the valley floor, as water-borne sediment typically occurs as sheet flow, spreading out into braided ephemeral stream channels.

The Town includes older as well as some newer construction that incorporates little alteration to natural terrain, with some structures built along and within natural drainage channels. Some streets are constructed without culverts or bridges. Flows along natural drainage courses can therefore impact such development.

Floods on alluvial fans are typically shallow in depth but can occur with little warning, at high speeds and can carry large sediment loads. As defined by the Federal Emergency Management Agency (FEMA), flood hazards associated with alluvial fans fall into two categories: active and inactive. Active alluvial fans have unpredictable flow paths, result in sudden and unexpected deposition and erosion and can pose an extreme hazard due to the combination of slope,

topography and sediment availability. It is difficult to realistically assess flood risk and develop appropriate mitigation under these conditions. Inactive alluvial fans have relatively stable flow paths and low levels of deposition and erosion that do not de-stabilize flow paths. Both processes may be present in a particular alluvial fan, especially where man-made structures have modified terrain. In Apple Valley, most alluvial fans exhibit active and inactive characteristics.

Regional Stormwater Management

Regional drainage facilities in the planning area and vicinity include rivers, major streams and their tributaries, as well as areas of significant sheet flows. As the agency responsible for management of these facilities, the San Bernardino Flood Control District ("Flood Control District") implements broad management functions, including flood control planning, construction of drainage improvements for regional flood control facilities, and watershed and watercourse protection related to those facilities. To carry out its mandated responsibilities, the Flood Control District also has power of taxation, bonded indebtedness, land and water rights acquisition, and cooperative partnerships with local, state, and federal agencies. The San Bernardino County Board of Supervisors is the official decision-making body for the Flood Control District.

Local Drainage Management

Although the County Flood Control District holds the primary responsibility for managing regional drainage in the planning area, the Town retains direct responsibility for local drainage management. Areas rich in vegetation and cover or constrained by topography, such as alluvial plains and drainage channels, provide a valuable means of reducing runoff, preserving the capacity of downstream facilities, as well as managing local drainage and open space. The integration of planned on-site stormwater detention facilities significantly reduces the needed size of downstream facilities, creates opportunities for groundwater recharge, and provides for enhanced open space and/or recreation areas.

Major Local Flood Control Facilities

The drainage within the Town of Apple Valley is defined by the Apple Valley Master Plan of Drainage and the Apple Valley West/Desert Knolls Master Plan of Drainage.

Apple Valley Master Plan of Drainage[32]
The Apple Valley Master Plan of Drainage divides the Town of Apple into subareas based on localized hydrologic features, including topography, soils, and drainage facilities. These subareas include the North Community, the South Community, and the East Community, as discussed below.

[32] "Apple Valley Master Plan of Drainage," prepared by San Bernardino County Flood Control District, 1991.

The North Community Master Drainage Plan identifies numerous drainage courses and regional drainage facilities in the northern part of Town, north of the Apple Valley Dry Lake. Existing and proposed flood control facilities in this area include:

- Facility N-01: an unimproved, open channel that collects runoff from a 3.3 square mile area that encompasses Fairview Mountain and is diffused on the valley floor. This channel intercepts runoff and provides flood protection for buildings east of Central Road.

- Facility N-02: a shallow earthen channel adjacent to the Apple Valley Airport. This channel runs through from Central Road north of Johnson Road, to Waalew Road west of Navajo Road. It transports runoff that originates on the south side of Black Mountain and the northeast side of Fairview Mountain, an approximately 8.7 square mile area.

- Facility N-03: a riprap-lined channel that transports runoff from an industrial area east of the airport, and merges with facility N-02 south of Papago Road.

- Facility N-04: a fully leveed channel that conveys runoff southward from Black Mountain, north of the Mojave Northern Railroad, draining an area of 7.6± square miles. A debris basin is recommended adjacent to the railroad, since there are numerous drainage paths through the Black Mountain area upstream of the railroad line.

- Facility N-05: an earthen channel with a partial riprap lining. Facility N-05 transports runoff generated entirely from the industrial area north of the airport, merging with channel N-04 just south of Gustine Street, where an earthen levee collects flows.

- Facility N-06: carries runoff generated by Bell Mountain, Little Bell Mountain, and Catholic Hill, west of Dale Evans Parkway between Quarry Road and Corwin Road. Draining approximately 1.6 square miles, N-06 is a natural earthen channel in some areas, has riprap in other sections, and is fully leveed in its southernmost sections. On the east side of the upper portions of the channel, containment levees are needed, and debris basins may be required, since the natural channels that drain Bell Mountain are intercepted.

- Facility N-07: a riprap-lined channel that carries runoff from Little Bell Mountain and Catholic Hill, running parallel with Corwin Road and merging with channel N-06 at the intersection of Corwin Road and Papago Road. Facility N-07 requires a containment levee along Corwin Road to channelize flows, and a debris basin where the natural channels that drain Catholic Hill are intercepted.

The South Community Master Drainage Plan proposes drainage courses and regional drainage facilities in the northern part of Town, north of the Apple Valley Dry Lake. The existing and proposed flood control facilities in this area include:

- Facility S-01 (Mariana Wash) and its tributaries: these facilities convey most of the initial runoff from the Ord Mountains within the watershed, out-letting at the Dry Lake, with 100-year peak flows of approximately 9,900 cubic feet per second and a tributary area of about 29

miles. The Drainage Plan indicates that it may be beneficial to elevate the lower reaches of this facility as a rectangular concrete channel to reduce impact on existing development.

- Facility S-02: conveys runoff from the residential area south of the railroad and north of Ocotillo Way along an alignment that closely follows that of the existing wash. This facility outlets to S-01, just south of Ramona Avenue with a 100-year peak flow rate of approximately 5,200 cubic feet per second. This drainage has a tributary area of about 9 square miles.

- Facility S-03: conveys runoff from the Ord Mountains east of the portion that is directly tributary to Facility S-01. At the confluence point with S-01, this facility has a peak 100-year flow rate of approximately 3,800 cubic feet per second, and a 5.5 square mile tributary area.

- Facility S-04: conveys runoff originating in the Ord Mountains west of the portion contributing directly to Facility S-01. Where these facilities meet, S-04 has a peak 100-year flow rate of approximately 2,100 cubic feet per second, and a 2.1 square mile tributary area.

- Facility S-05 (proposed): this facility will be constructed to convey runoff from the single-family residential development south of the railroad. It will have a base 15 feet wide and be riprap lined along its entire 200-foot length. The 100-year peak flow for this facility is estimated to be approximately 780 cubic feet per second.

- Facility S-06 (proposed): will follow the existing alignment of Colony wash, and convey runoff from Deadman Hills and the low-density residential area in the southeast portion of the Town. Where it meets Facility S-02, this facility would have a peak 100-year flow of approximately 3,100 cubic feet per second, and a 4.4 square mile tributary area.

- Facility S-07 (proposed): the alignment of this facility is proposed to closely follow the existing Del Oro Wash for its entire length, and will convey runoff from local residential areas encompassing 2.4 square miles. At its outlet to S-03 it will have a peak 100-year flow rate of 1,600 cubic feet per second.

- Facility S-08: conveys runoff from a southwest portion of Town to the Apple Valley Dry Lake. It is a long, narrow watershed that includes dense single-family residential development. It outlets to the Dry Lake, where the 100-year peak flow rate is approximately 2,800 cubic feet per second, with a 7.4-mile tributary area.

- Facility S-09: conveys runoff from the southwest portion of Town and outlets to S-08, just north of Standing Rock Avenue and east of Navajo Road. It has a 2.8-mile square mile tributary area; the 100-year peak flow rate is approximately 1,100 cubic feet per second.

- Facility S-10: conveys runoff from the area immediately west of the Apple Valley Dry Lake. Where it outlets to the Dry Lake, the channel has a 100-year peak flow rate of about 1,100 cubic feet per second. The tributary area is approximately 1.2 square mile.

Drainage courses and regional drainage facilities in the eastern part of Apple Valley are proposed in the *East Community Master Drainage Plan*. Currently there are no significant man-made flood control facilities in the East Community; the natural drainage system consists of one major watercourse, the Fairview Wash. The existing and proposed flood control facilities in this area include:

- Facility E-01: also known as the Fairview Wash, which receives runoff from the Granite Mountains in the east and south, and from the Fairview Mountains to the north. The tributary area is approximately 20 square miles. Runoff is contained within a broad flood plain with side slopes with a ratio of approximately 60 to 1. Facility E-01 outlets to the Apple Valley Dry Lake, with 100-year peak flows of 8,500 cubic feet per second.

- Facility E-02 (proposed): is planned to meet with E-01 at the outlet to the Dry Lake, and will receive runoff generated from Fairview Mountain north of Waalew Road. Runoff will be collected into a concrete channel by means of an earthen levee along the north side of Waalew Road, east of Tokata Road, as well as a short section of levee running north on the west side of the natural watercourse. The 100-year peak flow is expected to be about 1,400 cubic feet per second, with a 1.5-mile tributary area.

- Facility E-03: drains the southern portion of Fairview Mountain. The channel is partially riprap-lined and has a base of 15 feet. It meets Facility E-01 approximately 1,200 feet east of Japatul Road. Peak 100-year flow rates are approximately 840 cubic feet per second.

- Facility E-04: conveys runoff from the western portion of the Granite Mountains and the Deadman Hills. Channelization occurs just north of Esaws Avenue, approximately 1,600 feet east of Japatul Road. In order to ensure channelization of runoff, a levee is proposed to run southeast from the channel inlet, and another along the east side of Redwing Road. At its outlet into the Dry Lake, this facility has a 100-year peak flow of 5,700 cubic feet per second, from a 10.4 square mile tributary area.

- Facility E-05: conveys runoff from the Granite Mountains between Thunderbird Road and Standing Rock Avenue, meeting E-04 at Candlewood Road. The 100-year peak flow rate for this facility is 3,800 cubic feet per second, from a tributary area of 4 square miles.

- Facility E-06: conveys runoff from the Deadman Hills. Its confluence with E-04 occurs approximately 750 feet north of Esaws Avenue and 500 feet west of Shirwaun Road. The 100-year peak flow for this facility is approximately 1,600 cubic feet per second.

- Facility E-07: conveys runoff from the Granite Mountains and Japatul Hills south of Standing Rock Avenue, joining with E-05 at Shirwaun Road. E-07 has a 100-year peak flow of 1,200 cubic feet per second, and is riprap lined with a base of 15 feet.

- Facility E-08: conveys runoff from the Granite Mountains between Thunderbird Road and Standing Rock Avenue. It is a riprap-lined channel with a 100-year peak flow rate of

approximately 750 cubic feet per second. E-08 joins E-05 at Via Vista Road just east of Lillian Way.

Apple Valley West/Desert Knolls Master Plan of Drainage[33]
The Apple Valley West/Desert Knolls watershed is generally defined by Catholic Hill and Piercy Quarry to the north, the base of the Ord Mountains to the south, Kiowa Road to the east, and the Mojave River to the west. A long and narrow watershed, the northern portion is moderately sloping to the southwest. The southern portion gently slopes down to the northwest to the Mojave River. Existing and proposed flood control facilities in this area include:

- Line A-01: also known as the "Desert Knolls Wash," A-01 is an existing natural earthen channel that enters the Mojave River just upstream of the Upper Narrows. Along the River in this area, approximately 500 feet of containment levees will be required, ranging from zero to six feet in height. The 100-year flow depth of this facility and that of the River are the same at their confluence point.

- Line B-01: the proposed outlet of this line will cross Riverside Drive and continue directly into the River. In future, this facility will require containment levees along the River ranging from zero to six feet in height ,upstream to Talcony Road, which is approximately 1,200 feet upstream of Riverside Drive. The 100-year flow depth in this facility is approximately 3 feet higher than the River where they meet.

- Line C-01: flows across Havasu Road, emptying into an earthen swale that flows to the northwest and into the River. Containment levees at the River along this line will need to range from zero to six feet in height, upstream to Havasu Road. This facility and the River have the same 100-year flow at their confluence.

- Line E-01 (proposed): will utilize existing pits between the existing rail line and Rock Springs Road. The pits will need to be filled to approximately 10 feet and the River levee will have to be lowered to allow flows to reach the River, with railroad and road embankments acting as levees for this facility. These improvements will place the 100-year flow depth of this facility at approximately 4 feet higher than the River where the facility and the River join.

National Flood Insurance Program

The Federal Emergency Management Agency (FEMA) is responsible for the analysis and mapping of areas prone to flooding in the United States, as mandated by the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. In order to promote appropriate land use planning within floodplain, FEMA produces Flood Insurance Rate Maps (FIRMs) to regional and local agencies to identify flood hazard zones. They assist agencies in decision-making based on the varying degrees of potential flood hazards, and in determining the

[33] "Apple Valley Master Plan of Drainage," prepared by San Bernardino County Flood Control District, 1991.

need for federal flood insurance. A particular site's potential frequency of flooding, or "base flood," may also be referred to as the 100-year flood, which has a one percent probability of occurring in a given year. FIRM maps designate lands located within the 100-year and 500-year floodplains.

The National Flood Insurance Program (NFIP) uses the base flood as a regulatory standard to determine insurance requirements throughout the United States. This standard is also used by federal, state, and county agencies in the administration of floodplain management programs, which are intended to reduce flood-related losses and protecting the natural resources and functions of the floodplain. Property owners in local jurisdictions where floodplain management ordinances have been adopted and are enforced, and that meet minimum FEMA criteria, are eligible for federally subsidized flood insurance, as mandated by the NFIP. In addition, the NFIP offers State and community grants for flood mitigation projects, and, through the Community Rating System (CRS), recognizes communities that implement measures to protect their floodplains from flooding and erosion hazards.

The Town has participated in the NFIP since 1995, and therefore, flood insurance is available to any property owner in Town.

Flood Hazard Zones in the Planning Area

The FIRM inundation limits for the 100-year and 500-year flood for the General Plan area are shown in Exhibit III-12, Apple Valley Flood Hazard Map. Each of the applicable flood zones is briefly described below. It should be noted that the flood zones are incomplete since the entire planning area has not been studied.

Zone A: Areas of 100-year flood for which no base flood elevations have been determined.

Zone AE: Areas of 100-year flood for which base flood elevations have been determined.

Zone D: Areas with possible but undetermined flood hazards. No flood hazard analysis has been conducted. Flood insurance rates are commensurate with the uncertainty of the flood risk; mandatory flood insurance purchase requirements do not apply, but coverage is available.

Zone X: Areas that have been determined to be outside the 500-year floodplains.

The FIRM maps are amended periodically to reflect changes in flood control facilities and/or topography (usually as a result of development). Modifications to the FIRM maps typically accompany updated Flood Insurance Studies or Letters of Map Change that FEMA issues in response to an agency supplying new hydraulic data showing that the flooding hazard in a specific area has changed or been abated. Current FIRM maps in the Town include six community panels from 1996, and one community panel from 1997. Since their original publication, some of the maps have been amended by Letters of Map Change (LOMC).

Portions of Apple Valley are still vulnerable to inundation during the 100-year flood. Although the Mojave Riverbed is dry most of the year, areas along the Mojave River have been identified by FEMA as subject to inundation by the 100-year flood. While in some areas along the River development is located primarily atop bluffs, these natural barriers do not exist along the central and southern areas of the River, which are still subject to flood hazards. Low-lying areas near the River are especially at risk during periods of intense precipitation in the San Bernardino Mountains, which receive substantially more precipitation than the adjacent desert.

Other flood-prone areas include Desert Knolls Wash and lands within the Apple Valley Dry Lake. Most of the areas identified by FEMA as subject to flooding are relatively undeveloped, or minimally developed, as in Apple Valley Dry Lake. The Desert Knolls Wash area, however, is generally developed. Roadways potentially susceptible to flooding include Rock Springs Road, a major roadway that would be flooded and impassable in the event of a 100-year storm, and many secondary roads in the planning area, primarily in the vicinity of Apple Valley Dry Lake.

Town of Apple Valley Flood Hazard Overlay Ordinance[34]

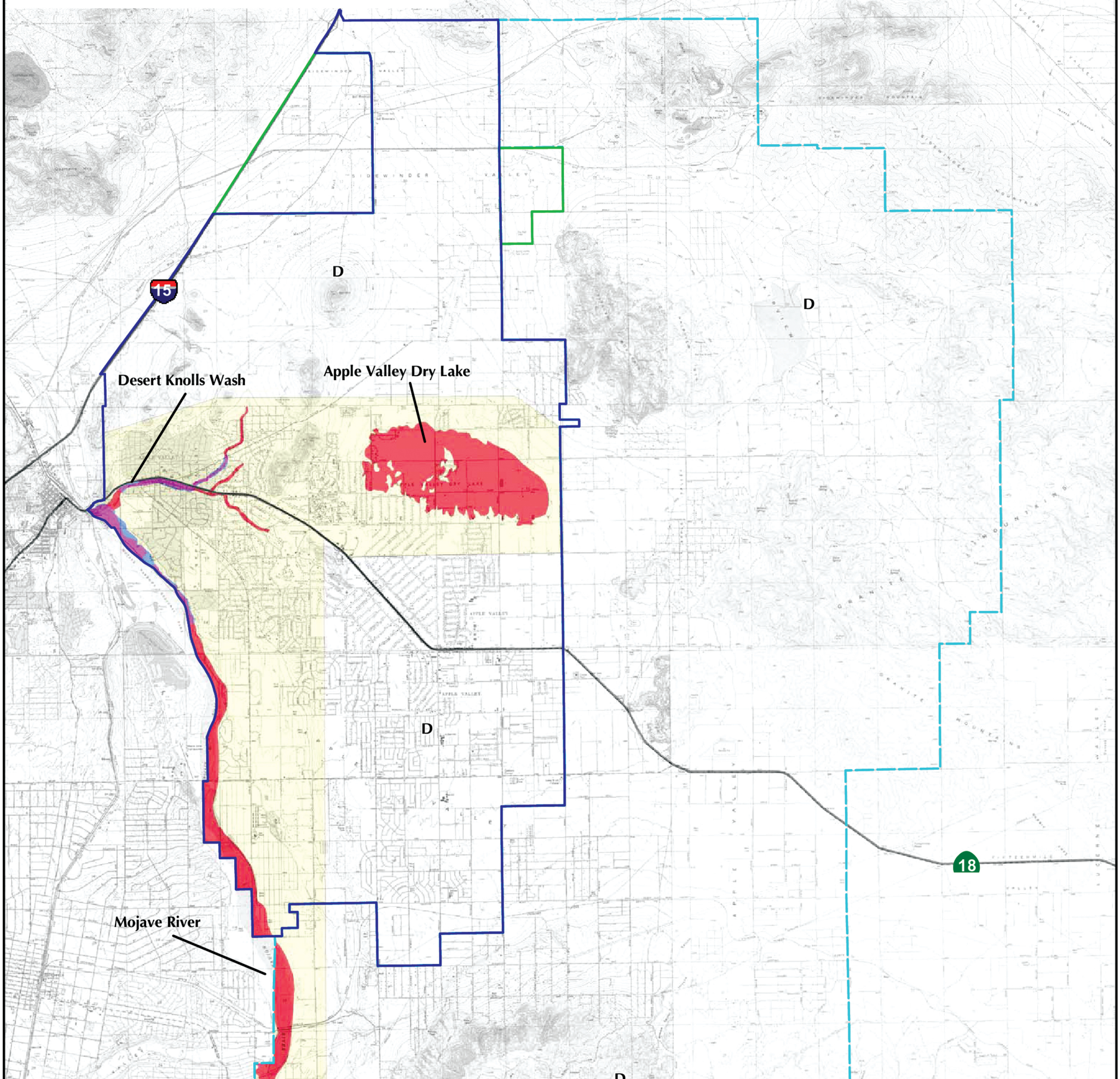
As part of its participation in the NFIP program and to ensure safe development within flood zones, the Town's development code establishes development standards within areas identified as FIRM-mapped flood hazard zones. The Flood Hazard Overlay Ordinance (Chapter 9.62 of Apple Valley Development Code) is intended to protect the community's residents from risk to health and safety and to minimize economic impacts associated with flooding. It restricts or prohibits uses that are unsafe or otherwise inappropriate for development in flood zones, and sets forth construction and other standards for permitted development in these areas.

[34] "Flood Hazard Overlay District Ordinance, Chapter 9.62, as amended, Town of Apple Valley Development Code 2000.

NOTES:

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, nor does it satisfy the evaluation requirements set forth in geologic hazard regulations.

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Base Map: USGS Topographic Map from Sure!MAPS RASTER, 1997.
Sources: Federal Emergency Management Agency, 1997; 1996, 1997 (Flood Insurance Rate Maps
Panel Numbers: 06071C6485F, 06071C5845F, 06071C5840F, 06071C5820F, 06071C6505F, and 06071C6515G).

N
W E
S

Scale: 1:108,000

9000 0 9000
Feet

2000 0 2000
Meters

Explanation

- A — Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
- AE — Areas of 100-year flood; base flood elevations and flood hazard factors determined.
- X — Areas of 500-year flood; areas of 100-year flood with average depths of less than one foot or with drainage areas less than one square mile and areas protected by levees from 100-year flood.
- X — Areas determined to be outside the 500-year floodplain.
- D — Areas in which flood hazards are undetermined.
- Town of Apple Valley Boundary
- Apple Valley Sphere of Influence
- Apple Valley Annexed Area

Source: Earth Consultants International, December 2008

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Planning & Research, Inc.

Apple Valley General Plan Draft EIR
Flood Zones in the Study Area
Apple Valley, California

Exhibit
III-12

All-Weather Crossings

As described above, the planning area includes numerous channels and drainage facilities. Bridges and underpasses are critical roadway components for delivery of food, water and medical supplies and personnel, as well as for the evacuation of the injured. U.S. Interstate-15 and State Route 18 are major regional access routes serving the Town. Freeway underpasses and railroad crossings are generally protected from flooding by existing flood control structures. In the event of a major flood or other disaster, critical roadways and components could be damaged or blocked.

Access to the U.S. Interstate-15 freeway, which links Apple Valley with other cities and communities in the region, may become flooded or damaged in the event of major flood events. Several roadways, including U.S. I-15, cross the Mojave River west of the Town. State Route 18, Bear Valley Road and Rock Springs Road cross the River at the Town limits. State Route 18 and Bear Valley Road are all-weather crossings. Rock Springs Road is an at-grade roadway that is frequently impassible during major storms. All bridges on U.S. Interstate-15 in the planning area are designed to withstand the 100-year flood and to have 2 feet of freeboard for the 50-year flood.[35]

An additional crossing, the Yucca Loma Bridge at Yucca Loma Road, is under design by the Town, and construction is anticipated to begin in 2010 and be completed in the later part of 2011. At completion this bridge will be four lanes wide (two lanes in each direction).

Bridge Scour

Bridge scour is the erosion and transport of stream materials from bridge foundations, and is caused by the rapid flow of flood or other surface waters beneath a bridge or railroad crossing. This process can result in the subsequent loss of support of bridge foundations, and could result in damage or the ultimate collapse of the bridge. Scour can occur within the main channel, on the floodplain, or both. Scouring of roadway and railroad bridges in the planning area could result from local or regional flooding.

There have been several catastrophic collapses of highway and railroad bridges nationwide that have occurred as a result of scouring and the subsequent loss of foundation support. A nationwide inventory and evaluation of bridges, administered by the U.S. Department of Transportation/Federal Highway Administration (FHWA), has been developed in response to these disasters. The State of California participates in this National Bridge Inventory program. Potential for bridge scour occurs within the planning are at the river crossings of State Route 18 and Bear Valley Road, as well as the railroad bridge at Rock Springs Road, and a concrete bridge where Interstate 15 crosses Bell Mountain Wash. Scouring may occur sporadically since streams in the planning area flow only occasionally, often during high-intensity storms. To ensure that any scouring is detected, bridges should be inspected during and after a flood event to ascertain scour damage that could impact their foundations. Repairs should take place as quickly as

[35] Personal communication, Darin Cooke, Caltrans District 8, August 11, 2008.

possible and prior to the next storm event or storm season, whichever is applicable. Mitigation measures are set forth below.

The San Bernardino County Flood Control District and the Town require that development approvals for all projects proposed in FEMA Zone A where sheet flooding may occur are conditioned to protect improvements from flood damage. As discussed under Project Impacts, below, future development in these areas should be carefully regulated until such time as flood improvements are completed and severe flooding threats are alleviated in these areas.

In summary, the Town has developed in a pattern that is characteristic of a rural to semi-rural development area, and in many areas there have been only minor alterations to natural terrain. Private developers have constructed most of the improvements to Apple Valley's drainage infrastructure as development has occurred, generally in a piecemeal fashion. Most site-specific systems include on-site collection and percolation. The western portion of the planning area is well-developed and generally incorporates more drainage improvements. Most of these flow to the Mojave River. In the overall, the Town currently lacks a comprehensive, interconnected storm drain system.

There are numerous natural drainages throughout the planning area, which, in the past, have been the primary cause of localized flooding. Many streets cross natural drainage channels that are not equipped with bridges or culverts. Unpaved roadways are subject to erosion, and paved and unpaved roadways in many areas lack curbs or channels to direct flows. Other facilities such as underground pipelines are not common. In the absence of these facilities, strong storms frequently result in localized flooding, road closures, erosion damage, and sedimentation. Drainages have been blocked or altered by debris or structures, such as elevated rail lines. The nature of these natural drainages, supplemented by a few man-made improvements, is the primary cause of localized flooding experienced in the recent past. Maintenance also becomes a challenge, as many of the naturally occurring drainage features meander through private properties. These issues are further addressed under Project Impacts and Mitigation Measures, below.

Seismically Induced Inundation

Dam Inundation

Inundation associated with seismic events can occur if dams and other water retention structures fail due to strong groundshaking, settlement and other risks associated with earthquakes. There are three major water retention structures upstream from Apple Valley: Mojave Forks Dam (Mojave Reservoir), Cedar Springs Dam (Silverwood Lake), and Lake Arrowhead Dam. The planning area and vicinity are subject to risk of flooding in the event these facilities fail. The California Division of Dam Safety monitors each of these dams for structural safety. Although the potential for a catastrophic dam breach is remote, the potential impacts of such an event could be devastating. Therefore, dams are required to develop inundation maps that show the potential flood limits to help with contingency planning. Dam owners are also required to submit emergency response plans to the State Office of Emergency Services, which serves as the lead

State agency for the State dam inundation-mapping program. The dam inundation pathways for the planning area are shown in Exhibit III-13, Dam Inundation Pathways.

Mojave Forks Dam
As previously noted, Mojave Forks Dam is located at the base of the San Bernardino Mountains at the confluence of Deep Creek and the West Fork of the Mojave River. Constructed in 1971 to control flooding in desert communities, with a drainage basin area of 215 square miles, the dam is designed to retain water temporarily during storm events. Single-outflow releases are then allowed at rates designed to remain within the downstream channel. design flood peak outflow is 23,500 cubic feet per second (cfs). The maximum release from the dam to date is 16,600 cfs, when waters reached a height of 73 feet below the spillway crest.

Cedar Springs Dam
Upstream from the Mojave Forks Dam, in the Summit Valley area of Hesperia, is the Cedar Creek Dam. This dam, which is constructed across the West Fork of the Mojave River, impounds the Silverwood Lake water supply reservoir and recreation area. Cedar Creek Dam is also used to generate hydroelectric power. It has a 34-square-mile drainage area and receives additional water from the California Aqueduct. A dam failure at this facility would inundate a substantial portion of eastern Summit Valley between Silverwood Lake and Mojave Forks Dam in less than 30 minutes.

Lake Arrowhead Dam
Lake Arrowhead is a man-made reservoir located in the San Bernardino Mountains, 15± miles south of Apple Valley, at an elevation of approximately 5,000 feet. Construction of the dam, which was originally intended to serve as a water supply source to the City of San Bernardino, began in 1893. Due to legal difficulties and ownership changes, the dam was not completed until 1922.

Projected Dam Failure Scenarios
The technical report prepared for the General Plan projected several dam failure scenarios. In the event that the Mojave Forks Dam were to fail at near-capacity conditions, the path of the water's inundation is projected to remain within the existing Mojave River bed and the mouth of several small tributary channels. Should Lake Arrowhead Dam fail, water flowing down the Deep Creek drainage would eventually reach the Mojave Forks Dam. Floodwaters from Silverwood Lake or Lake Arrowhead would remain within the Mojave Forks Reservoir area, assuming that facility was not at or near capacity. If it were, flood flows would spill over into the River[36]. As these scenarios indicate, therefore, the probability of extreme flood hazard from dam inundation is unlikely. This is due to the distance from the planning area, as well as precautions built into the holding basins below Lake Silverwood and in the Deep Creek area just ahead of where water enters into the Mojave River.

[36] "Technical Background Report to the Safety Element, Flooding Hazards, Town of Apple Valley", prepared by Earth Consultants International, October 2007.

NOTES:

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Distance from Dam..... 14.2 Miles
Arrival Time..... 2.25 Hours
Peak Elevation..... 2,752 NGVD
Time of Peak Elevation..... 4.0 Hours
Average Overbank Depth.. 32 Feet

32

Distance from Dam..... 10.2 Miles
Arrival Time..... 2.25 Hours
Peak Elevation..... 2,816 NGVD
Time of Peak Elevation..... 3.25 Hours
Average Overbank Depth.. 15 Feet

15

Distance from Dam..... 6.5 Miles
Arrival Time..... 1.5 Hours
Peak Elevation..... 2,885 NGVD
Time of Peak Elevation..... 2.5 Hours
Average Overbank Depth.. 14 Feet

14

Distance from Dam..... 3.2 Miles
Arrival Time..... 0.75 Hour
Peak Elevation..... 2,939 NGVD
Time of Peak Elevation..... 1.75 Hours
Average Overbank Depth.. 18 Feet

18

Distance from Dam..... 0.3 Mile
Arrival Time..... 0.25 Hour
Peak Elevation..... 2,993 NGVD
Time of Peak Elevation..... 1.25 Hours
Average Overbank Depth.. 32 Feet

Base Map: USGS Topographic Map from Sure!MAPS RASTER, 1997.
Sources: California Department of Water Resources, 1986;
US Army Corps of Engineers, 1975; US Army Corps of Engineers, 1986.
NGVD= National Geodetic Vertical Datum; the national standard reference datum used to establish elevations, in feet.

N
W E
S

10000 0 10000 Feet

2400 0 2400 Meters

Scale: 1:120,000

Explanation

- Mojave River Forks Dam Failure Inundation Pathway
- Cedar Springs Dam Failure Inundation Pathway
- Lake Arrowhead Dam Failure Inundation Pathway
- Town of Apple Valley Boundary
- Apple Valley Sphere of Influence
- Apple Valley Annexed Area
- 5 Cross-section, with average overbank depth in feet at cross-section.

Source: Earth Consultants International, December 2008

TERRA NOVA®
Planning & Research, Inc.

Apple Valley General Plan EIR
Dam Inundation Pathways
Town of Apple Valley

Exhibit
III-13

Inundation from Above-Ground Storage Tanks

Aboveground water tanks may be damaged by strong ground shaking and rupture. Seismically induced inundation can occur if a tank is not adequately braced and baffled, which allows water to slosh within the tank, potentially lifting it off of its foundation and splitting the shell. Pipes leading to and from the tank may also be severed or damaged, thereby releasing water. Although the Town of Apple Valley does not store or distribute water or own water storage tanks, there are several water purveyors serving Town, each of which maintains aboveground water storage reservoirs located throughout the planning area. Water tanks constructed in recent years are expected to meet current earthquake design standards, however this is not necessarily true of older tanks, which may lack seismic upgrades, such as flexible joints, that are designed to limit potential for tank failure and resulting flooding and damage to downstream areas. These issues are further discussed under Project Impacts and Mitigation Measures, below.

Annexations 2008-001 and 2008-002

Currently, both proposed annexation areas are largely undeveloped. Several shallow, dry washes (ephemeral streams) of relatively small width flow southeasterly throughout both annexation areas. Portions of Bell Mountain Wash, previously described, occur in Annexation 2008-001. As illustrated in Exhibit III-12 both annexation areas are designated by FEMA as Zone D, which is within the floodplain but not within the Special Flood Hazard Area (SFHA).

Federal and State Regulatory Requirements

National Pollutant Discharge Elimination System (NPDES)

Stormwater runoff from the built environment, such as rooftops, streets, parking lots, fertilized recreational facilities such as golf course, and other landscaped and hardscaped surfaces, could potentially contaminate or pollute surface and ground waters. The Town participates in the National Pollutant Discharge Elimination System (NPDES), which implements the federal Clean Water Act of 1990. NPDES regulates polluted runoff by requiring the implementation of stormwater management plans and programs that reduce the discharge of pollutants from stormwater systems into waters of the United States. Any development generating discharges that flow directly to surface water must obtain the NPDES permit.

Federal Clean Water Act

Drainages that flow into the Mojave River may be considered, for purposes of complying with Section 404 of the Clean Water Act (CWA), waters of the U.S., which fall under the jurisdiction of the U.S. Army Corps of Engineers (ACOE). Based on the Biological Resources Study prepared for the General Plan, surface disturbance involving dredge and/or fill activities affecting the streambanks or bed of Bell Mountain Wash and its connected tributaries may therefore require compliance with Section 404 of the federal CWA, which is administered by the ACOE.[37] Development within these channels may also be subject to compliance with Section

[37] "Town of Apple Valley General Plan Update - Biological Resources", prepared by AMEC Earth & Environmental, Inc., February 2008.

401 of the Clean Water Act through the Lahonton Regional Water Quality Control Board (LRWQCB). These issues are further discussed in Section III-F, Biological Resources.

California Fish and Game Code
Surface disturbance and/or land development that alters the bed and banks of streambed areas within the planning area may also require site-specific Streambed Alteration Agreement (SAA) permitting under Section 1602 of the California Fish and Game code. This is also further discussed in Section III-D.

2. Project Impacts

As the population in the planning area grows, development pressure will amplify and urbanization and associated impervious surfaces, such as roadways, sidewalks, and parking lots will also increase. Water that would at one time have been absorbed into the ground will dispersed as runoff to downstream areas. If drainage channels that convey storm waters are not designed or improved to carry these increased flows, areas that have not flooded in the past may be subject to flooding in the future, especially in developments downstream from canyons that have the potential to convey mudflows, and within the vicinity of the Mojave River and the Apple Valley Dry Lake. Future development also has the potential to alter existing drainage patterns and, in some areas, to result in the accumulation of a significant amount of debris during large storms. Golf courses, greenbelts or other open space areas in large-scale developments may be utilized as part of a network of channels that collect and convey on-site runoff.

Flood hazard areas in the planning area are at risk of periodic inundation. Such events create health and safety hazards that can result in the loss of life and property. Commerce and governmental services may be disrupted, requiring expensive outlays of public funds for flood protection and relief, and the tax base undermined. These would constitute adverse impacts on public health, safety and general welfare.

Such flood losses are the result of development that is inadequately elevated, flood-proofed, or protected from flood damage. Further, placing structures or other potential obstructions in areas of special flood hazards may result in cumulative effects such as increased flood heights and velocities; when such obstructions are inadequately secured, damage may also occur in other areas.

The gently sloping alluvial fans that spread out from the base of the surrounding hills and mountains in the planning area have provided the setting for most development in Apple Valley. Given the unpredictability of alluvial fan flooding, flash floods remain a substantial risk in the planning area. A large portion of Apple Valley has not yet been studied by FEMA, and storms even smaller than the 100-year event have potential to cause localized damage.

One of the most effective methods of managing flood control damage, safeguarding lives and property and reducing losses to the community is through land use planning that restricts the type and location of structures permitted near major drainages. Although improvements to the local stormwater management system are needed to assure its adequacy to serve build out of the

General Plan area, an approach that integrates the rural character of the planning area and utilizes natural internal drainage to the dry lakes may prove more efficient and practicable than an area-wide man-made drainage network. The Town's Flood Hazard Overlay Ordinance restricts and provides standards for development within floodplains.

The Town should continue to require that future planning for new developments consider the impact on flooding potential, as well as the impact of flood control structures on the local and regional environment. Land development projects can design floodway management to retain natural stream courses, or develop them as parks, golf courses or other open space amenities. Where flood control structures are necessary, design features may be incorporated to blend with the surrounding environment, and must be designed so as to avoid adverse environmental impacts. Certain natural processes may benefit from periodic flooding, which may affect off-site, even far distant areas. (e.g., soft-bottomed vs. concrete-lined channels to facilitate groundwater recharge). The advantages to natural flood control include lower cost, preservation of wildlife habitats, and improved recreational potential.

The proposed General Plan includes goals, policies and programs designed to limit flood hazards and protect natural watersheds as well as lives and properties in areas subject to flooding. In addition to land use strategies set forth in the General Plan Land Use Element, the Flooding and Hydrology Element establishes policies and programs intended to address potential flooding hazards and hydrology issues in the planning area as a whole, and establishes measures directed at minimizing the impacts of increased development of stormwater control facilities. Primarily, the Flooding and Hydrology Element will be implemented by the Apple Valley Master Plan of Drainage and the Apple Valley West/Desert Knolls Master Plan of Drainage. Both Master Plans of Drainage are currently being updated in consultation with the County of San Bernardino Flood Control District. The Town has indicated that it expects the updates to be completed by 2011 if not sooner.[38]

General provisions for flood hazard reduction are also provided in the Apple Valley Development Code, Grading Ordinance, and Subdivision Ordinance and apply to all lands in Areas of Special Flood Hazard. While the Town's Flood Hazard Overlay District and Flood Hazard Lake Overlay District are based on the FEMA maps, which show minimal at-risk areas, it should be noted that these provisions may also be applied to other portions of the planning area.

Hydrologic studies should be conducted as new developments are considered within the Town to measure the impact that increased development may have on existing development slope, and should assess the effects of increased runoff and alterations to natural stream courses. In keeping with CEQA guidelines, the project proponent of each development must demonstrate that any potential design deficiencies identified in the project-specific hydrologic study can be rectified, and significant impacts mitigated to acceptable levels prior to project construction. Mitigation measures may include the provision of flood control devices such as catch basins, storm drain

[38] Personal communication, Richard Pedersen, Town of Apple Valley, October 16, 2008.

pipelines, culverts, detention basins, desilting basins, velocity reducers, as well as debris basins for protection from mud and debris flows.

The San Bernardino County Flood Control District (SBFCD) sets forth methodology for analysis and design of flood control structures. The SBFCD and the Town must coordinate closely and both must review future development plans and ensure the compatibility and adequacy of mitigation measures. The effectiveness with which the drainage issues are managed within Apple Valley will have a direct impact on the scale, complexity and cost of future flood control facilities. Prevention and on-site management are effective cost-reduction methods and should be actively integrated into community land use planning and regulation, recognizing significant physical and financial constraints in many areas of Apple Valley.

Finally, inundation associated with water tank failure as a result of seismic activity poses a hazard in the planning area, as many aboveground storage tanks were constructed prior to current design criteria. As discussed under Mitigation Measures, below, all existing water tanks in the planning area should be evaluated and retrofitted as necessary to ensure compliance with the most current water tank design criteria and containment of potential floodwaters within a reservoir site.

Flood Protection Measures for Property Owners

Property owners may incorporate a variety of measures to reduce potential impacts of flooding on their homes and property. As identified by FEMA, these measures may include: adding waterproof veneers on building exterior walls; adding seals to all openings, including doors, to prevent the entry of water; elevating electrical components above the anticipated water level; and installing backflow valves to prevent sewage back-up through drainpipes in the house. These measures vary in complexity and cost, and not all are appropriate for a specific property. Such improvements may be subject to permitting by the Town or County, and property owners should confer with the appropriate agency..

In compliance with its Flood Hazard Overlay Ordinance, the Town should continue to require future development to ensure that improvements within flood zones subject to sheet flooding are protected from flood damage. Conditions of approval may include raising the finished floor levels of buildings above the flood depth projected for the surrounding area, and providing protection to drainages against scouring.

Annexation 2008-001 and 2008-002

As with the rest of the planning area, future development in the annexation areas will result in construction that includes impervious surfaces such as roads, sidewalks, driveways, and parking lots, which, in addition to the conversion of undeveloped land to more urban uses, will result in a reduction of permeable soils. Future development also has the potential to alter or obstruct existing drainage patterns and may impact the ephemeral streams that traverse each of the annexation areas.

Larger developments that incorporate features such as golf courses, open spaces, and common areas can utilize these spaces to convey runoff, while smaller-scale developments may require the installation of retention/detention basins and other on-site flood control facilities. Site-specific analyses should be conducted prior to development that identify potential hazards, and set forth effective mitigation measures and development standards that minimize impacts from structural failure and promote the health and safety of residents.

Future development within the planning area, including the subject annexation areas, will require that developers obtain any applicable state and federal regulatory permitting for activities that involve disturbance to stream banks or beds. Such permitting typically requires site-specific development consultation to determine the applicability and extent of permitting requirements and to determine resource mitigation where required. These requirements are further discussed in Section III-F, Biological Resources, and mitigation measures are set forth therein to ensure compliance with state and federal regulations regarding impacts to jurisdictional waters.

3. Mitigation Measures

The Town will continue to review and assess hydrology analyses on a project-by-project basis. The findings of these studies will be integrated into the project master drainage plans appropriately, and the Town will have the opportunity to require additional on-site flood control facilities as necessary. The proposed General Plan establishes goals, policies and programs to ensure that lives and property are protected, and that a comprehensive system of flood control facilities are implemented throughout the planning area.

1. The Town shall monitor its Master Plans of Drainage every five years to ensure that it reflects changes to local and regional drainage and flood conditions.

2. The Town shall upgrade its local and regional drainage system through proactive planning and coordination with other responsible agencies to ensure the provision of a comprehensive system of flood control facilities throughout the Town.

3. The Town shall continue to implement flood-warning systems, and shall maintain its public outreach and information programs to educate and inform the public of potential flood hazards and provide potential solutions made available to them.

4. The Town shall develop evacuation plans in the 100-year and 500-year flood zones where critical facilities, including but not limited to schools, hospitals and nursing homes are located.

5. To ensure that water storage tanks retain their structural integrity during an earthquake, and so that water demands after the earthquake can be met, the Town shall coordinate with all water purveyors in the planning area to evaluate and retrofit all above-ground water tanks in the Town as necessary, based on their vulnerability to seismic hazards, to ensure compliance with the most current water tank design criteria.

6. Major drainage facilities, including debris basins and flood control channels, shall be designed to maximize their use as multi-purpose recreational or open space sites, consistent with the functional requirements of these facilities.

7. The Town shall assure that adequate, safe all-weather crossings over drainage facilities and flood control channels are provided where necessary, and are maintained for passage during major storm events.

8. The Town shall continue to restrict development in those areas that are FEMA-mapped as being subject to flooding, and shall require site-specific hydrologic studies for future development to determine flooding potential for other areas.

9. Future development proposals shall be required to submit a hydrology study and mitigation plan which conforms to the Apple Valley Master Plan of Drainage or the Apple Valley West/Desert Knolls Master Plan of Drainage and other regional and local requirements, policies, and programs.

10. All new development shall be required to incorporate, at the developer's expense, adequate flood control mitigation, such as grading that prevents adverse drainage impacts to adjacent properties, on-site retention of runoff, and the adequate siting of structures located within flood plains and to, as part of project development.

11. Future flood control plans required of developers shall include specific recommendations and/or designs regarding pollution control techniques to be applied to keep pollutants, including herbicides, pesticides, and other hydrocarbons out of surface and groundwaters. Mitigation measures may include specifically designed open space areas such as artificial wetlands where nuisance and otherwise contaminated on-site runoff shall be retained separate from channels conveying off-site flows.

12. Bridging of General Plan roadways within new development projects shall be the responsibility of the developer on whose project the bridge occurs, and shall be included as a condition of approval.

13. Stormwater retention shall be enforced through the development review process and routine site inspection.

14. The Town shall pursue all credible sources of funding and continue to explore County funding, Cobey-Alquist Flood Plain Management Act, other State programs, and Federal funding options for local and regional drainage improvements needed for adequate flood control protection.

15. Capital Improvement Plans for drainage management and control shall be developed, updated and maintained and shall be based upon the Apple Valley Master Plan of Drainage and the Apple Valley West/Desert Knolls Master Plan of Drainage.

16. The Town shall consider the establishment of Fair Share Cost Allocations or Assessment Districts for purposes of funding necessary drainage improvements in particular geographic areas throughout Apple Valley.

17. In conjunction with SBFCD the Town shall coordinate and cooperate in the filing of appropriate FEMA application materials to incrementally secure amendments to the Flood Insurance Rate Maps of the Town, consistent with existing and proposed improvements.

Mitigation Monitoring/Reporting Program

A. The Town shall, at least once annually, report to the Town Council on progress made in updating the local drainage plans and implementing drainage control projects. Such reports shall also include information regarding the status of regional drainage plans and facilities affecting flood control in the Town.
Responsible Parties: Town Engineer, Town Council, San Bernardino County Flood Control District

B. The Town shall review and approve project-specific hydrology studies and mitigation plans for development proposals, and assure their adequacy with regard to stormwater management and on-site retention, and pollution control.
Responsible Parties: Town Engineer, Project Developer

I. Water Resources/Quality

Introduction

This section discusses the existing water supply and water quality conditions for the General Plan and annexation areas. It assesses potential impacts on water suppliers and water quality that are expected from the implementation of the proposed General Plan update and annexations. Existing and future water demand is described, and current and projected availability and reliability of water supplies, as well as State Water Project water supplies.

The role of the Mojave Water Agency (MWA), which is responsible in managing water resources in the General Plan area, is also discussed. There are several water suppliers responsible for distribution of water resources in the General Plan area. Their service areas are described and illustrated. Apple Valley Ranchos Water Company (AWRWC) serves the majority of connections in the General Plan area; therefore, its ability to provide water supplies over the course of General Plan build out is also discussed.

A variety of information sources have been consulted, including the MWA Urban Water Management Plan (MWA UWMP), the AVRWC UWMP, and materials from the California Department of Water Resources and other entities.

Thresholds of Significance/Criteria for Determining Significance[39]

The following standards and criteria have been drawn from Appendix G: Environmental Checklist Form of the California Environmental Quality Act (CEQA) Guidelines. The following factors have been considered to ensure that the General Plan EIR adequately addresses potential impacts to water resources that may result from the adoption and implementation development of the Apple Valley General Plan and annexation areas.

a. Violate any water quality standards or waste discharge requirements.

b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).

c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site.

[39] "California Environmental Quality Act Statutes and Guidelines," prepared by the Association of Environmental Professionals, January 2007. Additional thresholds related to hydrology are in the Section III-D, Hydrology, of this EIR.

d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site.

e. Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

f. Otherwise substantially degrade water quality.

1. Existing Conditions

The topography of the Town of Apple Valley and the planning area are the result of a variety of natural forces. As discussed in Section III-F, the planning area is located within a seismically active region and in proximity to several large, active fault zones. The region has and continues to be subject to ground rupture, major groundshaking, subsidence, uplift and mountain building, landform compression and extension.

The Mojave River streambed trends south to north along the western edge of the Town's boundary. Flows in the streamed are generally limited to those occurring as a result of spring runoff or intense seasonal rainstorms. The topographic relief along the Mojave River constitutes a divide in local drainage patterns. Drainage from the hills and mountains in Apple Valley to the east flow towards the Apple Valley Dry Lake, while channels along the western side of the Town ultimately discharge into the River. The Bell Mountain Wash is a natural channel that collects runoff primarily in the area north and west of Bell Mountain and flows into the River. A number of small, unnamed drainages flow towards the River from the western part of the Ord Mountains, which occur to the southeast. Bell Mountain, at 3,897 feet above sea level, is the highest point in the Town, while the lowest point, approximately 2,700 feet above sea level, occurs along the Mojave River.

Climatalogically, the region is subject to temperature extremes, ranging from the 20°F in the winter months to more than 100°F in the summer, with variations based on elevation. The average annual rainfall is approximately 5 inches.[40] The region is subject to intense seasonal storms, and the rainfall in a given year may vary.

Mojave River Groundwater Basin

As previously noted, the Mojave Water Agency (MWA) is responsible for managing long-term reliability of surface and groundwater within a management area covering approximately 4,900 square miles and including 22 groundwater basins.[41] The Mojave River Groundwater Basin (the Basin), which falls within the MWA management area, underlies the Town and the planning

[40] "Apple Valley Ranchos Water Company 2005 Urban Water Management Plan," prepared by Apple Valley Ranchos Water Company, November 2005.

[41] "Mojave Water Agency 2004 Regional Water Management Plan, Supplement A: 2005 Urban water Management Plan Update," December 8, 2005.

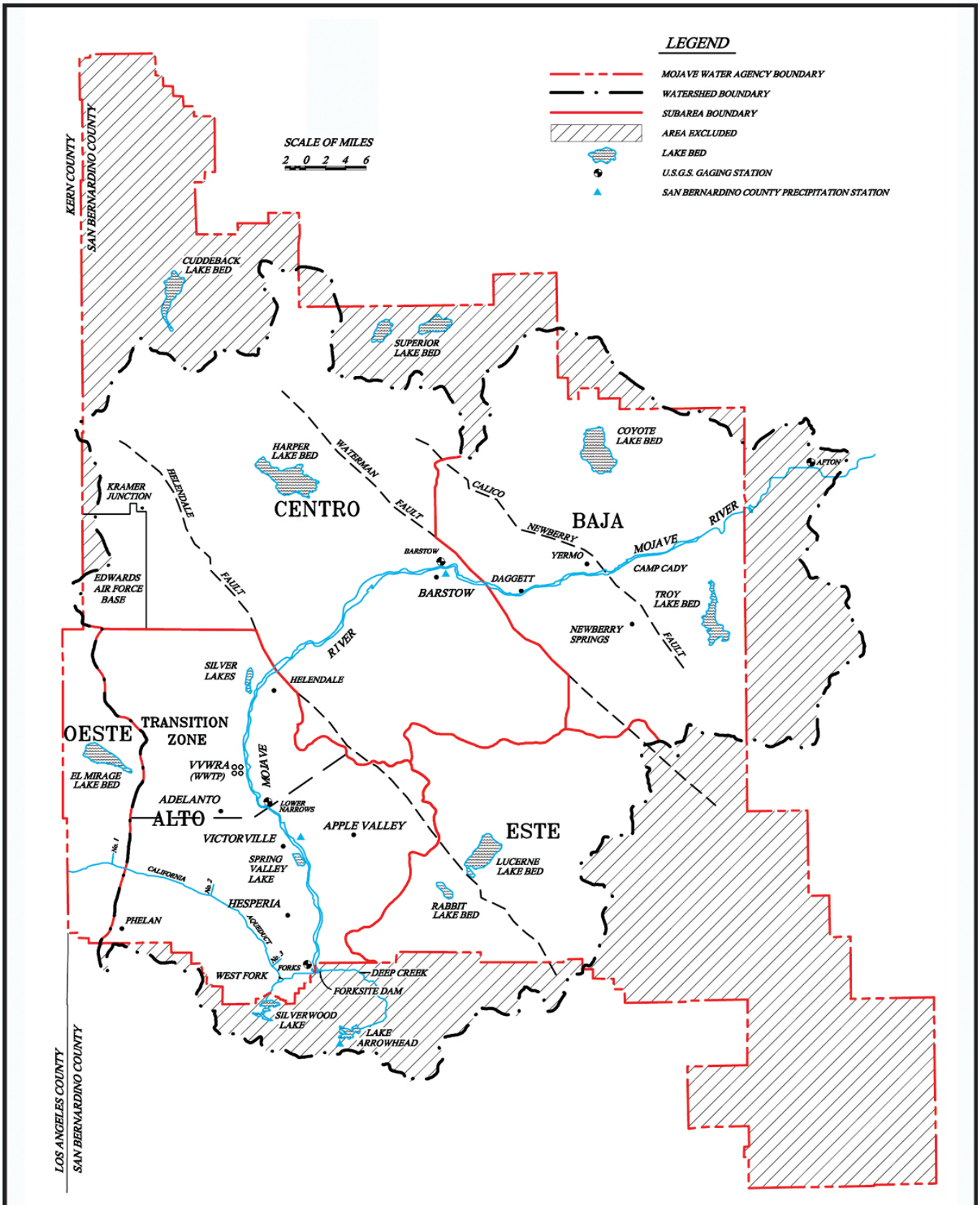
area. The Basin comprises an approximately 1,400 square mile area along the Mojave River and has an estimated groundwater storage capacity of 5 million acre-feet.[42]

The Mojave River Groundwater Basin is comprised of several subsurface aquifers, or subareas, that underlie the MWA management area. These subareas are defined by faults and other topographic features that restrict groundwater flow and surface water drainage, and include the Alto, the Baja, the Centro, the Este, and the Oeste subareas (please see Exhibit III-14. Groundwater Basins within the MWA Service Area). The Town is located near the center of the Alto Subarea, which is further described below. The Basin is in a condition known as overdraft, wherein groundwater discharge exceeds recharge, resulting in a net reduction in groundwater stored in the aquifer. Modeling data prepared by the U. S. Geological Survey (USGS) indicates that the overdraft condition began in the Centro and Baja subareas in the 1950s, and by 1960 was present in all subareas of the Basin.

Water levels in the Alto subarea have declined by between 50 and 75 feet since the mid-1940s.[43] Overdraft conditions are currently present in almost all of the subareas in the Mojave River Basin.

42 Op. Cit.

43 "Water Supply in the Mojave River Ground-Water Basin, 1931-99, and the Benefits of Artificial Recharge," prepared by the U.S. Geological Survey, November 2001.



MOJAVE BASIN AREA

Source: Fourteenth Annual Report of the Mojave Basin Area Watermaster for Water Year 2006-2007 Mojave Water Agency, April 1, 2008

TERRA NOVA®
Planning & Research, Inc.

Apple Valley General Plan Draft EIR
Groundwater Basins
in the Mojave Water Agency Service Area
Apple Valley, California

Exhibit
III-14

Mojave Basin Area Adjudication

The MWA is subject to the Mojave Basin Area and the Warren Valley Adjudications ("the Adjudication," January 1996). The Adjudication is a court-approved mechanism for MWA to finance and obtain supplemental water to recharge these Basins and augment water supplies for parties to the Adjudication. The Alto Subarea as well as the other sub-areas shown on Exhibit III-14, above, are within the Mojave Basin Adjudication.

The Mojave Basin Adjudication limits the amount of groundwater that may be produced in each subarea before requiring that additional groundwater be imported.[44] and assigns a Free Production Allowance (FPA) within each of the adjudicated subareas. The FPA is intended to avoid overdraft conditions and maintain a safe water balance between the Alto and other subareas. The court reviews and adjusts the FPA annually, and has appointed MWA as the "Watermaster" for the Mojave Water Basin. In this role, MWA is charged with ensuring that extractions do not exceed supply, using, in part, the assigned FPA. The FPA is currently 65.79% of Base Annual Production (BAP), which is defined as a water producer's highest annual use verified for the five-year period from 1986 through 1990.

Should groundwater extractions exceed the FPA, domestic water producers are required to replace the overage, either by means of a replenishment fee to acquire additional water, or through transfer of unused water rights within the Alto Subarea from another party to the Adjudication. For 2007-2008, the replenishment fee was set at $277 per acre-foot.

The Watermaster accounts for average and minimum annual flows to ensure these are maintained between the Mojave Basin subareas. The Adjudication assumes that sufficient water supplies will be available to MWA in future to meet the needs of the Basin, and that such supplies are a combination of natural recharge, imported water from SWP and other sources, water conservation, water reuse, and FPA transfers among producers.

All water supplies generated in the MWA, or imported from outside, are recharged into the groundwater basins for future use. The 2005 Urban Water Management Plan prepared by MWA (see below) demonstrates that increased water demands over the next 20 years will require the development and implementation of additional projects and water management actions to ensure sufficient groundwater recharge to maintain groundwater levels and to protect groundwater quality. The Presiding Judge for the Mojave Basin Area Adjudication may require mandatory production cutbacks in the event such projects are not implemented and overdraft persists or intensifies.

Alto Subarea

The Alto Subarea generally encompasses the communities of Apple Valley, Victorville, Adelanto, Hesperia, Helendale, and Phelan. The subarea is comprised of an approximately 35-mile long water-bearing strata underlying the Mojave River, and is recharged by snowmelt from

[44] "2004 Regional Water Management Plan, Supplement A: 2005 Urban Water Management Plan Update," prepared by Mojave Water Agency, December 8, 2005.

the San Bernardino Mountains to the south of Apple Valley. The Alto Subarea has the largest water supply in the Mojave Basin, due to its proximity to the Mojave River.

The Alto Subarea merges with the Este Subarea to the east, with the Oeste Subarea to the West, and with the Centro Subarea to the North, down-gradient. To the south are the headwaters of the Mojave River, which occur where the West Fork and Deep Creek streams converge. The general boundaries of the Alto Subara are the non-water bearing rocks of the San Bernardino Mountains to the south, the non-water bearing rocks of the San Gabriel Mountains to the west, and Helendale Fault to the northeast.

The Alto Subarea contains approximately 82,400 acre-feet of water; outflows and losses are estimated at 47,700 acre-feet, yielding an estimated net volume of water of 34,700 acre-feet. An additional 75,800 acre-feet of State Water Project (SWP) entitlements are available to MWA. SWP allocations are further discussed below. The following table shows historical verified annual production in the Alto Subarea from 1994 to 2007.

Table III-31
Alto Subarea Verified Annual Production
1994 – 2007

Year	Acre-Feet	Million Gallons
1994	81,100	26,427
1995	75,100	24,471
1996	87,500	28,512
1997	88,500	28,838
1998	75,900	24,732
1999	83,300	27,143
2000	88,300	28,773
2001	82,800	26,980
2002	87,100	28,382
2003	86,700	28,251
2004	92,700	30,206
2005	88,900	28,968
2006	95,900	31,247
2007	99,900	32,561

Source: Mojave Basin Area Watermaster Annual Water Reports, 1994 - 2008.

Distribution Facilities

There are several domestic water purveyors with distribution facilities in the Town as well as its Sphere of Influence. The Apple Valley Ranchos Water Company (AVRWC) provides domestic water services to most of the Town of Apple Valley, with approximately 19,000 active service connections in its service area. Golden State Water Company (Golden State) has approximately 2,800 service connections in its service area. There are several other water purveyors, some of

which have very small customer service areas. The following additional purveyors serve 100 or ore service connections: Apple Valley Foothill County Water District, Apple Valley Heights County Water District, Apple Valley View Mutual Water Company, County Service Area 64, Juniper Rivera County Water District, Mariana Ranchos County Water District, Rancheritos Mutual Water Company and Thunderbird County Water District. One other small water purveyor, Navajo Mutual Water Company, serves approximately 80 service connections within Apple Valley.

Apple Valley Ranchos Water Company

AVRWC, an investor-owned water utility, is regulated by the California Public Utilities Commission (CPUC). As noted above, AVRWVC provides water service to the majority of the Town of Apple Valley and the planning area. AVRWC draws groundwater solely from its 23 AVRWC wells, which are located along the Mojave River. Many of the wells are equipped with stationary emergency generators or quick connections for mobile generator hook-ups. Groundwater is pumped from the wells into the AVRWC distribution system, which has 11 million gallons (MG) of elevated storage capacity. The water distribution system is comprised of more than 400 miles of pipelines; these lines generally range in size from 4 inches to 20 inches in diameter. There are currently 15 pressure zones to accommodate the Town's topography and elevation changes, with booster pump or pressure reducing stations at the juncture of interconnecting pressure zones. These facilities may require expansion to accommodate future development and ensure adequate fire flows.[45] This is further discussed under Project Impacts, below.

Under the Mojave Basin Adjudication, AVRWC was assigned a free production allowance (FPA) of 11,250 acre-feet for year 2007-08. This includes carry-over from the 2006-07 FPA.[46]

Golden State Water Company

Golden State Water Company, a subsidiary of American States Water, is a public utility company that serves the northeastern and southern portions of the Town, including a small portion within the southern Sphere-of-Influence. Within the planning area, Golden State has a service area of approximately 4± square miles. Currently, the Golden State system provides water to approximately 2,847 active service connections within its services areas. [47] Historical water demand production for the years 1996 to 2005 averaged 0.64 acre-feet per year per connection in Golden State's Apple Valley North and South service areas.[48], [49]

45 "Apple Valley Ranchos Water Company Pressure Zone Discussion," prepared by Apple Valley Ranchos Water Company, 2008.

46 "Permanent Transfers of Base Annual Production Right (BAP) and 2007-08 Free Production Allowance (FPA) Reconciled for Transfers Accepted by Watermaster as of the Date of this Report, 2007-08 Water Year," Mojave Basin Area Watermaster, July 23, 2008.

47 Personal communication, Perry Dahlstrom, Golden State Water Company, August 21, 2008.

48 "Existing and Future Water Demands—Apple Valley North Water System," prepared by CH2MHill, April 6, 2007.

49 ibid.

Small Water Purveyors and Private Companies

A number of other, smaller water purveyors serve portions of the Town of Apple Valley and/or its Sphere of Influence. Several of these are San Bernardino County Service Areas (CSAs) that were established to provide domestic water services and facilities to specific development. Other purveyors are private water companies.

Apple Valley Foothill County Water District encompasses an approximately 2 square mile service area located at the southeastern edge of the Town's corporate limits near Central Road and Del Oro Road. It serves 180 service connections, and has 2 wells and 2 elevated storage units, with approximately 150,000 gallons of capacity.

Apple Valley Heights County Water District covers a service area of approximately 2 square miles, and is located south of the Town corporate limits and its Sphere of Influence. The district has approximately 290 service connections, with two wells and has 260,000 gallons of elevated storage.

Apple Valley View Mutual Water Company has a service area of approximately 1 square mile. It currently has 100 service connections, of which 81 are active. There are 3 wells, one storage tank with a capacity of 20,000 gallons, and one 5,000-gallon pressure tank. It is estimated that the service area has potential to build out with up to 301 connections, which would require a facilities upgrade. The company has purchased lands to upgrade through construction of a larger capacity storage tank.

County Service Area (CSA) 64 covers an approximately 4 square mile service area, which is bisected east to west by the Mojave River. The eastern portion is within Apple Valley and the largest portion is to the west in the City of Victorville. CSA 64 serves approximately 3,801 active service connection, of which approximately 20% are within the Town of Apple Valley. Its facilities include five wells, three elevated storage tanks, and approximately 2.65 million gallons of storage capacity.

Juniper Rivera County Water District's service area encompasses approximately 2 square miles and serves 168 connections. There are two wells and two storage tanks with approximately 150,000 gallons of capacity.

Mariana Ranchos County Water District encompasses approximately 7 square miles, most of which is located south of the Town's corporate limits but within its Sphere of Influence. It serves 650 service connections with 2 wells and three elevated storage tanks with approximately 900,000 gallons of storage capacity.

Rancheritos Mutual Water Company has a service area of approximately 1.25 miles in the southern portion of Apple Valley and within its Sphere of Influence. It serves 269 service connections with three wells. Rancheritos has no elevated storage; wells are equipped with small reserve storage tanks and pressure is maintained hydro-pneumatically. Water is distributed via small distribution tanks directly to service connections. Rancheritos may erect additional,

possibly elevated storage on two sites in the future, however plans are not complete and site selection has not been finalized.

Thunderbird County Water District serves approximately 325 service connections within its approximately 2 square mile service area. It is located east of the Town limits and includes service area within the Town's Sphere of Influence. Thunderbird has three wells and three storage reservoirs with a capacity of approximately 410,000 gallons.

Annexation. 2008-001 and 2008-002

Currently neither annexation area is serviced by any of the water purveyors listed above. Water for existing development, which is limited to scattered single-family residential development in Annexation 2008-001, and an aggregate quarry operation in Annexation 2008-002, is provided by private wells or water delivered by private haulers for storage in privately owned underground storage tanks.[50]

Regional Water Supply And Demand

Regional Water Supply

Currently, the Town relies on precipitation and runoff from adjacent mountains for groundwater recharge, as well as from imported water. MWA has established a groundwater replenishment program for the Mojave Water Basin, including the Alto Subarea. The purpose of this program is to reduce annual and cumulative groundwater overdraft through artificial recharge to the groundwater basin.

Current Consumption

Water production data (water withdrawals) from AVRWC indicates that the water table in the Alto Subarea has steadily declined over the past two decades. This data is shown on Table III-32, below.

[50] Personal communication, Jerry Bender, Apple Valley Ranchos Water Company, November 25, 2008.

Table III-32
Apple Valley Ranchos Annual Water Production
1999 - 2007

Year	Acre-Feet	Million Gallons
1999	14,916	4,860
2000	16,002	5,214
2001	14,741	4,803
2002	15,853	5,166
2003	15,536	5,062
2004	16,100	5,246
2005	16,189	5,275
2006*	15,123	4,928
2007*	16,527	5,385

Source: "Urban Water Management Plan," Table 6, prepared by Apple Valley Ranchos Water Company, 2005.
*Mojave Basin Area Water Master, Annual Reports 2007 and 2008.

The following shows annual water production data for Golden State wells for the period from 1996 to 2005. As shown here, water production has fluctuated during this period but has generally increased over time. Future water demand in the Golden State service area in the Town is expected to increase in future.

Table III-33
Golden State Annual Water Production
1996 - 2005[1]

Year	Acre-Feet	Million Gallons
1996	1,052	3,251
1997	929	2,871
1998	893	2,759
1999	997	3,081
2000	1,038	3,207
2001	1,013	3,130
2002	1,136	3,510
2003	1,116	3,448
2004	1,206	3,727
2005	1,205	3,723

[1]Portions of the North and South systems are outside Town corporate limits but within its Sphere of Influence. Source: Combined totals: "Existing and Future Water Demands: Apple Valley North System," and "Existing and Future Water Demands: Apple Valley South System," prepared by CH2M Hill. 2007.

Imported Water

The Mojave River is predominantly a dry wash that flows intermittently after intense storms or during spring runoff; therefore, natural recharge from precipitation runoff to the upper reaches of washes and the River is limited. To ensure adequate recharge and to achieve the Court-mandated balance in the Basin, MWA relies on imported water from two primary sources. These include California State Water Project water, and "banked" or conjunctive use water from the Metropolitan Water District (MWD).

As a State Water Project contractor, MWA imports SWP water for groundwater recharge. MWA has an annual allocation of 75,800 acre-feet, which includes 25,000 acre-feet that MWA purchased from Berrenda-Mesa Water District in 1998. MWA uses factors of 69% under 2005 demands to 77% under 2025 conditions to estimate the reliability of SWP deliveries. Based on these factors, MWA can expect to receive between 53,800 to 58,400 acre-feet annually, should it request its full entitlement.[51] The average dry year supply is estimated at 43,200 acre-feet/year, and 22,900 acre-feet/year over multiple dry years.[52] Between 1972 and 2001, MWA received approximately 150,000 acre-feet of water from the SWP.[53]

It should be noted that current deliveries of SWP water allocations to SWP contractors, including MWA, have been affected by recent events involving water deliveries and impacts to endangered species in the San Joaquin River basin. It is possible that future deliveries may be reduced, although the extent of such potential reductions is unclear. This issue is further discussed under Project Impacts, below.

MWA also has an agreement with the MWD that allows MWD to store up to 75,000 acre-feet of water in the Mojave basin. This is referred to as "conjunctive use" or "water banking", in exchange for which MWD is entitled to an equal amount of water in the event of a significant drought in the future.

Based on year 2010 estimates, MWA estimates that approximately 119,300 acre-feet/year is available through natural supplies and SWP allocations annually (2010 projection).[54] AVRWC estimates that water supply sources in 2005 were 17,818 acre feet, which included its FPA allotment, additional groundwater replacement water purchased from MWA, and purchased water rights. It estimates increased supplies of 29,067 acre-feet per year in 2010, of which 69% would be purchased as replacement groundwater from MWA.[55] Current and planned water supplies through year 2025 are discussed under Project Impacts, below.

Additional Water Sources

Reclaimed Water

Wastewater treatment is provided to the Town by the Victor Valley Wastewater Reclamation Authority (VVWRA) facilities in Victorville. VVWRA processes approximately 10,000 acre-feet of reclaimed water per year, which is used internally at the VVWRA plant and for golf course irrigation in Victorville. There are currently no facilities to provide reclaimed water to Apple Valley. VVWRA has indicated that it plans to construct intercept and sub-regional

51 "Mojave Water Agency 2004 Regional Water Management Plan, Groundwater Management Plan, Urban Water Management Plan," prepared by Mojave Water Agency, adopted February 24, 2005.

52 "2004 Regional Water Management Plan, Supplement A: 2005 Urban Water Management Plan Update," prepared by Mojave Water Agency, December 8, 2005.

53 Op. Cit.

54 "2004 Regional Water Management Plan, Supplement A: 2005 Urban Water Management Plan Update," prepared by Mojave Water Agency, December 8, 2005.

55 "Apple Valley Ranchos Water Company 2005 Urban Water Management Plan," prepared by Apple Valley Ranchos Water Company, November 2005.

treatment facilities in Apple Valley to produce reclaimed water from wastewater generated in Apple Valley. Such facilities would provide AVRWC with a source of reclaimed water for use in Apple Valley, thereby reducing the consumption of potable groundwater. Timeline for completion of this project is based on VVWRA Board approval of the Capital Improvement Project, and has not yet been determined.[56]

Water Conservation

The California Public Utilities Commission adopted a Water Action Plan in 2005 with the primary objective to strengthen water conservation programs of regulated water utilities. This plan also contains a number of specific actions designed to increase water conservation programs.

The County and the Town work closely with AVRWC and Golden State to encourage water conservation. The County General Plan includes several policies and programs that both require and encourage water conversation. The County requires the use of drip irrigation systems or systems of equivalent efficiency for all landscaping at commercial facilities and all common areas of residential developments.

The Alliance for Water Awareness and Conservation (AWAC) was established in August 2003 and includes a regional consortium of 24 entities, including local stakeholders in and around the Apple Valley planning area. The purpose of the AWAC is to "provide a vehicle to attract support for a regional water conservation program and coordinate implementation of activities by forming partnerships to obtain common measurable goals."[57] Goals of the AWAC include the reduction of regional water use by 10% gross per capita by 2010 and 15% gross per capita by 2015.

The Town of Apple Valley has adopted a Water Conservation Plan Ordinance (Development Code Chapter 9.75) regulating water use and prohibiting wasteful water use practices, such as excessive runoff of landscape irrigation water and washing driveways and walkways with water The Ordinance establishes penalties for violation of these regulations. In addition, MWA has established a goal of 10% municipal conservation by 2020. In an effort to meet this goal, development within the Town is to be consistent with the recently adopted MWA 2005 Urban Water Management Plan.[58]

Adequate water supplies for local purveyors to meet the demand associated with build out of the General Plan depend on MWA's ability to manage the basin and to implement any necessary additional infrastructure projects and water management actions to continue to recharge the groundwater basin, maintain groundwater levels, secure additional sources of supply and protect groundwater quality. Based on Supplement A to the MWA 2005 Urban Water Management Plan Update, adequate supplies will be available through 2025, however this availability is based on a combination of measures to manage demand, as well as increased reliance on stored

56 Personal communication, Sandra Perea and Gilbert Perez, VVWRA, October 14, 2008.

57 "Mojave Water Agency 2004 Regional Water Management Plan, Groundwater Management Plan, Urban Water Management Plan," prepared by Mojave Water Agency, adopted February 24, 2005.

58 Ibid.

groundwater, and management mechanisms implemented through the Mojave Basin Judgment, Warren Basin Judgment, and the MWA Regional Water Management Plan.

Urban Water Management Plans

The state of California requires that all urban water suppliers serving more than 3,000 customers or supplying more than 3,000 acre-feet of water prepare an Urban Water Management Plan (UWMP) at least once every five years. (Division 6 Part 2.6, California Water Code). Although MWA does not directly supply water, as an SWP contractor it imports water to replenish groundwater basins within its service area and to meet the conditions of the Adjudication.

MWA and AVWRC each adopted UMWPs in 2005.[59],[60] The UMWPs demonstrate historic water usage in the water supplier's service area, estimate potential demand through 2020, and make findings as to the availability of water to its service area for those periods. MWA published a supplemental update to its 2005 UWMP providing availability projections through year 2030.[61] Both UMWPs set forth projects and Demand Management Measures (DMMs), including but not limited to, water conservation and reclamation, to ensure the continued availability of water. Further, MWA has established a goal of 10% municipal conservation by 2020. The discussions herein reference various data from these UMWPs.

Regional Water Quality

There are a number of factors that impact groundwater quality, including the water source, type of water-bearing materials in which groundwater water occurs or is stored, depth to the water table, proximity to faults, presence of surface or subsurface contaminants, and quality of well maintenance. AVRWC publishes a Consumer Confidence Report that states that water quality within the Town is considered to be very high, based on data from hundreds of monthly water samples collected by AVRWC. Samples are analyzed to ensure that AVR complies with all federal and state drinking water standards.

Testing results reported in the Golden State Water Annual Water Quality Report for approximately 80 types of constituents show that in many instances, water quality in Golden State wells exceeds U.S. EPA and California Department of Health Services standards.

The following discusses testing data for Total Dissolved Solids (TDS) and nitrates.

Total Dissolved Solids

Based on data provided in the AVR 2006/2007 Annual Water Quality Report, AVR water wells within the Town of Apple Valley contain total dissolved solids (TDS) concentrations ranging from 120 to 960 milligrams per liter (mg/L), with an average of 248 mg/L. The State Maximum

[59] "2004 Regional Water Management Plan: Integrated Regional Water Management Plan, Groundwater Management Plan, Urban Water Management Plan," Mojave Water Agency, adopted February 24, 2005.

[60] "Urban Water Management Plan," Apple Valley Ranchos Water Company, November 2005.

[61] "2004 Regional Water Management Plan, Supplement A: 2005 Urban Water Management Plan Update," prepared by Mojave Water Agency, December 8, 2005.

Contaminant Level (MCL) is 1,000 mg/L. AVR indicates that potential sources of TDS are run-off and leaching from natural deposits.[62]

Data from the 2007 Golden State Water Company Water Quality Report shows TDS concentrations in its wells ranged from 400 to 470 mg/L (average 435 mg/L)[63] based on year 2005 sampling data for the Apple Valley North system. In the Apple Valley South system, year 2006 sampling data show these concentrations within a range of 120 to 680 mg/L, averaging 310 mg/L.[64]

Nitrates

Groundwater quality may be adversely impacted by long-term discharge from on-lot septic systems. These impacts to groundwater quality are expected to be greatest where septic systems serve large populations in high densities. Well-maintained community sewer systems provide excellent protection of groundwater resources through the prompt removal of sewage materials and levels of treatment at the plant and in the soil column to assure safe recharge into the subsurface groundwater basin.

Based on water quality data for 2006-2007, AVR wells average concentrations range between 2.5 and 17 parts per million (ppm) of nitrates as NO_3, with an average of 6.4 ppm.[65] The State MCL and Public Health Goal (PHG) or Maximum Contaminant Level Goal (MCLG) is 45 ppm.

Golden State water quality data for nitrates shows concentrations at a range of between 5.7 to 7.7 mg/L (ppm), averaging 6.7 mg/L (ppm) in the Apple Valley North system.[66] For Apple Valley South, the range of nitrate concentrations ranged from "not detectable" to 5.0 mg/L, with an average of 2.8 mg/L.[67] Sampling data was from year 2006 for both systems.

Approximately 30 percent of the Town of Apple Valley is connected to the existing sewer system.[68] The balance of existing development utilizes on-site septic systems. Many of these systems will be abandoned over time, as future development occurs and infrastructure is expanded, thereby allowing projects on their own collection and treatment systems to connect to the larger community system. Given the costs to convey wastewater from many areas of the Town that are outside the existing wastewater treatment system to the VVWRA, the Town has

62 "Apple Valley Ranchos Water Co. – 2006/2007 Annual Water Quality Report, Water Quality Parameters Detected in Apple Valley Ranchos Company Wells," prepared by Apple Valley Ranchos Water Company.

63 "Apple Valley North System-Source Water Quality," year 2005 data, presented in Golden State Water Quality Report, May 2007.

64 "Apple Valley South System-Source Water Quality" year 2006 data, presented in Golden State Water Quality Report, May 2007.

65 "Apple Valley Ranchos Water Co. – 2006/2007 Annual Water Quality Report, Water Quality Parameters Detected in Apple Valley Ranchos Company Wells," prepared by Apple Valley Ranchos Water Company.

66 "Apple Valley North System-Source Water Quality," year 2005 data, presented in Golden State Water Quality Report, May 2007.

67 "Apple Valley South System-Source Water Quality" year 2006 data, presented in Golden State Water Quality Report, May 2007.

68 Personal Communication, Rodger Lopez, Town of Apple Valley Public Works Division, April 21, 2008.

identified areas where sub-regional wastewater treatment plants might be located to serve existing and future development.

The Town's Sewer Connection Policy was adopted in January 2006 to ensure that new single-family subdivisions with lots less than one acre and within one-half mile of existing sewer infrastructure connect to the Town sewer system. Developers of subdivisions located further than one-half mile from existing sewer lines are required to install a dry sewer system on-site. The policy provides for options to the dry sewer requirement, which are subject to Town and/or California Regional Water Quality Control Board (CRWQCB) approval. These include an interim holding tank system or a community septic system, both of which are designed as sewage collection and treatment systems located within the developments they serve.

Water Quality Regulation

Water quality control efforts are legislated through a variety of federal and state laws and regulations that are intended to ensure that water quality control efforts are adequately planned, implemented and enforced. Federal regulations include the Clean Water Act and the National Environmental Policy Act (NEPA). The State of California has enacted water quality statutes and administrative laws that include the California Water Code, California Environmental Quality Act (CEQA) and California Code of Regulations. Other applicable state codes include the Health and Safety Code, Fish and Game Code and Public Resources Code.

Under California Water Code (Section 13260), "any person discharging waste or proposing to discharge waste that may affect waters of the State, except to a community sewer system" is required "to file a report of waste discharge with the regional board of that region" where densities exceed two (2) dwelling units/acre. These requirements also apply to commercial and industrial wastewater generators where discharge volumes exceed certain thresholds.

Federal and state laws and regulations pertaining to water quality are implemented by the California Regional Water Quality Control Board (CRWQCB), Lahontan Region. A Memorandum of Understanding (MOU) between the Town and the CRWQC provides for the Town to issue building permits for development projects that use individual septic systems without obtaining RWQCB approval, based on certain conditions. The MOU directs the Town to consider on-site conditions such as soil characteristics, proposed densities based on EDU wastewater flows, lot sizes, and other parameters. It excludes commercial and industrial projects that will generate more than 500 gallons/acre/day, residential projects that exceed the EDU/acre density threshold, and others as set forth in the MOU.[69]

In addition to addressing issues regarding septic and sewer systems, the CRWQCB oversees concerns about the Mojave River and other sources of surface water. CRWQCB monitors illegal discharges of human or animal waste, leaking fuel storage tanks, and unauthorized hazardous and toxic materials dumping sites.

[69] "Memorandum of Understanding Between the California Water Quality Control Board, Lahontan Region and the Town of Apple Valley," California Regional Water Quality Control Board, Lahontan Region, February 6, 1990.

National Pollutant Discharge Elimination System

The National Pollutant Discharge Elimination System (NPDES), adopted in 1990, implements the federal Clean Water Act. Under NPDES, municipalities are required to develop, adopt and implement storm water management plans and programs. The NPDES is intended to ensure that local jurisdictions "effectively prohibit non-storm water discharge into the storm drain and require controls to reduce the discharge of pollutants from storm water systems to waters of the United States to the maximum extent possible." No CEQA analysis is required for pollutant control measures. The NPDES program for the Town of Apple Valley is managed by the Town Engineering Division.

2. Project Impacts

Build out of the proposed General Plan will result in an additional 64,749 dwelling units. This represents an increase of approximately 13,696 units, or 27.4% over the previous General Plan, which planned for 50,053 units.[70] Residential development in the General Plan area is expected to generate a population of approximately 194,931. The proposed Plan will also result in a proportional increase in commercial, industrial, public and other types of development. Therefore, implementation of the proposed General Plan update is expected to result in an increase in water consumption and other impacts to water resources, as compared with the previous General Plan.

Annexations 2008-001 and 2008-002

Adoption and implementation of the proposed Annexations 2008-001 and 2008-002 would facilitate the development of approximately 4,236 dwelling units, and a population of approximately 13,238, along with commercial and industrial development. These lands are currently largely undeveloped, with the only development consisting of an aggregate processing operation and scattered single-family homes. Implementation of the annexations is therefore expected to result in an increase in water consumption and other impacts to water resources as compared with existing conditions. Water lines will need to be extended and other infrastructure constructed so that water purveyors in the Town can serve future development in the annexation areas.

Future Consumptive Demand

There are several published consumption rates to estimate future water demand associated with build out of the proposed General Plan and the annexations. Such rates are generalized and are offered as a guide. Each specific project in the planning area should be evaluated individually.

AVRWC has developed an average water demand factor for residential land uses of 208 gallons per capita per day (gpcpd). This factor is based on historical use, as cited in the AVRWC 2004

[70] "Town of Apple Valley Housing Element, Table 31" prepared by the Town of Apple Valley, 2000.

Urban Water Management Plan. No AVRWC consumption factors were available for commercial, industrial and other uses are base. Therefore, consumption factors developed for desert climates have been used.[71]

Estimated water demands for proposed General Plan build out land uses are shown in Table III-34, below.

Table III-34
Estimated Future Water Service Demands at General Plan Build Out

	Units	Demand Factor [1, 2, 3, 4]	Demand
Land Use	**No. of Persons**	**Gallons Per Capita Per Day (GPCPD)**	**Ac-ft/Yr**
Residential	194,931	208.00	45,396.2
	AC	**Ac-Ft/Ac/Year**	**Ac-ft/Yr**
Commercial	11,914	1.98	25,590.3
Industrial	2,258	1.61	3,636.0
Other Uses	8,117	2.88	23,377.3
		Non-Residential Subtotal	**50,603.6**
		TOTAL GP BUILDOUT	**95,999.8**

[1]Residential factor from AVRWC based on historical consumption for residential uses.
[2]Commercial factors based on CVWD (2004) factor for Retail Shopping Areas, assuming 35% return flow. Commercial acreage includes Mixed Use and SP/Commercial.
[3]Industrial factor based on CVWD (2004) factor for Commercial and Industrial parks, based on 35% return flow. Industrial acreage does not include SP/Industrial since that is counted under SP/Commercial, above.
[4]Other uses factor based on CVWD (2004) average of factors for Golf course developments, public schools, self-storage facilities assuming 5% return flow.
Source: Terra Nova staff estimates based on historical consumption factors for residential uses from AVRWC UWMP 2005; industrial, commercial and other uses factors from Water System Backup Facilities Charge Study, prepared by Engineering Dept, Coachella Valley Water District, Sept 2004.

The estimates for future water service demand shown in Table III-34 account for build out of the entire General Plan area, including the proposed annexation lands. Residential development associated with implementation of the proposed General Plan and the annexations is estimated to result in water demand of 45,396.2 acre-feet per year at build out. Commercial, industrial and other land uses are expected to result in water demand of 50,603.6 acre-feet per year at build out. All land uses within the Town limits and annexation areas are expected to result in total water demand of 95,999.8 acre-feet per year at build out.

[71] "Water System Backup Facilities Charge Study," prepared by Engineering Department, Coachella Valley Water District, September 2004. See Table 11 - Annual Consumption Factors by Development Type Factors.

Annexations 2008-001 and 2008-002

Implementation and build out of proposed Annexation 2008-001 could result in development of approximately 4,236 dwelling units. No residential land uses are proposed for Annexation 2008-002. Currently, unincorporated San Bernardino County, in which the proposed annexation lands are located, has an average household size of approximately 5.13 persons per household. This yields an estimate of approximately 13,238 additional residents in Annexation 2008-001.

The consumption factors cited above for build out of the General Plan within the Town have been utilized for residential, commercial, industrial and other uses for the annexation areas. Table III-35, below, shows estimated water demand within the annexation areas.

Table III-35
Estimated Water Demand at Build Out of Proposed Annexation Areas

Annexation 2008-001

	Units	Demand Factor[1, 2, 3, 4]	Demand
Land Use	**No. of Persons**	**Gallons Per Capita Per Day (GPCPD)**	**Ac-ft/Yr**
Residential	13,238	208.00	3,082.8
	AC	**Ac-Ft/Ac/Year**	**Ac-ft/Yr**
Commercial	773	1.98	1,530.6
Industrial	812	1.61	1,307.4
Other Uses	193	2.88	555.6
		Subtotal Non-Residential	**3,393.6**
		TOTAL ANNEXATION 2008-001	**6,476.4**

Annexation 2008-002

	Units	Demand Factor[1, 2, 3, 4]	Demand
Land Use	**No. of Persons**	**Gallons Per Capita Per Day (GPCPD)**	**Ac-ft/Yr**
Residential	0	208.0	0
	AC	**Ac-Ft/Ac/Year**	**Ac-ft/Yr**
Commercial	0	1.98	0
Industrial	801	1.61	1,289.7
Other Uses	4	2.88	11.8
		Subtotal Non-Residential	**1,301.5**
		TOTAL ANNEXATION 2008 -002	**1,301.5**
		TOTAL ANNEXATION AREAS -001 & -002	**7,777.9**

[1]Residential factor from AVRWC based on historical consumption for residential uses.
[2]Commercial factors based on CVWD (2004) factor for Retail Shopping Areas, assuming 35% return flow. Commercial acreage includes Mixed Use and SP/Commercial.
[3]Industrial factor based on CVWD (2004) factor for Commercial and Industrial parks, based on 35% return flow. Industrial acreage does not include SP/Industrial since that is counted under SP/Commercial, above.
[4]Other uses factor based on CVWD (2004) average of factors for Golf course developments, public schools, self-storage facilities assuming 5% return flow.
Source: Terra Nova staff estimates based on historical consumption factors for residential uses from AVRWC UWMP 2005; industrial, commercial and other uses factors from Water System Backup Facilities Charge Study, prepared by Engineering Dept, Coachella Valley Water District, Sept 2004.

Water consumption at build out of future development in Annexation 2008-001 is estimated at 6,476.4 acre-feet per year, of which approximately 3,082.8 acre-feet would be from residential uses and approximately 3,393.6 acre-feet would be from commercial, industrial and other uses. For future industrial and other uses in Annexation 2008-002, build out water demand is estimated at 1,301.5 acre-feet per year.

Estimated increases in water consumption will occur gradually as these lands develop. Further, no development projects are expected to occur in the annexation areas immediately, and impacts to domestic water resources are not anticipated in the immediate future. Nonetheless, build out of the proposed annexation lands will contribute to cumulative increases in the demand for

domestic water resources. Build out of the General Plan area, including the proposed Annexation No. 2008-001 and No. 2008-002, will result in significant impacts to water resources without mitigation.

Summary

To summarize, based on the level of development proposed, impacts to water resources associated with adoption and implementation of the General Plan are expected to be about 17.5% more than those associated with the existing General Plan. As the proposed General Plan builds out, potential for groundwater contamination will increase. The proposed Plan includes goals, policies and programs to reduce impacts to water resources to less than significant levels, as well as to ensure that federal, state, local and all other applicable pollution control standards continue to be implemented.

AVRWC distributes domestic water to approximately 80% of the connections in the Town of Apple Valley. The 2005 AVRWC UWMP demonstrates that AVRWC has sufficient water supplies for its service area through year 2025 under normal and drought conditions.[72] Based on sufficiency of water supplies through AVWRC to the majority of the Town, it seems safe to assume that sufficient water will be available to serve the entire planning area through year 2025. In its UWMP, AVWRC acknowledges the need to identify additional water sources to growing demand and also sets forth Best Management Practices (BMPs) to increase water efficiency. These include water conservation measures and incentives, water audits, plumbing retrofits and public education. It is expected that new development will utilize efficient appliances and irrigation systems, and these and other water-saving technologies and conservation efforts will serve to decrease water demand by development in the planning area.

The implementation of the proposed General Plan will facilitate urban development that will contribute to cumulative impacts on groundwater resources in the region; these impacts will include a reduction in the amount of potable groundwater in storage. It should be noted that the subject increased water consumption will occur over time, at a gradual rate as development occurs. The Town shall require that prior to approval of any future development in the planning area has an adopted Water Supply Assessment in compliance with SB 610 and 221.

The MWA and AVRWC UWMPs include mitigation measures and conservation methods that are intended to reduce total water consumption in the Mojave Water Basin, including the General Plan area. The AVRWC UWMP includes a water shortage contingency plan, and a series of water demand measures to implement water conservation and recycling programs. The goal of these measures is to increase the overall efficiency of the existing water system and reduce general consumption.

[72] Urban Water Management Plan," Apple Valley Ranchos Water Company, November 2005.

Other Impacts

Build out of the General Plan and the annexation areas will facilitate development that may require the expansion of existing or construction of new domestic water facilities to ensure adequate fire flows and provision of domestic water. Expansion may include "looping" of existing water systems into new storage and/or distribution facilities, construction of booster pumping or pressure reduction stations, and construction of transmission mains and pipelines.[73] Future development plans will be subject to review by the Town, AVFPD and the applicable water provider. Such review will consider fire flow requirements and will include a determination of the appropriate funding mechanisms for construction of these improvements. A Water Supply Assessment will be conducted for projects subject to the requirements of AB 220 and AB610.

3. Mitigation Measures

Water Conservation

Water conservation is an essential short and long-term resource management strategy, given increasing demands on water supplies in the General Plan area, including the proposed annexation lands. Efforts to reduce per capita consumption are a priority. The implementation of water-efficient landscaping design and management is among the best conservation opportunities. The Town's Water Conservation Plan ordinance includes water regulations that prohibit wasteful water practices, including washing driveways and walkways with water and excessive runoff of landscape irrigation water and washing driveways , and establishes penalties for violation of these regulations. MWA has established a goal of 10% municipal conservation by 2020. The proposed General Plan recommends that the Town follow the recently adopted MWA UWMP.

The Town will continue its involvement in the Alliance for Water Awareness and Conservation (AWAC). As noted previously, the AWAC has set goals to reduce regional water use by 10% gross per capita by 2010 and by 15% gross per capita by 2015.

General Mitigation Measures

Groundwater depletion and contamination are regional and local issues that affect groundwater subareas, which are not defined by jurisdictional boundaries. As discussed above, conservation and efficient use of water will continue to be foundational to community planning and development in Southern California. Further, to help assure and optimize long-term natural recharge of the Mojave River Basin and the respective subareas, the region's major mountain watersheds must be protected. Effective stormwater management can also preserve and protect groundwater quality. The Town has an integral role in the protection and management of this finite, essential resource.

[73] "Apple Valley Ranchos Water Company Pressure Zone Discussion," prepared by Apple Valley Ranchos Water Company, 2008.

The proposed Apple Valley General Plan update includes a variety of goals, policies, and programs that are intended to provide and maintain a dependable supply of safe, high-quality domestic water to meet the needs of all segments of the community. To reduce potential impacts to water resources associated with implementation of the proposed General Plan and subject annexations to less than significant levels, the following mitigation measures shall be implemented:

1. The Town shall coordinate and cooperate with the Mojave Water District, the Apple Valley Ranchos Water Company, Golden State Water Company and other water purveyors within the Town to strengthen and expand educational and public relations programs that convey the importance of water conservation and water-efficient landscaping.

2. The Town shall promote, encourage and participate in the development of water management and conservation strategies through the Alliance for Water Awareness and Conservation, the San Bernardino Association of Governments (SANBAG) and its member jurisdictions, as well as the Mojave Water Agency, Apple Valley Ranchos Water Company, Golden State Water Company, and other water purveyors in the Town, on water supply and conservation programs.

3. The Town shall continue to implement its Water Conservation Plan ordinance and comply with State Assembly Bill 325 (AB 325) by limiting turfed areas in new projects, and requiring the use of native and other drought-tolerant planting materials, installing efficient irrigation systems and monitoring existing systems to ensure maximum efficiency and conservation.

4. The Town shall require that all new developments use water conserving appliances and fixtures, including low-flush toilets and low-flow showerheads and faucets. The Town shall require the application of water-conserving technologies in conformance with Section 17921.3 of the Health and Safety Code, Title 20, California Administrative Code Section 1601(b), and applicable sections of Title 24 of the State Code.

5. The Town shall encourage the use of faucets, showerheads and appliances in new development that exceed Title 20 and Title 24 water efficiency requirements.

6. The Town shall require that future development in the General Plan area has an adopted Water Supply Assessment in compliance with AB 610 and 221 prior to approval of development plans.

7. The Town shall actively support and encourage the continuation and expansion of groundwater recharge efforts, and shall confer and coordinate with MWA and AVRWC regarding the possible future use of tertiary treated wastewater as a means of reducing demand for groundwater resources. To the greatest extent practicable, the Town shall direct new development to provide irrigation systems that are able to utilize reclaimed water, when available, for use in common area and streetscape landscaping.

8. The Town shall consider approaches and mechanisms that facilitate financing and construction of expanded wastewater collection facilities.

9. To the greatest extent practicable, the Town shall continue to require new development to connect to the community sewer system. Where sewer service is not available and lots are created of less than one (1) acre in size, the Town shall require the installation of "dry sewers" and the payment of connection fees for future sewer main extensions.

10. Consistent with community design standards and local and regional drainage plans, the Town shall provide development standards and guidelines for the construction of on-site storm water retention facilities.

11. The Town shall require that the development and maintenance of project-specific on-site stormwater retention/detention basins that implement the NPDES program, enhance groundwater recharge, complement regional flood control facilities, and address applicable community design policies subject to all applicable regulations, standards and guidelines.

12. The Town shall evaluate the potential of all proposed land use and development plans to create groundwater contamination hazards from point and non-point sources. The Town shall confer and coordinate as necessary with appropriate water agencies and water purveyors to ensure adequate review.

13. The Town shall coordinate with Apple Valley Ranchos Water Company, Golden State Water Company, and other water purveyors that serve the Town and its Sphere of Influence to establish/continue incentive programs to encourage that existing development be retrofitted to utilize water conserving fixtures, and landscaping and irrigation materials and controllers.

14. The Town shall restrict the amount of turf planted on all new commercial, industrial, public facilities, multi-family and front yards of single-family residential projects to reduce the amount of water used for irrigation.

15. Irrigation design that reduces overspray and uses conservation techniques shall be required for all new commercial, industrial, public facilities and multi-family projects which will reduce the amount of water used and wasted on irrigation.

16. The Town shall confer and coordinate with the Victor Valley Wastewater Reclamation Authority to explore the possible future provision of recycled/reclaimed wastewater that can serve new and existing development.

17. The Town shall consider incentive programs for the removal of existing turf and replacing the turf with drought tolerant desert landscaping that requires less water.

18. The Town shall proceed with the agreement entered into with the City of Hesperia to design two (2) wastewater reclamation plants that will enable reclaimed water to be used to irrigate Town parks and the Apple Valley Country Club Golf Course.

Mitigation Monitoring/Reporting Program

A. The Planning Division and the Town Engineer shall review all development proposals to assess potential adverse impacts on water quality and quantity, and shall require all development to mitigate any significant adverse impacts.
Responsible Parties: Planning Division, Town Engineer, Mojave Water Agency, Apple Valley Ranchos Water Company, Golden State Water Company, other local water purveyors, project developer

B. The Town shall coordinate and cooperate with the Mojave Water Agency, Apple Valley Ranchos Water Company, Golden States Water Company and other local water purveyors to ensure that groundwater aquifer is protected from excessive extraction**.**
Responsible Parties: Planning Division, Town Engineer, Mojave Water Agency, Apple Valley Ranchos Water Company, Golden State Water Company, other local water purveyors.

J. Land Use, Population and Housing

Introduction and Background
This section of the EIR addresses potential impacts associated with land use, population and housing. It analyzes the potential impacts of the General Plan and the annexations on these resources. The existing conditions in the Town and annexation areas are described, and the impacts of changes, particularly changes in the land use allocation from the previously approved General Plan, are assessed.

Thresholds of Significance/Criteria for Determining Significance
The following thresholds or criteria are not those strictly recommended in 15064 of CEQA. Rather, they are derived from Appendix G of CEQA, which is used to determine the level of potential effect. Build out of the General Plan for the Town of Apple Valley would have a significant effect on land use, population or housing if it is determined that the project will:

Land Use and Planning

a. Physically divide an established community.

b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

c. Conflict with any applicable habitat conservation plan or natural community conservation plan.

Population and Housing

a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).

b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.

c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

1. Existing Conditions

Apple Valley has developed most densely along major roadways in the Town, including State Highway 18 and Bear Valley Road. Highway 18, extends southeast to northwest through the Town, while Bear Valley Road is south of Highway 18, and runs east to west. Existing development becomes gradually less dense north of Highway 18 to Waalew Road, north of

which existing development is scattered and relatively limited in most areas. The Apple Valley Airport is located between Waalew Road on the south and Johnson Road on the north, west of Central Road. Currently the area surrounding the airport is comprised of lands that have been developed to a limited extent for industrial uses. The airport is centrally located within the approved North Apple Valley Industrial Specific Plan (NAVISP) area that provides for the industrial and commercial development of these lands.

The Mojave River runs generally southeast to northwest along the Town's western boundary. It enters the Town near its southern boundary and crosses under Highway 18 where it exits the Town to the northwest. U.S. Interstate 15 crosses the River at the westernmost portion of the Town, and then turns northeast along a portion of the Town's western boundary.

Commercial centers in the Town include the Village commercial area, which is situated along State Highway 18 between Navajo Road and Central Road; retail and office uses between Rancherias Road and Dale Evans Parkway, north to Thunderbird Road along Highway 18, in the vicinity of Town Hall and other public facilities associated with the Civic Center complex; and further west along Highway 18, near its intersection with Corwin Road, St. Mary Medical Center and associated medical offices and other commercial uses. The most recent and substantial commercial development in Town has occurred on the west half of Bear Valley Road, which experienced significant expansion of the Town's commercial base in the first seven years of this century.

Residential development in Apple Valley is concentrated in the southern and central portions of the Town, generally south of Waalew Road. Residential densities in these areas range from very low to high densities (1 dwelling unit per 5 acres or more, to 20 dwelling units per acre). The majority of single-family development in the Town occurs on lots of between 0.5 and 2.5 acres. There are also residential developments within Specific Plan areas, such as Jess Ranch in the southwest portion of Town. The approved North Pointe and Bridle Path Specific Plan areas are located in the northwest portion of Town. The Specific Plans were recently approved, but have not been developed.

The Town's developed areas integrate numerous public and private open space areas, including parks and recreational facilities, operated by the Town and parks associated with Apple Valley Unified School District (AVUSD) schools. Other recreational and open spaces include golf courses, and open space associated with the Mojave River, Apple Valley Dry Lake, Bell Mountain and other notable landforms in the Town. Institutional development and public facilities, such as schools, fire and police stations, are located amidst residential and other types of development. The Town's Civic Center complex is centrally located on Dale Evans Parkway near State Highway 18 and Thunderbird Road.

The land use patterns described above reflect existing General Plan designations. Residential land use designations are concentrated south of Waalew Road, while commercial designated lands are generally organized around major roadways such as Highway 18 and Bear Valley Road and north of Waalew Road near U.S. I-15. As noted above, the General Plan also designates Specific Plan areas, including Jess Ranch, Bridle Path, North Pointe and the NAVISP area. It

allocates lands for Community Reserve, providing for a mix of low density residential and supporting commercial and industrial uses, west of the NAVISP site and north of Waalew Road. Lands along U.S. Interstate 15 in the northern portion of the Town are generally designated for regional commercial uses intended to serve highway travelers.[74]

Existing Land Uses in Annexation Areas

Proposed Annexation 2008-001
There are approximately 2,774±-acres within the proposed Annexation 2008-001 area. Of these, approximately 2,552.1 acres (92%) are vacant and undeveloped desert lands. The remaining approximately 8% are sparsely developed with single-family residences and paved and unpaved roadways. Lands in this annexation area are designated and zoned for Rural Living, Rural Living-5 (minimum 5-acre lots) and Neighborhood Commercial under the County General Plan and Zoning Code.[75]

Proposed Annexation 2008-002
There are approximately 805 acres within this proposed annexation area, of which nearly all is vacant and undeveloped. Approximately 5.5 acres are developed for uses associated with the Black Mountain quarry operation. Lands within proposed Annexation No 2008-002 are designated and zoned Regional Industrial, Community Industrial, Resource Conservation, and Rural Living in the County General Plan and Zoning Code.[76]

Surrounding Land Use
The Town is located in the high desert region of southwest San Bernardino County. The mountains and foothills of the San Bernardino Mountains occur to the south, with the San Gabriel Mountains further south.

There are a number of jurisdictions surrounding the Town. Portions of lands to the northwest are within unincorporated San Bernardino County and comprise the proposed Annexation area No. 2008-001, comprised of largely undeveloped desert lands. The City of Victorville is located west of Apple Valley, beyond the Mojave River and U.S. I-15. The City of Hesperia lies to the southwest and the unincorporated Lucerne Valley community to the southeast. While the region has an overall rural character, these established communities constitute largely urbanized areas that include a range of residential, commercial, industrial, public facilities and open space uses. To the north are sparsely populated desert lands and the small community of Bell Mountain.

Lands to the east are within unincorporated San Bernardino County and include portions of the Town's Sphere of Influence as well as federal lands administered by the Bureau of Land Management. These lands are largely vacant, undeveloped and sparsely populated desert and mountainous areas, with some residential and industrial development, including the aforementioned Black Mountain Quarry operation that is located within the proposed

[74] "Town of Apple Valley General Plan Existing Alternative" map, prepared by Aerial Information Systems, December 27, 2007.
[75] Ibid.
[76] Ibid.

Annexation 2008-002 annexation area, which lies east of the Town. County land use designations on lands to the east of the Town are predominantly Rural Living, but also include Regional and Community Industrial, Resource Conservation, and to a limited extent, Single Residential and General Commercial.

Lands to the south are also within unincorporated San Bernardino County and include portions of the Town's Sphere of Influence, rising into the foothills and mountain slopes of the San Bernardino Mountains. These lands are County designated Single Residential, Rural Living, with Resource Conservation further south within mountainous areas.

Demographic Information

Based on U.S. Census data, the population in the Town of Apple Valley grew from 46,079 in 1990 to 54,239 by 2000, an increase of approximately 17.7%. The 2008 population is currently 70,092.

In 1990, the median age in Apple Valley was 30.8 years, whereas in 2000 it had increased to 35.4 years. As of 2008 there were 24,925 housing units in the Town; this figure had increased from year 2000, when there were 20,161 housing units. There were an average of 2.903 persons per household in 2000; by 2008 this average had increased to 3.053.

The median household income in Apple Valley in 2000 was $40,421, and had risen by approximately 34.4% in 2008, to $54,323.

The median home price for existing homes in Apple Valley was $338,000 in third quarter 2007, and had fallen to $220,000 by third quarter 2008. At current levels, home ownership is considered affordable to moderate income households in Apple Valley. The median new home price in the Victor Valley region, in which the Town is located, also dropped over the past year. In second quarter 2007 the median new home price in the region was $415,000, and $377,000 in second quarter 2008. These prices still exceed those of the overall County of San Bernardino for the same period.

Build Out of the Town and Annexation Areas under the Current General Plans

The current General Plan for the Town of Apple Valley allocated land uses for all incorporated areas, resulting in a total potential 50,053 residential units 28,608,875 square feet of commercial land uses, and 37,848,814 square feet of industrial land uses at build out. The current General Plan would result in a build out population of 152,813 within Town limits, based on a 2008 Department of Finance household size of 3.053 persons per household. Table III-36 illustrates the development potential of the current Town of Apple Valley General Plan.

Table III-36
Statistical Summary of Land Uses
Current General Plan – Town of Apple Valley

Land Use Designation	**Developed**	**Vacant**	**Total**			
Residential Designations				**Existing Units**	**Potential Units**	**Total Units**
Very Low Density Residential	174.46	1,828.18	2,002.64		366	366
Low Density Residential	503.64	3,403.59	3,907.23		1,361	1,361
Estate Residential	3,128.95	2,836.06	5,965.02	20,107	2,836	22,943
Single Family Residential	8,625.30	4,690.55	13,315.86		7,036	7,036
Medium Density Residential	852.07	564.16	1,416.22	3,775	8,462	12,237
Community Reserve	30.07	3,241.00	3,271.07		3,241	3,241
Specific Plan/Residential Units	1,068.45	5,884.28	6,952.73		2,869	2,869
			Total	**23,882**	**26,171**	**50,053**
Commercial Designations				**Existing SF**	**Potential SF**	**Total SF**
General Commercial	368.44	523.83	892.27	3,530,803	5,019,991	8,550,794
Regional Commercial	19.40	844.56	863.96	185,937	8,093,581	8,279,518
Service Commercial	147.66	150.77	298.42	1,415,034	1,444,831	2,859,865
Office Professional	49.34	186.04	235.38	472,851	1,782,838	2,255,689
Specific Plan/Commercial	1,068.45	5,884.28	6,952.73	1,740,086	4,922,924	6,663,010
			Total	**7,344,710**	**21,264,165**	**28,608,875**
Industrial Designations				**Existing SF**	**Potential SF**	**Total SF**
Planned Industrial	3.50	91.49	95.00	33,560	876,810	910,369
Specific Plan/Industrial	1,068.45	5,884.28	6,952.73	3,053,208	33,885,237	36,938,445
			Total	**3,086,768**	**34,762,047**	**37,848,814**
Other Designations						
Public Facility	263.78	60.92	324.70			
Open Space	241.94	2,771.70	3,013.64			0
Mineral Resources	111.6	340.9	452.5			0
Street Rights-of-Way	2,563.53	1,378.11	3,941.64			
Grand Total	**18,152.1**	**28,796.2**	**46,948.3**			

In Annexation 2008-001, the County of San Bernardino has assigned primarily residential land use designations, with the exception of one 8 acre site for neighborhood commercial development. If Annexation 2008-001 were to build out under the current land use designations, a total of 2,067 residential units and 53,192 square feet of commercial space would be expected to occur. The current County General Plan land use pattern would result in a build out population of 6,459 persons, based on a 2008 Department of Finance household size of 3.125 persons per household in unincorporated San Bernardino County. Table III-37 illustrates the build out potential of Annexation 2008-001.

Table III-37
Statistical Summary of Land Uses
Current General Plan (County) – Annexation 2008-001

Land Use Designation	Developed	Vacant	Total	Existing Units	Potential Units	Total Units
Residential Designations						
Rural Living	151.6	1,982.4	2,134.0		1,982	1,982
Rural Living, 5 AC.	14.2	425.5	439.7		85	85
			Total	**-**	**2,067**	**2,067**
Commercial Designations				**Existing SF**	**Potential SF**	**Total SF**
Neighborhood Commercial		7.9	7.9	**-**	**53,192**	**53,192**
Other Designations						
Street Rights-of-Way	42.8	150.1	192.9			
Grand Total	**208.7**	**2,565.9**	**2,774.6**			

In Annexation 2008-002, the County of San Bernardino General Plan identifies about 400 acres of residentially designated lands, 78 acres of Resource Conservation land, and 324 acres of industrially designated land. If Annexation 2008-002 were to build out under the current County land use designations, a total of 398 residential units and 3,101,376 square feet of industrial space would be expected to occur. The current County General Plan land use pattern would result in a build out population of 1,245 persons, based on a 2008 Department of Finance household size of 3.125 persons per household in unincorporated San Bernardino County. Table III-38 illustrates the build out potential of Annexation 2008-002.

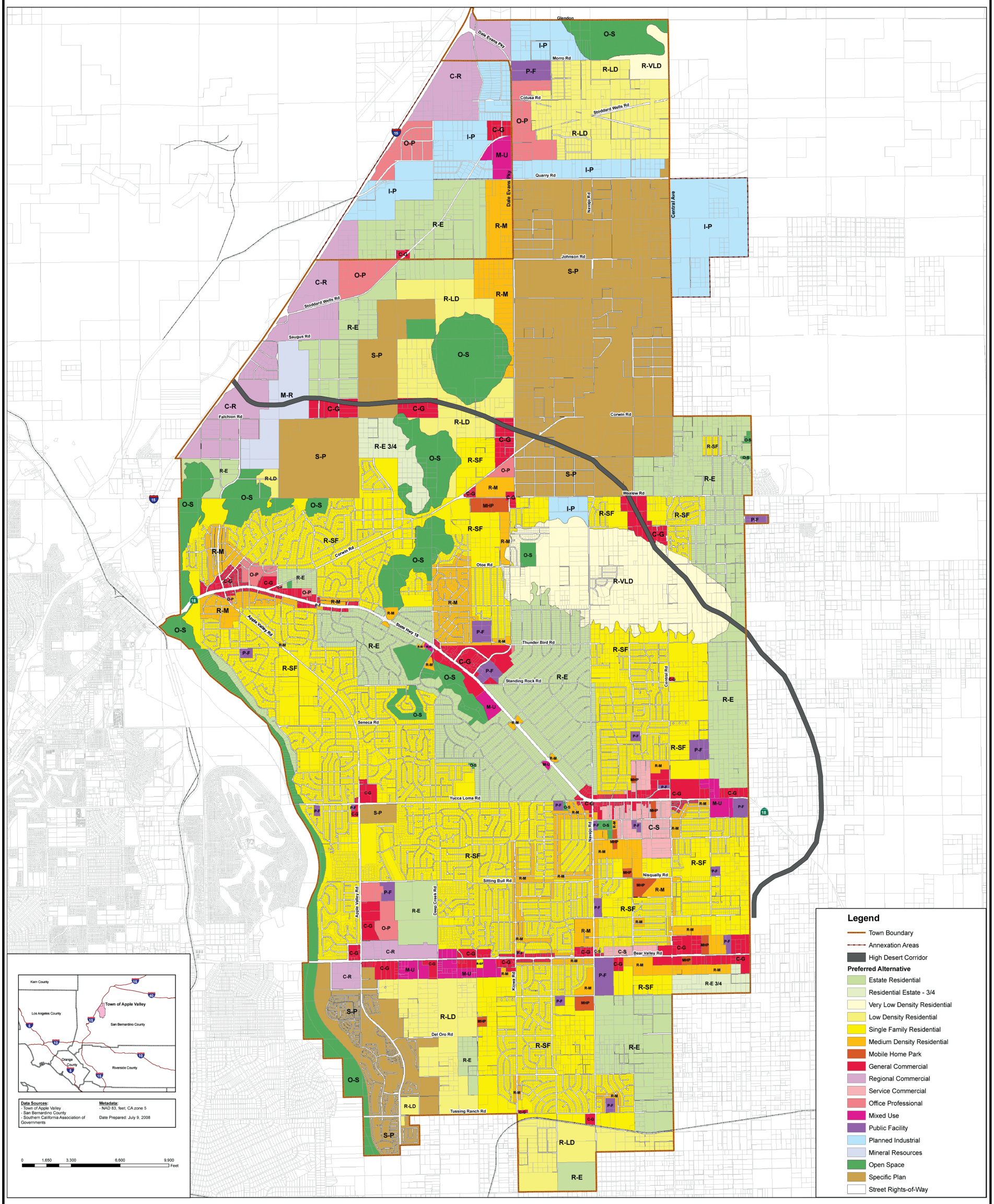
Table III-38
Statistical Summary of Land Uses
Current General Plan (County) – Annexation 2008-002

Land Use Designation	Developed	Vacant	Total	Existing Units	Potential Units	Total Units
Residential Designations						
Rural Living	5.4	394.1	399.5		394	394
Resource Conservation	0.1	77.7	77.8		4	4
			Total	**-**	**398**	**398**
Industrial Designations				**Existing SF**	**Potential SF**	**Total SF**
Community Industrial		50.5	50.5	-	483,608	483,608
Regional Industrial		273.2	273.2	-	2,617,768	2,617,768
			Total	**-**	**3,101,376**	**3,101,376**
Other Designations						
Street Rights-of-Way	0.2	3.9	4.1			
Grand Total	**5.7**	**799.3**	**805.0**			

When considering the area within the Town limits and both Annexation Areas, the existing General Plan designations assigned to these lands have the potential to generate a total of 52,519 residential units, 28,662,067 square feet of commercial space, and 40,950,190 square feet of industrial space. In total, the current General Plan designations would generate a build out population of 160,517 persons. Table III-39 illustrates the build out potential of the existing General Plans for the Town and annexation areas.

Table III-39
Statistical Summary – Build Out of the Current General Plan and Annexation Areas

Land Use Designation	**Developed**	**Vacant**	**Total**			
Residential Designations				**Existing Units**	**Potential Units**	**Total Units**
Rural Living (County)	157.0	2,376.5	2,533.5		2,377	2,377
Rural Living, 5 AC. (County)	14.2	425.5	439.7		85	85
Resource Conservation (County)	0.1	77.7	77.8		4	4
Very Low Density Residential	174.46	1,828.18	2,002.64		366	366
Low Density Residential	503.64	3,403.59	3,907.23		1,361	1,361
Estate Residential	3,128.95	2,836.06	5,965.02	20,107	2,836	22,943
Single Family Residential	8,625.30	4,690.55	13,315.86		7,036	7,036
Medium Density Residential	852.07	564.16	1,416.22	3,775	8,462	12,237
Community Reserve	30.07	3,241.00	3,271.07		3,241	3,241
Specific Plan/Residential Units	1,068.45	5,884.28	6,952.73		2,869	2,869
			Total	**23,882**	**28,637**	**52,519**
Commercial Designations				**Existing SF**	**Potential SF**	**Total SF**
Neighborhood Commercial (County)		7.9	7.9	**-**	**53,192**	**53,192**
General Commercial	368.44	523.83	892.27	3,530,803	5,019,991	8,550,794
Regional Commercial	19.40	844.56	863.96	185,937	8,093,581	8,279,518
Service Commercial	147.66	150.77	298.42	1,415,034	1,444,831	2,859,865
Office Professional	49.34	186.04	235.38	472,851	1,782,838	2,255,689
Specific Plan/Commercial	1,068.45	5,884.28	6,952.73	1,740,086	4,922,924	6,663,010
			Total	**7,344,710**	**21,317,35**	**28,662,067**
Industrial Designations				**Existing SF**	**Potential SF**	**Total SF**
Community Industrial (County)		50.5	50.5	-	483,608	483,608
Regional Industrial (County)		273.2	273.2	-	2,617,768	2,617,768
Planned Industrial	3.50	91.49	95.00	33,560	876,810	910,369
Specific Plan/Industrial	1,068.45	5,884.28	6,952.73	3,053,208	33,885,237	36,938,445
			Total	**3,086,768**	**37,863,422**	**40,950,190**
Other Designations						
Public Facility	263.78	60.92	324.70			
Open Space	241.94	2,771.70	3,013.64			
Mineral Resources	111.6	340.9	452.5			
Street Rights-of-Way	2,606.53	1,532.11	4,138.64			
Grand Total	**18,366.4**	**32,161.4**	**50,527.9**			



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Apple Valley General Plan Draft EIR
Preferred General Plan Land Use Map
Apple Valley, California

Exhibit
III-15

2. Project Impacts

The proposed General Plan does not significantly change development patterns or land use designations within Town limits. Land use designations have generally been maintained consistent with those in the current General Plan. Three new land use designations are proposed, the Mixed Use, Estate Residential ¾, and the Mobile Home Park designations.

The Mixed Use designation, which has generally been assigned to lands on major roadways such as Bear Valley Road and Highway 18, as well as lands in proximity to the future Highway 220 (also known as the High Desert Corridor), requires the development of both commercial and high density residential development within each project. This designation has been applied to lands previously designated Medium Density Residential, various Commercial designations, and some Residential designations, particularly north of Highway 18. The Mixed Use designation has been assigned to a total of 383.2 acres, 288.3 acres within Town limits and 94.9 acres in the annexation areas. This designation has the potential to generate 2,984 dwelling units, and 2,224.298 square feet of commercial space.

The Estate Residential ¾ designation has been assigned primarily in the southern and eastern areas of Town, on lands previously designated Estate Residential or Very Low or Low Density Residential. This designation is proposed specifically to allow the keeping of animals, and the expansion of the equestrian lifestyle in the Town. The Residential Estate ¾ designation has been assigned to a total of 475.7 acres, and has the potential to generate 607 dwelling units.

The Mobile Home Park designation has been assigned to existing mobile home parks in Town, which under the current General Plan were assigned a range of residential densities, but generally occurred in the Single Family Residential and Medium Density Residential land use designation. This designation, as it applies to only existing mobile home parks, will have no impact on the ultimate build out densities or intensities beyond those of the current General Plan.

Table III-40
Statistical Summary of Land Uses
General Plan Preferred Alternative

	Town of Apple Valley		Annexation Areas	
Land Use Designation	**Acres**	**%**	**Acres**	**%**
Residential Land Uses				
Very Low Density Residential (1 du/5 or more gross ac)	1,961.5	4.2%	--	--
Low Density Residential (1 du/2.5 - 5 gross ac)	3,503.5	7.5%	--	--
Estate Residential (1du/1 – 2.5 gross ac)	6,666.9	14.2%	778.0	21.7%
Estate Residential ¾ (1 du/0.75 – 1 ac)	475.7	1.0%	--	--
Single-Family Residential (1 du/0.4-0.9 ac)	12,527.9	26.7%	--	--
Medium Density Residential (4- 20 du/ac)	1,925.9	4.1%	218.7	6.1%
Mobile Home Park (5-15 du/ac)	180.0	0.4%	--	--
Mixed Use	288.3	0.6%	94.9	2.7%
Specific Plan	7,046.8	15.0%	--	--
Total Residential Uses	**34,576.6**	**73.6%**	**1,091.6**	**30.5%**
Commercial Land Uses				
Mixed Use[1]	288.3	0.6%	94.9	2.7%
General Commercial	1,550.8	3.3%	52.6	1.5%
Regional Commercial	1,303.0	2.8%	442.5	12.4%
Service Commercial	335.6	0.7%	--	--
Office Professional	616.8	1.3%	183.1	5.1%
Specific Plan/Commercial[1]	7,046.8	15.0%	--	--
Total Commercial Uses	**3,806.1**	**8.1%**	**678.1**	**18.9%**
Industrial Land Uses				
Planned Industrial	645.3	1.4%	1,613.1	45.1%
Specific Plan/Industrial[1]	7,046.8	15.0%	--	--
Total Industrial Uses	**645.3**	**1.4%**	**1,613.1**	**45.1%**
Other Land Uses				
Public Facility	472.5	1.0%	--	--
Open Space	3,053.9	6.5%	--	--
Mineral Resources	452.5	1.0%	--	--
Street Rights-of-Way	3,941.2	8.4%	196.9	5.5%
Total Other Land Uses	**7,290.3**	**16.9%**	--	--
Grand Total	**46,948.3**	**100.0%**	**3,579.7**	**100.0%**

[1]Specific Plan and Mixed Use acreage included under Residential, above.
Source: Aerial Information Systems, July 2008

The proposed General Plan includes 34,576.6 acres of residentially designated lands within the existing Town limits, and 1,091.6 acres in the annexation areas, for a total of 35,668.2 acres of residentially designated lands within the planning area. This represents a decrease of 4,213.6 acres in residential lands, or 10.6%. The proposed General Plan will also result in a total of 63,749 dwelling units, 59,513 of which will occur within the Town, and 4,236 in Annexation 2008-001. This represents an increase of 11,230 residential units, or an increase of 21.4% over the current General Plan residential units. These changes will also result in an increase in build out population from 160,517 to 194,931 residents at build out of both the General Plan and the

two annexation areas. The increase in units, when compared to the decrease in acreage, is attributable to the increase in Medium Density Residential lands (an additional 728.4 acres), and the addition of the Mixed Use designation, which in and of itself has the potential to generate 2,984 residential units.

Commercial acreage is increased under the proposed General Plan and annexations. The total commercial acreage will be 4,484.2 acres, an increase of 2,186.2 acres (95%), 678.1 acres occurring within the annexation areas. The proposed General Plan also results in an increase in commercial space, primarily associated with Annexation 2008-001. The proposed General Plan will result in a total of 51,860,766 square feet of commercial space, or 23,198,699 square feet more than under the current General Plan designations. 7,135,369 square feet of this increase will occur in Annexation 2008-001. In total, commercial square footage will increase by 81% over the existing General Plan designations.

Industrial land use designations total 2,258.4 acres under the proposed General Plan and annexation areas, as compared to 418.7 under the current General Plan designations. The vast majority of these lands occur in the annexation areas, where 1,613.1 acres of industrial lands are proposed. The proposed General Plan and annexations will also result in a total of 58,051,428 square feet of industrial space, an increase of 17,101,238 square feet over the current General Plan potential. Almost all of this increased industrial space will occur in the annexation areas (14,929,042 square feet).

Finally, the proposed General Plan and annexations result in an increase from 324.7 to 472.5 acres in Public Facility land uses, primarily associated with the addition of schools and other previously undesignated public lands in the current General Plan; and an increase from 3,013.6 to 3,053.9 acres in Open Space lands.

Table III-41
Preferred Alternative General Plan
Land Use Designation Build Out Summary: Town & Unincorporated Lands

RESIDENTIAL LAND USES

	Town Limits						Annexation Areas					
Land Use Designation	**AC Dev.**	**AC Vacant**	**AC Total**	**Exist. Units**	**Future Units**	**Total Units**	**AC Dev.**	**AC Vacant**	**AC Total**	**Exist. Units**	**Future Units**	**Total Units**
Very Low Density Residential (1 du/5 or more gross ac)	174.1	1,787.4	1,961.5		357	357	--	--	--	--	--	--
Low Density Residential (1 du/2.5 - 5 gross ac)	390.1	3,113.3	3,503.5		1,245	1,245	--	--	--	--	--	--
Estate Residential (1du/1 – 2.5 gross ac)	3,177.8	3,489.1	6,666.9	20,107	3,489	23,596	55.7	722.3	778.0	--	722	722
Estate Residential ¾ (1 du/0.75 – 1 ac)	20.8	454.9	475.7		607	607	--	--	--	--	--	--
Single-Family Residential (1 du/0.4-0.9 ac)	8,424.0	4,103.9	12,527.9		6,156	6,156	--	--	--	--	--	--
Medium Density Residential (4- 20 du/ac)	745.1	1,180.8	1,925.9	3,775	17,712	21,487	41.4	177.3	218.7	--	2,659	2,659
Mobile Home Park (5-15 du/ac)	178.5	1.5	180.0	1,043	23	1,066	--	--	--	--	--	--
Mixed Use	51.6	236.7	288.3		2,130	2,130	0.00	94.8	94.8	--	854	854
Specific Plan	1,068.6	5,978.2	7,046.8		2,869	2,869	--	--	--	--	--	--
Residential Total	**14,230.7**	**20,345.9**	**34,576.6**	**24,925**	**34,588**	**59,513**	**97.2**	**994.4**	**1,091.6**	**--**	**4,236**	**4,236**

COMMERCIAL AND INDUSTRIAL LAND USES

	Town Limits				Annexation Areas			
Land Use Designation	**Acres Dev.**	**Acres Vacant**	**Acres Total**	**Total Potential SF**	**Acres Dev.**	**Acres Vacant**	**Acres Total**	**Total Potential SF**
Mixed Use[1]	51.6	236.7	288.3	1,587,686	0.0	94.9	94.9	636,612
General Commercial	385.5	1,165.3	1,550.8	14,861,742	11.7	40.8	52.6	503,617
Regional Commercial	31.7	1,271.3	1,303.0	12,486,488	7.2	435.3	442.5	4,240,502
Service Commercial	146.8	188.7	335.6	3,215,875	--	--	--	--
Office Professional	74.2	542.6	616.8	5,910,597	--	183.1	183.1	1,754,639
Specific Plan[1]	1,068.6	5,978.2	7,046.8	6,663,010	--	--	--	--
Commercial Sub Total	**638.2**	**3,167.9**	**3,806.1**	**44,725,397**	**19.0**	**659.2**	**678.1**	**7,135,369**
Planned Industrial	21.4	623.9	645.3	6,183,941	55.3	1,557.8	1,613.1	14,929,042
Specific Plan[1]	1,068.6	5,978.2	7,046.8	36,938,445	--	--	--	--
Industrial Sub Total	**21.4**	**623.9**	**645.3**	**43,122,386**	**55.3**	**1,557.8**	**1,613.1**	**14,929,042**
Grand Total Commercial & Industrial	**659.6**	**3,791.8**	**4,451.4**	**87,847,783**	**74.2**	**2,217.1.**	**2,291.2**	**22,594,023**

[1] Mixed Use and Specific Plan acreage included under Residential, above.

Table III-41 (continued)
Preferred Alternative General Plan
Land Use Designation Build Out Summary: Town & Unincorporated Lands

Other Land Use Designations

	Town Limits			Annexation Areas		
Land Use Designation	**Acres Dev.**	**Acres Vacant**	**Acres Total**	**Acres Dev.**	**Acres Vacant**	**Acres Total**
Public Facility	353.5	119.1	472.5	--	--	--
Open Space	233.3	2,820.6	3,053.9	--	--	--
Mineral Resources	111.6	340.9	452.5	--	--	--
Street Rights-of-Way	2,563.5	1,377.8	3,941.2	43.1	153.8	196.9
Grand Total Other Uses	**3,261.8**	**4,658.5**	**7,920.3**	**43.1**	**153.8**	**196.9**

Source: Aerial Information Systems, July 2008

Table III-42
Build Out Summary – Annexation 2008-001

Land Use Designation	**Developed**	**Vacant**	**Total**	**Existing Units**	**Potential Units**	**Total Units**
Residential Designations						
Estate Residential	55.7	722.3	778.0		722	722
Medium Density Residential	41.4	177.3	218.7		2,659	2,659
Mixed Use	0.0	94.8	94.9		854	854
			1,091.6	**-**	**4,236**	**4,236**
Commercial Designations				**Existing SF**	**Potential SF**	**Total SF**
Mixed Use	0.0	94.9	94.9	-	636,612	636,612
General Commercial	11.7	40.8	52.6	112,202	391,415	503,617
Regional Commercial	7.2	435.3	442.5	69,069	4,171,433	4,240,502
Office Professional	0.0	183.1	183.1	-	1,754,639	1,754,639
			773.0	**181,271**	**6,954,099**	**7,135,369**
Industrial Designations				**Existing SF**	**Potential SF**	**Total SF**
Planned Industrial	49.72	762.4	812.1	**476,523**	**7,305,753**	**7,782,275**
Other Designations						
Street Rights-of-Way	42.8	150.1	192.9			
Grand Total	**208.7**	**2,565.9**	**2,774.6**			

Table III-43
Build Out Summary – Annexation 2008-002

Land Use Designation	Developed	Vacant	Total	Existing SF	Potential SF	Total SF
Industrial Designations						
Planned Industrial	5.54	795.5	801.0	**53,089**	**7,623,290**	**7,676,379**
Other Designations						
Street Rights-of-Way	0.2	3.9	4.1			
Grand Total	**5.7**	**799.4**	**805.1**			

Table III-44
Build Out Summary – Annexations 2008-001 & 2008-002 Totals

Land Use Designation	Developed	Vacant	Total	Existing Units	Potential Units	Total Units
Residential Designations						
Estate Residential	55.7	722.3	778.0		722	722
Medium Density Residential	41.4	177.3	218.7		2,659	2,659
Mixed Use	0.0	94.8	94.9		854	854
			1,091.6	**-**	**4,236**	**4,236**
Commercial Designations				**Existing SF**	**Potential SF**	**Total SF**
Mixed Use	0.0	94.9	94.9	-	636,612	636,612
General Commercial	11.7	40.8	52.6	112,202	391,415	503,617
Regional Commercial	7.2	435.3	442.5	69,069	4,171,433	4,240,502
Office Professional		183.1	183.1	-	1,754,639	1,754,639
			773.0	**181,271**	**6,954,099**	**7,135,369**
Industrial Designations				**Existing SF**	**Potential SF**	**Total SF**
Planned Industrial	55.26	1,557.8	1,613.1	**529,612**	**14,929,042**	**15,458,654**
Other Designations						
Street Rights-of-Way	43.1	153.8	196.9			
Grand Total	**214.5**	**3,365.3**	**3,579.7**			

Summary of Impacts

The proposed General Plan and annexations will result in an increase in residential units, commercial and industrial square footage. Within the existing Town limits, this increase will be associated with changes in the distribution of land uses, including an increase in Medium Density residential units. The changes in the land use pattern within the Town, however, will not be significant, and will not significantly affect the pattern of development which has already occurred. Lower intensity residential land uses are still proposed in the southern and northwestern areas of Town. The character of these areas will not significantly change. Along the

High Desert Corridor, land use intensities will increase somewhat, as the land use map has been modified to reduce the exposure of sensitive receptors, particularly single family homes, to the potential impacts of a high-volume roadway. The changes proposed in the land use plan will not represent a significant impact to land use within the Town limits.

Annexation 2008-001

Annexation Area 2008-001 will experience the greatest change in land use patterns. This area is currently primarily designated for low density residential development of 1 unit per acre, with an 8 acre neighborhood commercial land use designation occurring along Dale Evans Parkway. The proposed land use plan for Annexation 2008-001 will result in increased residential densities, including Medium Density and Mixed Use residential development. Approximately 722 acres will be designated for Estate Residential development, which is equivalent to the Rural Living land use designation currently in effect in the area.

Annexation 2008-001 will also result in the addition of 773 acres of commercially designated lands, and 812.1 acres of industrial designated lands. These lands are currently designated Rural Living under the County General Plan.

Annexation 2008-001 is located immediately west of lands within the Town currently designated for industrial development, on the east side of Dale Evans Parkway. North of the annexation area, at the I-15/Dale Evans parkway interchange, lands within the Town are designated for commercial development, and will be in the proposed General Plan. The annexation area is also bordered on its west boundary by I-15. These currently occurring conditions are not conducive to the long term preservation of rural land uses in the area.

As development occurs in Town over the next several years, an intensification of land use would be expected in Annexation 2008-001, regardless of the current land use patterns in the area. However, the character of the existing scattered residential development, and of potentially constructed 1 acre residential lots in the future, will be changed significantly by the proposed land use designations in this annexation area. The General Plan includes policies and programs designed to provide buffers between residential and commercial or industrial land uses. The Town's Development Code also includes such standards, and would require any development to appropriately protect surrounding residential development. Further, only about 208.7 acres, or 7.5% of the 2,774.6 acres within the annexation area are currently developed. Impacts of development to existing residents will therefore be limited, and the development of the area will not displace a substantial number of homes or residents.

It is not expected that development in this area will occur in the short term. Infrastructure is not currently available, and economic conditions will not allow its extension at this time. However, in the mid- to long-term, development will occur in this area, according to the land use designations assigned under this project.

Changes in land use designations as proposed in this General Plan and Annexation effort cannot be mitigated to less than significant levels. As a result, the anticipated changes in land use

designations within Annexation 2008-001 will be significant and unavoidable, as they relate to land use.

Annexation 2008-002

Lands within Annexation 2008-002 are currently designated for a mix of Rural Living (399.5 acres) and industrial (323.7 acres) land uses. The proposed Annexation would result in all lands within the annexation area to be developed in industrial land uses (801.0 acres). The annexation area is currently vacant, and does not include any residential development. The area is bordered on the west by lands designated for industrial development, and includes a portion of an existing mining operation. The land use designations proposed under Annexation 2008-002 will therefore have no impact on the character of the area. Development of industrial uses on these lands will not displace any housing or people. The impacts associated with land use in Annexation 2008-002 are expected to be insignificant.

3. Mitigation Measures

The General Plan includes policies and programs to address and mitigate land use incompatibilities. Even with these policies and programs, however, the impacts associated with land use in Annexation 2008-001 will remain significant and unavoidable. The following mitigation measures are offered to help reduce impacts to the extent possible.

1. Individual project proposals, especially those involving a mix of residential and other uses, as well as those located near sensitive lands or uses, shall be fully evaluated during the project review process to assure that all land use compatibility issues are addressed and mitigated.

2. Development in currently undeveloped areas shall be controlled to assure that adequate infrastructure, including roadways, water and wastewater systems.

Mitigation Monitoring/Reporting Program

A. All development proposals shall be reviewed by the Planning Division to assess the potential for land use incompatibilities between residential and more urban land uses and to assure that appropriate mitigation measures are identified and implemented.
Responsible Parties: Planning Division, Developers, and affected land owners.

K. Mineral Resources

Introduction

Important mineral resources that occur in the Apple Valley area are aggregate and limestone, both of which are used in the manufacturing of cement. The availability of these resources has the potential to be significantly impacted and restricted by urbanization or development of nearby properties. This section of the EIR addresses the development of the General Plan and annexations as they relate to mineral resources, particularly those resources which have previously been identified, and are or have been mined.

California Government Code Section 65560(b) directs cities and counties to provide for the preservation of mineral resource areas, as well as other resources. The Section is one among many state and federal regulations that apply to mineral resource issues, with the various requirements having direct application to the Town of Apple Valley and its Sphere of Influence, where important mineral resources have already been identified and developed. The regulation of mineral resources is also addressed at length in Sections 2762, 2763 and 2764 of the Public Resources Code.

Thresholds of Significance/Criteria for Determining Significance

The following thresholds or criteria are derived from Appendix G of CEQA. The proposed General Plan will have a significant effect on mineral resources if it:

a. Results in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.

b. Results in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

1. Existing Conditions

Utilization of mineral resources frequently conflicts with urban or suburban land uses. Careful consideration of rare or valuable mineral deposits is required prior to their exclusion by urban development. Mineral deposits are nonrenewable resources, and careful and efficient utilization is essential to avoid waste or over-exploitation.

Mineral resources located within the Town and Sphere of Influence are found primarily along or near the Mojave River or in the surrounding mountains, and include sand, gravel and stone deposits that are suitable as sources of concrete aggregate. The Cemex Black Mountain Quarry mines limestone on the northwest edge of Town, adjacent to the newly approved North Pointe and Bridle Path Specific Plans. Cemex and TXI Riverside Cement operate quarries within the Sphere of Influence. The Cemex operations occur in part in Annexation 2008-002.

State Mineral Resource Designations

California's Department of Mines and geology has established definitions for mineral resource zones, to identify the potential for their occurrence in any area. These definitions are:

MRZ-1: Areas where available geologic information indicates that little likelihood exists for the presence of significant mineral resources.

MRZ-2a: Areas underlain by mineral deposits where geologic data indicate that significant measured or indicated resources are present. MRZ-2 is divided on the basis of both degree of knowledge and economic factors. Areas classified MRZ-2a contain discovered mineral deposits that are either measured or indicated reserves as determined by such evidence as drilling records, sample analysis, surface exposure, and mine information. Land included in the MRZ-2a category is of prime importance because it contains known economic mineral deposits.

MRZ-2b: Areas underlain by mineral deposits where geologic information indicates that significant inferred resources are present. For this report, areas classified MRZ-2b contain discovered mineral deposits that are significant inferred resources as determined by their lateral extension from proven deposits or their similarity to proven deposits. Further exploration work could result in upgrading areas classified MRZ-2b to MRZ-2a.

MRZ-3a: Areas containing known mineral occurrences of undetermined mineral resource significance. Further exploration work within these areas could result in the reclassification of specific localities into MRZ-2a or MRZ-2b categories. MRZ-3 is divided on the basis of knowledge of economic characteristics of the resources.

MRZ-3b: Areas containing inferred mineral occurrences of undetermined mineral resource significance. Land classified MRZ-3b represents areas in geologic settings that appear to be favorable environments for the occurrence of specific mineral deposits. Further exploration work could result in the reclassification of all or part of these areas into the MRZ-2a or MRZ-2b categories.

MRZ-4: Areas of no known mineral occurrences where geologic information does not rule out either the presence or absence of significant mineral resources.

Aggregate Resource Areas (ARA) in Apple Valley

As described in the Department of Conservation's 2006 Geological Survey, "Aggregate Availability in California," the Barstow Victorville P-C Region contained 133 million tons of permitted aggregate resources as of January, 2006. The following State-designated areas include highly significant deposits of aggregate resources, and have been identified in and near Apple Valley:

ARA-8: That part of the Mojave River MRZ-2b area between the Rock Springs Road crossing and the Bear Valley Road bridge. The size of this ARA is 2,758 acres. The aggregate resources in this area are about 71 feet thick, based on well logs in the area. ARA-8 is rated as Highly Significant and the highest probable use of material from this deposit is concrete aggregate.

ARA-9: That part of the Mojave River MRZ-2b area between the Bear Valley Road bridge and the Upper Narrows. The size of this ARA is 691 acres. The aggregate resources in this area are at least 100 feet thick, based on well logs in the area. ARA-9 is rated as Highly Significant and the highest probable use of material from this deposit is concrete aggregate.

Exhibits III-16 and III-17 delineate mineral resource zones within the planning area.

Evidence of mining, particularly surface mining in desert areas, can remain for hundreds of years, if not properly reclaimed through redistribution of unmarketable (waste) materials, recontouring, fine grading and revegetation. Nevertheless, excavation of mineral resources can have significant environmental impacts that may not be entirely mitigated by surface mining reclamation plans. The Surface Mining and Reclamation Act (SMARA) was developed to assure the sustainable utilization of mineral resources while concurrently addressing the need for protecting the environment. The Town does not currently exercise jurisdiction over local quarry reclamation plans, and instead relies on the expertise of San Bernardino County and state staff, to the extent they are empowered under SMARA. The General Plan includes policy which requires the Town to establish formal relationships with these agencies to assure the long term protection of quarries, and their proper reclamation.

Legend

Map No.	Name	Commodity	Mineral Resource Zone
267	Scheerer Quarry	Limestone	MRZ 2a
268	Unknown	Limestone	MRZ 4
269	Unknown	Limestone	MRZ 4
270	Piercy	Limestone	MRZ 2a
271	Unknown	Limestone	MRZ 3a
272	Unknown	Gold	MRZ 3a
273	Unknown	Gold	MRZ 3a
279	Unknown	Gold	MRZ 4
280	Unknown	Gold	MRZ 4
300	Unknown	Unknown	MRZ 4
301	Unknown	Unknown	MRZ 4

MRZ-1: Areas where available geologic information indicates that little likelihood exists for the presence of significant mineral resources.

MRZ-2a: Areas underlain by mineral deposits where geologic data indicate that significant measured or indicated resources are present. MRZ-2 is divided on the basis of both degree of knowledge and economic factors. Areas classified MRZ-2a contain discovered mineral deposits that are either measured or indicated reserves as determined by such evidence as drilling records, sample analysis, surface exposure, and mine information. Land included in the MRZ-2a category is of prime importance because it contains known economic mineral deposits.

MRZ-2b: Areas underlain by mineral deposits where geologic information indicates that significant inferred resources are present. For this report, areas classified MRZ-2b contain discovered mineral deposits that are significant inferred resources as determined by their lateral extension from proven deposits or their similarity to proven deposits. Further exploration work could result in upgrading areas classified MRZ-2b to MRZ-2a.

MRZ-3a: Areas containing known mineral deposits of undetermined significance. Further exploration work within these areas could result in the reclassification of specific localities into MRZ-2a or MRZ-2b categories. MRZ-3 is divided on the basis of knowledge of economic characteristics of the resources.

ARA-10: That part of the Mojave River MRZ-2b between the Upper Narrows and Highway 15 bridge. The size of this ARA is 119 acres. The aggregate resources in this area are about 40 feet thick, based on well logs in the area. ARA-10 is rated as Significant. The highest probable use of material from this deposit is concrete aggregate.

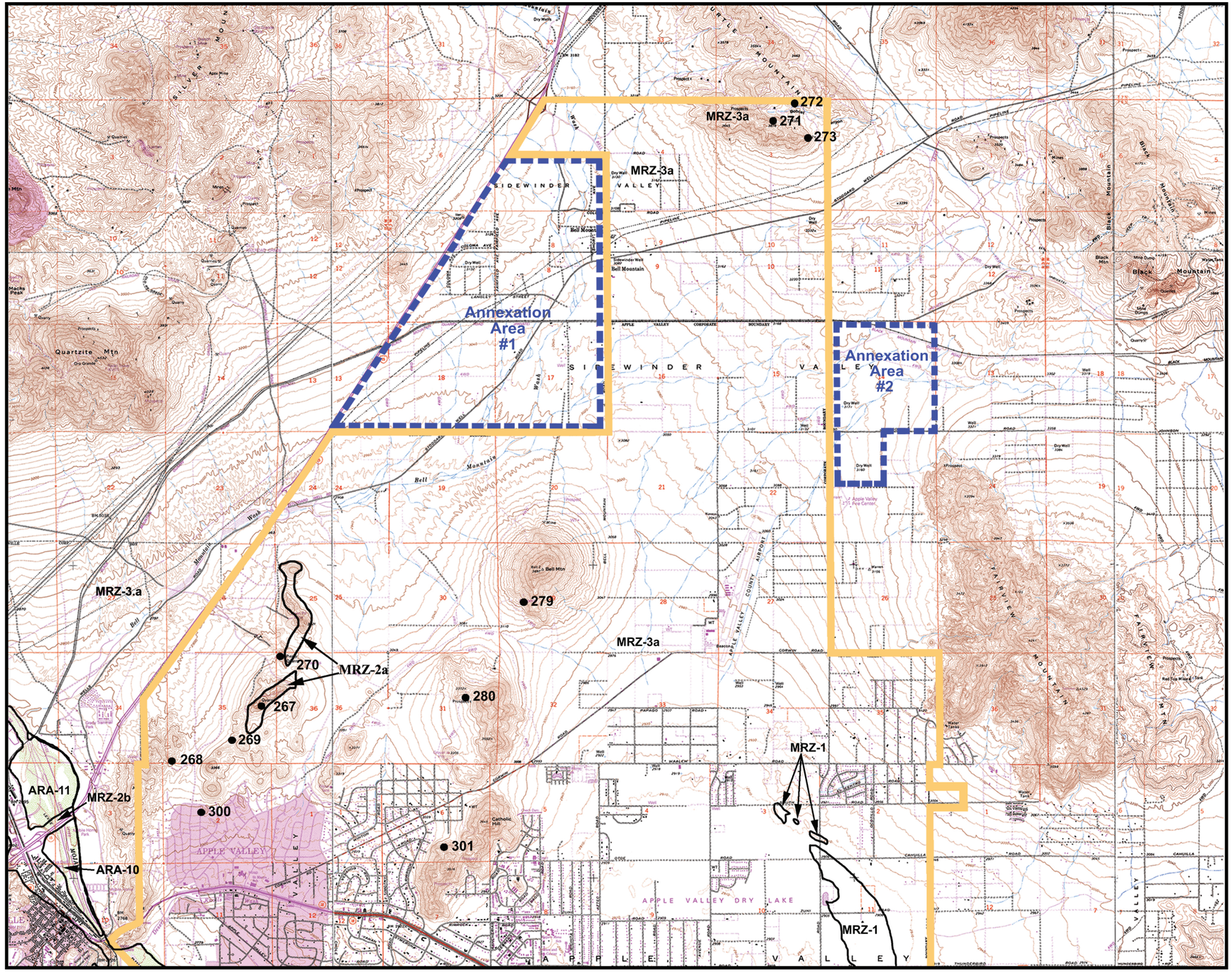
ARA-11: That part of the Mojave River MRZ-2b between the Highway 15 bridge and a pipeline crossing near the Lowers Narrows. The size of this ARA is 290 acres. The aggregate resources in this area are about 42 feet thick, based on well logs in the area. ARA-10 is rated as Highly Significant. The highest probable use of material from this deposit is concrete aggregate.

Source: USGS 7.45 Minute Maps;

Apple Valley North, CA 1970, revised 1993
Fairview Valley, CA 1993
Helendale, CA 1956 revised 1993
Turtle Valley, CA 1970, revised 1993
Victorville, CA 1956, revised 1993

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SCALE IN FEET

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Apple Valley General Plan Draft EIR
Mineral Resource Zones North / Mines and Prospects
Apple Valley, California

Legend

MRZ-1: Areas where available geologic information indicates that little likelihood exists for the presence of significant mineral resources.

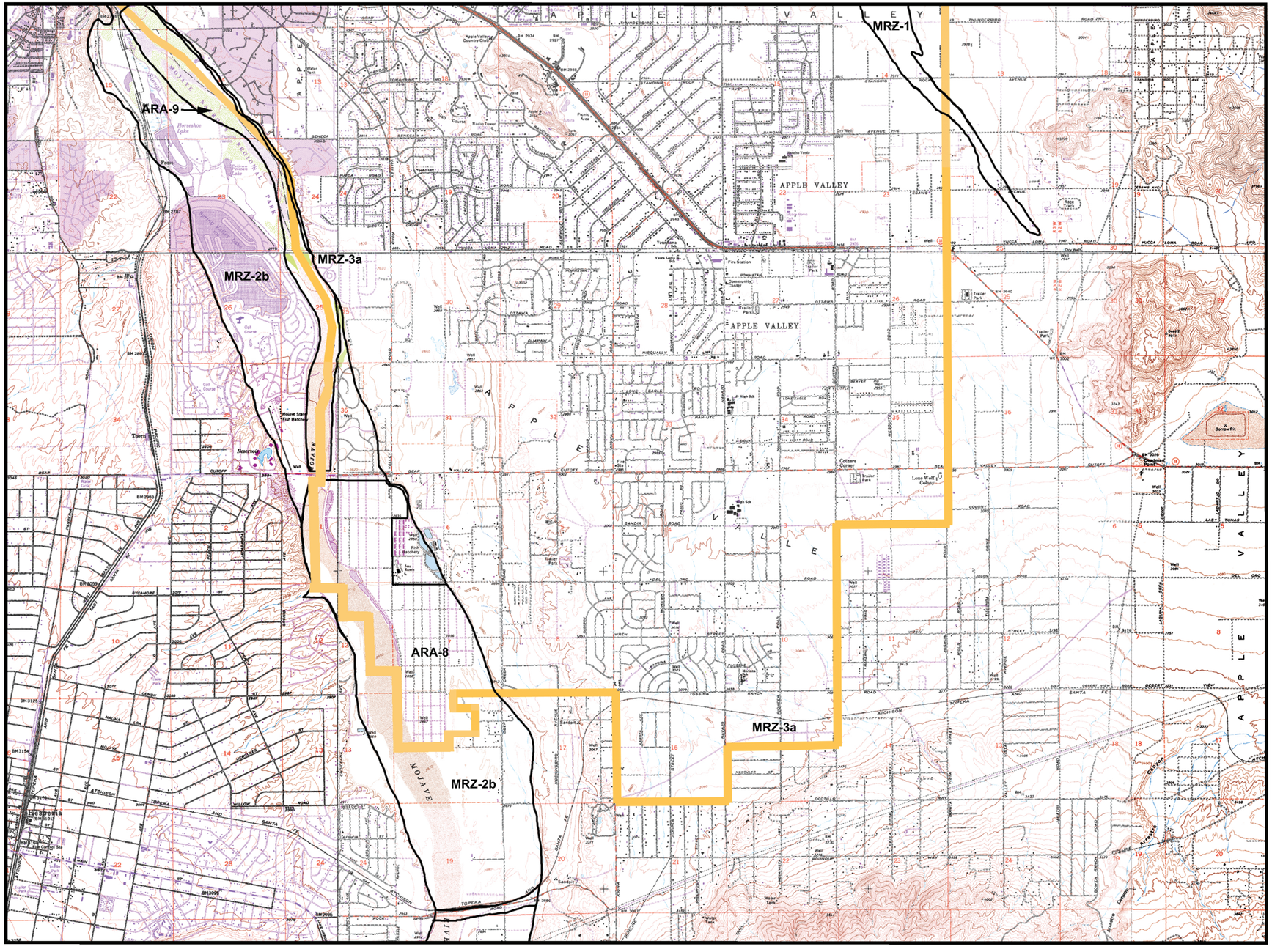
MRZ-2a: Areas underlain by mineral deposits where geologic data indicate that significant measured or indicated resources are present. MRZ-2 is divided on the basis of both degree of knowledge and economic factors. Areas classified MRZ-2a contain discovered mineral deposits that are either measured or indicated reserves as determined by such evidence as drilling records, sample analysis, surface exposure, and mine information. Land included in the MRZ-2a category is of prime importance because it contains known economic mineral deposits.

MRZ-2b: Areas underlain by mineral deposits where geologic information indicates that significant inferred resources are present. For this report, areas classified MRZ-2b contain discovered mineral deposits that are significant inferred resources as determined by their lateral extension from proven deposits or their similarity to proven deposits. Further exploration work could result in upgrading areas classified MRZ-2b to MRZ-2a.

MRZ-3a: Areas containing known mineral deposits of undetermined significance. Further exploration work within these areas could result in the reclassification of specific localities into MRZ-2a or MRZ-2b categories. MRZ-3 is divided on the basis of knowledge of economic characteristics of the resources.

ARA-8: That part of the Mojave River MRZ-2b area between the Rock Springs Road crossing and the Bear Valley Road bridge. The aggregate resources in this area occupy 2,758 acres, and are about 71 feet thick, based on well logs in the area. ARA-8 is rated as Highly Significant and the highest probable use of material from this deposit is concrete aggregate.

ARA-9: That part of the Mojave River MRZ-2b area between the Bear Valley Road bridge and the Upper Narrows. The size of this ARA is 691 acres. The aggregate resources in this area are at least 100 feet thick, based on well logs in the area. ARA-9 is rated as Highly Significant and the highest probable use of material from this deposit is concrete aggregate.


MRZ-1
ARA-9
MRZ-3a
MRZ-2b
ARA-8
MRZ-3a
MRZ-2b
APPLE VALLEY
APPLE VALLEY
MOJAVE RIVER
MOJAVE RIVER
APPLE VALLEY
APPLE VALLEY
Borrow Pit
Mojave Sierra Fish Hatchery
Reservoir
Fish Hatchery
Hesperia
Sanitary Landfill
Golf Course
Golf Course
Horseshoe Lake
Regional Park
Apple Valley Country Club
Fire Station
Community Center
Trailer Park
Trailer Park
Trailer Park
Trailer Park
Colbers Corner
Lone Wolf Cabaret
Desert View Park
Water Tank
Water Tank
Water Tank
Water Tank
Well
Well
Well

2. Project Impacts

The Town of Apple Valley has designated 452.5 acres as mineral resources land use. Of this, approximately 111.56 acres are developed for mining and processing of aggregate materials, and an additional 340.95 acres are designated for the use and production of mineral resources. Mining activities may be incompatible with surrounding land uses, as for example, dust, noise, and heavy truck traffic may create conflicts with residential and commercial uses. The designation of mineral resources land use therefore has some impact on the potential uses of adjacent lands and development proposals could be submitted to the Town that may generate land use conflicts with aggregate and limestone quarries. However, thoughtful application of the Town's land use policies will reduce potential impacts from adjacent conflicting land uses to less than significant levels.

CEMEX Incorporated owns a mineral extraction operation in the planning area and was granted a permit in December 2005 to build a 4.5 million metric ton per year aggregate processing plant. Several quarries within the Black and White Mountains, and the Alvic, and Piercy quarries are also mined for limestone.

According to the California Air Resources Board 2007 Almanac (Appendix A), the Cemex Black Mountain Quarry emits 4,754 tons of Oxides of Nitrogen (NOx), 277 tons of Particulate Matter PM10, and 183 tons of Particulate matter PM2.5 per year. In addition to generating noise and light impacts, mineral resource operations in or near the planning area may therefore impact the air quality of the Town and the two annexation areas. Application of the Town's Development Standards for lighting and noise will limit other impacts to less than significant levels.

Annexation 2008-001 and 2008-002

Impacts from mineral resource operations will impact the two annexation areas to the same extent as they impact other northern parts of the planning area. Land use designations within the annexation areas have been determined as compatible with mineral resource operations and implementation of the Town's policies and standards concerning effective buffering, maintenance of air quality, and control of noise and light emissions will reduce potential impacts in these areas to less than significant levels.

3. Mitigation Measures

The following mitigation measures shall be implemented to reduce the impacts resulting from mineral resource extraction to acceptable levels:

1. The Town will allow aggregate, limestone and other mineral resource extractions only in cases where all residual hazards to public health and safety are effectively mitigated.

2. Development proposals adjacent to lands designated for Mineral Resources shall be reviewed to assure the inclusion of adequate buffering.

3. The Town shall cooperate with the Mojave Desert Air Quality Management District to ensure mineral extraction operations' compliance with air quality standards.

4. The Town shall coordinate closely with San Bernardino County and the State Department of Mines and Geology to assure that reclamation plans are current and adequately implemented at existing mining operations.

Mitigation Monitoring/Reporting Program

A. Town staff shall review development proposals for the inclusion of buffering when adjacent to quarries.
Responsible Party: Planning Division

B. Town staff will establish contractual arrangements with San Bernardino County, the Mojave Desert Air Quality Management District and the California Department of Mines and Geology to assure compliance with all local, regional and state requirements.
Responsible Party: Town Engineer, County Geologist, Mojave Desert Air Quality Management District, Department of Mines and Geology.

L. Noise

Introduction and Background

This section describes existing conditions in the planning area noise environment and analyses the potential impacts of the various potential sources of noise associated with build out of the proposed General Plan and annexations. An acoustical analysis has been prepared in conjunction with the General Plan, and the results have been used to prepare the analysis of noise impacts presented in this section of the EIR[77]. The study is included in its entirety in Appendix E of this EIR. This section also sets forth noise-related mitigation measures that will effectively reduce construction, operational and traffic noise impacts to acceptable levels.

Thresholds of Significance/Criteria For Determining Significance

The following thresholds or criteria are derived from Appendix G of the CEQA Guidelines, which are used to determine the level of potential effect. Build out of the proposed General Plan and annexations will have a significant effect on noise levels if it:

a. Generates or exposes persons to noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

b. Generates or exposes persons to excessive ground-borne vibration or ground-borne noise levels;

c. Causes a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;

d. Causes a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;

e. If located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, a project would expose people residing or working in the project area to excessive noise levels;

f. If located within the vicinity of a private airstrip, a project would expose people residing or working in the project area to excessive noise levels.

[77] "Town of Apple Valley Noise Element Update, Technical Study Report", prepared by Urban Crossroads, Inc., December 9, 2008.

1. Existing Conditions

Although noise has been accepted as a necessary by-product of urban development, it has in recent years begun to receive attention as a potential environmental hazard. Excessive noise or prolonged exposure to noise can contribute to physical impairments, both temporary and permanent, which may include hearing loss, fatigue, stress, anxiety and annoyance. A variety of components of the urban environment generate noise; these include construction equipment and activities, motor vehicles, rail and air traffic, mechanical equipment, household appliances, and other sources.

The Town of Apple Valley generally enjoys a quiet noise environment. The community noise environment is dominated primarily by motor vehicle traffic on highways and major arterials, including U.S. Interstate 15, which forms a portion of the Town's northwest boundary, State Route 18 in the central portion of the planning area, and other roadways. Other noise generators in the local environmental include operations associated with general aviation aircraft at the Apple Valley Airport in the northeast portion of the planning area, and rail lines that serve local and regional mineral extraction operations and have a limited impact on the portions of the planning area to the north, south and west.

There are a variety of noise sensitive land uses throughout the planning area, including but not limited to schools, hospitals, rest homes, long-term care facilities, residential uses, places of worship, libraries, and passive recreation areas. Potential land use incompatibilities related to noise occur when residential areas or other sensitive receptors are located in proximity to industrial and commercial uses.

Noise Rating Terminology

The A-weighted decibel (dBA) scale is the most common unit for measuring noise levels. It reflects the human ear's response by de-emphasizing the very low and high frequency components of sound. The decibel scale threshold of hearing ranges from 0 dBA to140 dBA, with the higher end of this continuum representing a threshold that is considered painful to the human ear. Most common sounds range between 40 dBA (very quiet) and 100 dBA (very loud). For example, a rural night-time environment typically measures about 25 dBA, while a jet flying overhead generates 105 dBA. The logarithmic nature of the decibel means that a doubling of sound energy of a noise source results in an increase in the decibel rating of only 3 dBA. In order for a human ear to perceive a sound as being twice as loud, the sound must increase by nearly 10 dBA.

The average intensity of a sound over a 24-hour period is known as the Community Noise Equivalent Level (CNEL). To account for the decrease in background noise levels that occur during evening and nighttime hours, as well as people's increased sensitivity to and decreased tolerance for noise during these times, weighting penalty factors are added for sounds that occur in evening and nighttime hours. For sounds that occur during evening hours (from 7 p.m. to 10 p.m.), 5 decibels are added, and for sounds that occur during nighttime hours (between 10 p.m. and 7 a.m.), 10 decibels are added.

Noise sources can be classified as either "line sources" (such as a busy street) or "point sources" (for example, a commercial air compressor). There are a number of factors that affect noise transmission, such as temperature, wind speed and direction, as well as the type of ground surface, whether hard or soft, and intervening vegetation and walls. Sound transmission is diminished at a rate of approximately 4.5 dBA per doubling of distance under "soft site" conditions, such as that which occurs over natural surfaces, such as earth and vegetation. Under "hard site" conditions, such as hard ground surfaces including asphalt, concrete, and stone, a doubling of distance typically results in a noise reduction of 3 dBA.

A noise compatibility matrix has been developed by the State of California to evaluate the noise compatibility of various land uses. A range of allowable exterior noise levels of different land uses is shown Table III-45, based on 1998 State of California General Plan Guidelines. This table illustrates the standards used for maximum outdoor noise levels. Where sensitive land uses will be exposed to noise levels of 60 dBA CNEL or higher, an acoustical study may be required. In residential areas in California, the standard is a CNEL of 65 dBA. Mitigation measures are required where land uses will be exposed to noise levels exceeding 65 dBA CNEL. As discussed below, the Town of Apple Valley has consistently implemented the noise levels shown in Table III-45 for several years.

Table III-45
Land Use Compatibility for Community Noise Environments

Land Uses	CNEL (dBA)						
	50	55	60	65	70	75	80
Residential - Single Family Dwellings, Duplex, Mobile Homes	A	B			C		D
Residential – Multiple Family	A		B		C		D
Transient Lodging: Hotels and Motels	A		B		C		D
School Classrooms, Libraries, Churches, Hospitals, Nursing Homes and Convalescent Hospitals	A		B		C		D
Auditoriums, Concert Halls, Amphitheaters	B					C	
Sports Arenas, Outdoor Spectator Sports	B					C	
Playgrounds, Neighborhood Parks	A				C		D
Golf Courses, Riding Stables, Water Recreation, Cemeteries	A				C		D
Office Buildings, Business, Commercial and Professional	A				B		D
Industrial, Manufacturing, Utilities, Agriculture	A				B		D

Source: *California Department of Health Services, "Guidelines for the Preparation and Content of the Noise Element of the General Plan," 1990*

A **Normally Acceptable:** With no special noise reduction requirements assuming standard construction.

B **Conditionally Acceptable:** New construction or development should be undertaken only after a detailed analysis of the noise reduction requirement is made and needed noise insulation features included in the design.

C **Normally Unacceptable:** New construction is discouraged. If new construction does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

D **Clearly Unacceptable:** New construction or development should generally not be undertaken.

Town of Apple Valley Noise Standards

Town of Apple Valley Noise Ordinance

The Town of Apple Valley Development Code, Section 9.73, sets forth community-wide noise standards and establishes regulations for noise measurement and monitoring. Intended to regulate excessive noise from existing uses and their activities while underscoring the value of an acceptable noise environment, the Ordinance cites special provisions, and exemptions to the ordinance. It defines violations as a nuisance, and provides procedures, remedies and penalties to which violators are subject. Table III-46, below, shows the exterior noise limits established by the Town of Apple Valley in its Noise Ordinance.

Table III-46
Exterior Noise Limits[1]

Receiving Land Use Category	Time Period	Noise Level (dBA)
Single Family Residential	10 p.m. - 7 a.m.	40
	7 a.m. - 10 p.m.	50
Multiple Dwelling Residential, Public Space	10 p.m. - 7 a.m.	45
	7 a.m. - 10 p.m.	50
Limited Commercial & Office	10 p.m. - 7 a.m.	55
	7 a.m. - 10 p.m.	60
General Commercial	10 p.m. - 7 a.m.	60
	7 a.m. - 10 p.m.	65
Light Industrial	Any Time	70
Heavy Industrial	Any Time	75

[1]Levels not to be exceeded more than 30 minutes in any hour.
Source: Town of Apple Valley Development Code, Section 9.73.050.

Section 9.73 also establishes standards for construction activities, which represent a temporary, but often disruptive, noise source. From 7 a.m. to 7 p.m. weekday and on Saturdays, the maximum noise levels allowed for mobile and stationary equipment near single-family residential development are 75 dBA Leq and 60 dBA Leq, respectively. These levels are reduced to 60 dBA Leq for mobile equipment, and 50 dBA Leq for stationary equipment during weekday nighttime hours between 7 p.m. to 7 a.m. and all day Sundays and holidays. These levels are increased by about 5 dBA Leq, across the board, for multi-family residential development, and by another 5 dBA Leq for areas characterized as "semi-residential/commercial."

Other Noise Standards and Regulations

A variety of other noise standards and regulations were considered in the preparation of the acoustical analysis for the General Plan. The following describes these standards.

Based on the Federal Highway Program Manual Vol. 7, Ch. 7, Section 3, 1982 use compatibility chart for community noise, "normally acceptable" noise limits are 50 to 60 db for residential land uses (single and multi family dwellings, group quarters, and mobile homes), and 50 to 65 db for commercial land uses. For residential, transient lodging, schools, libraries and commercial uses noise levels Noise levels of up to 70 db are considered "conditionally acceptable." For

recreational uses, however, noise exposure up to only 65 db is considered "conditionally acceptable."

An additional source for establishing guidelines for compatible land uses and limiting human exposure to noise comes from the California Department of Health Services.[78] Based on these guidelines, an exterior noise limit of 60 db is considered "normally acceptable" for residential land uses (including single-family dwellings, duplexes, and mobile homes); for multifamily residential dwellings and transient lodging, the standard is 65 db. Noise levels up to 70 db are "normally acceptable" for commercial land uses, while noise levels of up to 70 db are considered "conditionally acceptable" for residential, lodging, schools, libraries, churches and hospitals.

The California Administrative Code requires acoustical analysis to demonstrate that residential units are designed to limit interior noise levels, with doors and windows closed, to 45 CNEL in any habitable room. The Code further implements noise insulation standards for new multifamily structures within the 60 CNEL contour adjacent to roads, railroads, airports, industrial areas, and rapid transit lines.

Existing Noise Level Measurements in the General Plan Area

Two types of noise monitoring were conducted to establish a baseline for the Town's noise environment, and both have been used in the noise analysis conducted for the General Plan. First, four sites were monitored for a 24-hour period. A summary of the data collected at these sites is shown in Table III-47, below. Hourly noise levels at these locations ranged between 49.1 dBA Leq to 66.7 dBA Leq; the weighted 24-hour noise levels ranged from 60.5 dBA CNEL to 65.7 dBA CNEL. Data indicate that traffic peak hours, at about 7:00 a.m. and 6:00 p.m., generally resulted in the highest noise levels.

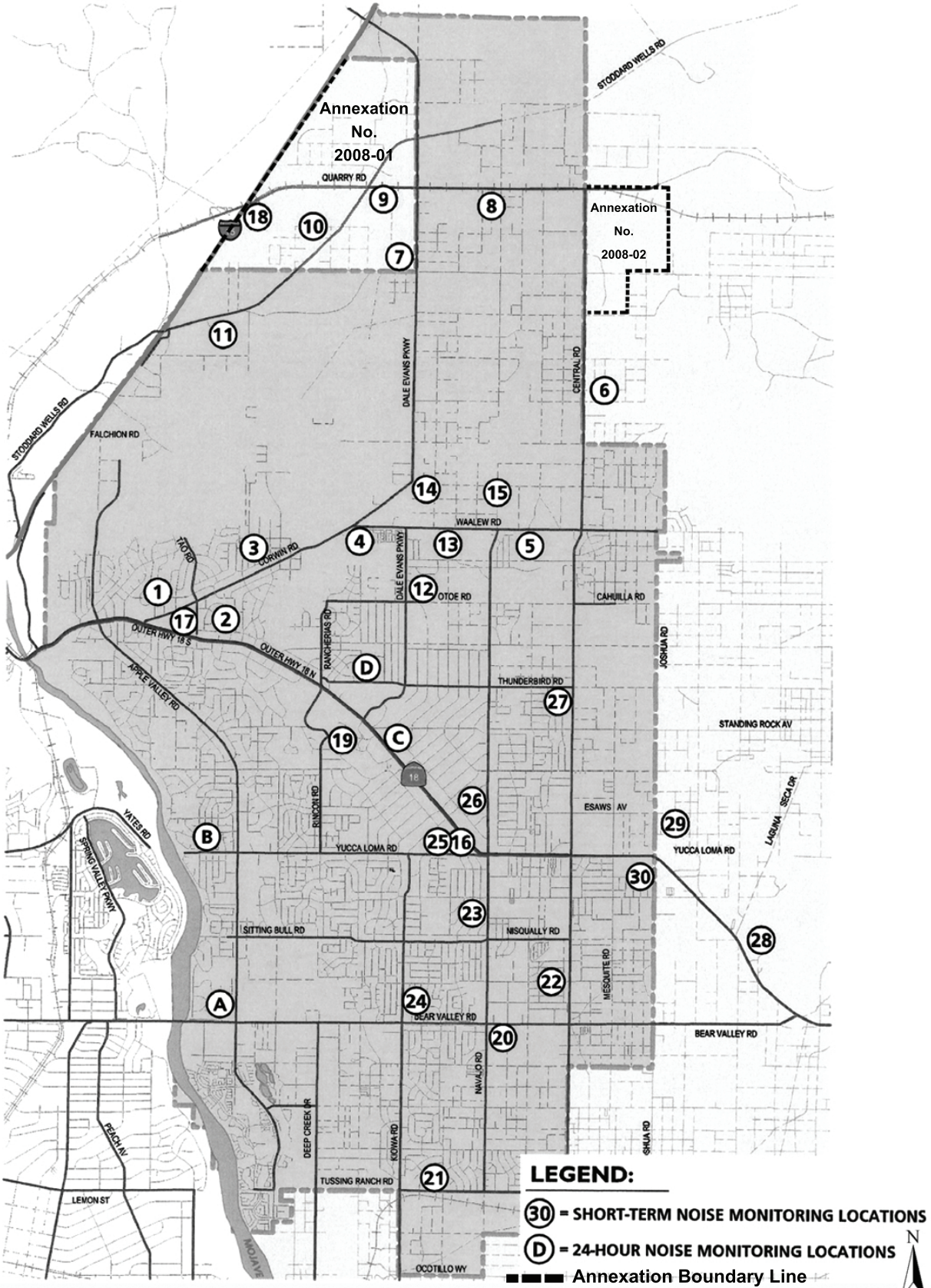
In addition, short term monitoring was performed at 30 sites, as shown on Exhibit III-18; the results of the short-term monitoring are shown in Table III-48. Data shown in this table demonstrate that existing residential neighborhoods adjacent to Highway 18, Bear Valley Road, Central Road, Waalew Road and Corwin Road currently experience exterior noise levels approaching 65 dBA CNEL.

[78] California Department of Health Services, "Guidelines for the Preparation and Content of the Noise Element in the General Plan," 1990.

Table III-47
Existing (Ambient) 24-hour Noise Level Measurements[1]

Observer Location[2]	Description	Hourly Noise Levels (1h-Leq)		24-Hour Noise Levels (CNEL)
		Minimum	Maximum	
A	Located in a residential area behind a 5-foot high sound wall.	49.1	57.8	60.5
B	Located in a residential area near the intersection of Apple Valley Rd. and Yucca Loma Rd.	58.1	66.6	69.7
C	Located in a residential area approximately 200 feet north of the 18 Highway.	48.0	66.7	65.1
D	Located at the Vista Campana Middle School approximately 200 feet from Thunderbird Rd.	52.2	66.5	65.7

[1] Noise measurements taken by Urban Crossroads, Inc. on June 18 and 19, 2008.
[2] See Exhibit III-18 for the location of the monitoring sites, and Appendix C of the Noise Impact Study for Study Area Photos.
[3] Taken with a Quest DL Type 2 noise dosimeter.



Source: Urban Crossroads 11.14.2008

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Apple Valley General Plan Draft EIR
Noise Monitoring Locations in the Study Area
Apple Valley, California

Exhibit
III-18

Table III-48
Existing (Ambient) Noise Level Measurements[1]

Observer Location[2]	Description	Time Of Measurement	Primary Noise Source	Measured Noise Levels (Leq Dba)	Calculated Noise Levels (Leq CNEL)
1	Located 50 feet from the road centerline by the Valley Crest Residential Care.	8:30 a.m.	traffic noise from Corwin Road	65.2	65.8
2	Located approximately 150 feet from the road centerline by the Corwin Park.	8:50 a.m.	traffic noise from Corwin Road	56.5	57.1
3	Located 50 feet from the road centerline in a residential area along Corwin Road south of Choco Road.	9:10 a.m.	traffic noise from Corwin Road	66.8	67.4
4	Located 50 feet from the road centerline in front of the Rancho Del Lago residential community near a 7-foot high masonry wall.	9:30 a.m.	traffic noise from Corwin Road	62.1	62.7
5	Located 50 feet from Waalew Road centerline in a single family front yard across the Specific Plan area.	9:50 a.m.	traffic noise from Waalew Road.	63.2	63.8
6	Located 50 feet from Central Road near residential developments.	10:20 a.m.	traffic noise from Central Road.	62.5	63.1
7	Located approximately 100 feet from Dale Evans Parkway south of Johnson.	10:40 a.m.	traffic noise from Dale Evans Pkwy.	59.4	60.0
8	Located 50 feet from Quarry Road centerline east of Dale Evans Pkwy.	11:10 a.m.	traffic noise from Quarry Rd.	62.1	62.6
9	Located 30 feet from the centerline of Quarry Road in front of a house.	11:30 a.m.	traffic noise from Quarry Rd.	62.5	63.0
10	Located 50 feet from the centerline of Stoddard Wells Road by a single family home.	11:50 a.m.	traffic noise from Stoddard Wells Rd.	57.5	58.0
11	Located 50 feet form Stoddard Wells Road west of Johnson Road.	8:50 a.m.	traffic noise from Stoddard Wells Rd.	61.5	62.1

Table III-48
Existing (Ambient) Noise Level Measurements[1]

Observer Location[2]	Description	Time Of Measurement	Primary Noise Source	Measured Noise Levels (Leq Dba)	Calculated Noise Levels (Leq CNEL)
12	Located 50 feet from Dale Evans Parkway south of Waalew Rd. near single family homes.	9:20 a.m.	traffic noise from Dale Evans Pkwy.	58.4	59.0
13	Located 100 feet from Waalew Rd. near a gas station east of Dale Evans Pkwy. south.	9:40 a.m.	traffic noise from Waalew Rd.	61.1	61.7
14	Located 50 feet from the centerline of Stoddard Wells Road by a single family home.	11:50 a.m.	traffic noise from Stoddard Wells Rd.	57.5	58.0
15	Located 50 feet form Stoddard Wells Road west of Johnson Road.	8:50 a.m.	traffic noise from Stoddard Wells Rd.	61.5	62.1
16	Located 50 feet from Dale Evans Parkway south of Waalew Rd. near single-family homes.	9:20 a.m.	traffic noise from Dale Evans Pkwy.	58.4	59.0
17	Located 100 feet from Waalew Rd. near a gas station east of Dale Evans Pkwy. south.	9:40 a.m.	traffic noise from Waalew Rd.	61.1	61.7
18	Located 100 feet from Dale Evans Pkwy. approximately 500 feet from Waalew Rd.	10:00 a.m.	traffic noise from Dale Evans Pkwy.	53.9	54.5
19	Located 400 feet from Waalew Rd. near a single family home east of Dale Evans Pkwy.	10:20 a.m.	traffic noise from Waalew Rd.	47.6	48.2
20	Located at the Apple Valley High School approximately 100 feet from Bear Valley Rd.	2:00 p.m.	Traffic noise from Bear Valley Rd.	64.1	69.2
21	Located in a residential area approximately 100 feet north of Tussing Ranch Rd.	2:20 p.m.	Traffic noise from Tussing Ranch Rd.	57.1	62.2
22	Located in a residential area approximately 100 feet west of Central Rd.	2:50 p.m.	Traffic noise from Central Rd.	57.0	61.3
23	Located at the Apple Valley Middle School approximately 100 feet east of Navajo Rd.	3:00 p.m.	Traffic noise from Navajo Rd.	62.2	66.5

Table III-48
Existing (Ambient) Noise Level Measurements[1]

Observer Location[2]	Description	Time Of Measurement	Primary Noise Source	Measured Noise Levels (Leq Dba)	Calculated Noise Levels (Leq CNEL)
24	Located in a residential area approximately 100 feet west of Kiowa Rd.	3:20 p.m.	Traffic noise from Kiowa Rd.	59.9	64.2
25	Located in a residential area approximately 40 feet from Yucca Loma Rd.	1:40 p.m.	Traffic noise from Yucca Loma Rd.	59.8	64.1
26	Located in a residential area approximately 100 feet from Highway 18.	1:20 p.m.	Traffic noise from Highway 18	53.4	58.3
27	Located in a residential area approximately 150 feet from Central Rd.	11:50 p.m.	Traffic noise from Central Rd.	67.1	71.4
28	Located at the Horseman's Center Park.	12:10 p.m.	Traffic noise from Highway 18.	53.4	57.7
29	Located at a park by the swimming pool approximately 150 feet from Dale Evans Pkwy.	11:10 a.m.	Traffic noise from Dale Evans Pkwy.	59.6	65.0
30	Located in a residential area approximately 100 feet west of Joshua Rd.	3:00 p.m.	Traffic noise from Joshua Rd.	54.5	58.8

[1] All measurements were taken with a Larson Davis 824 Series Type 1 noise meter.

[2] See Noise Technical Study Exhibit III-18 for the location of the monitoring sites, and Noise Technical Study Appendix C for Study Area Photos.

[3] Noise measurements 1 to 10 taken by Urban Crossroads, Inc. on March 24, 2006.

[4] Noise measurements 11 to 16 taken by Urban Crossroads, Inc. on January 26, 2007.

[5] Noise measurements 16, 17 and from 25 to 30 taken by Urban Crossroads, Inc. on May 20, 2008.

[6] Noise measurements 18 to 24 taken by Urban Crossroads, Inc. on June 9, 2008.

Primary Noise Sources

As previously noted, the primary noise source in Apple Valley is motor vehicle traffic. Other noise sources include: air and rail traffic, which generally have the greatest impact only on certain portions of the planning area; noise from industrial and commercial operations, including truck loading and back-up beepers; noise from operation of mechanical equipment such as HVAC systems associated with residential and commercial development; and construction noise, which impacts development in proximity to the construction activities and equipment. Each of these noise sources is discussed categorically, below.

Motor Vehicle Noise

A variety of factors contribute to noise generated by motor vehicles, which is the major noise source in the General Plan area. Noise levels are affected by engine vibration, tire and roadway interaction, the operation of exhaust systems, as well as traffic volumes, and the types and speed of vehicles traveling on roadways. U.S. I-15 runs along the northwestern Town limits; currently there are no noise sensitive uses near U.S. I-15. The primary thoroughfare through Town, State Route 18, is adjacent or in proximity to residential uses that are impacted by traffic noise. Schools and the St. Mary Medical Center are also located on major roadways.

Existing noise levels along major roadways in the study area are shown on Table III-49. These levels were determined based on modeling using the Federal Highway Administration (FHWA) Traffic Noise Prediction Model FHWA-RD-77-108. This model is currently in use nationwide and has undergone extensive field measurement verification. Using various data inputs, it calculates equivalent noise levels during typical daytime, evening and nighttime hours. These inputs include factors such as traffic volume, vehicle mix and speed, roadway geometry, site conditions and the percentage of total average daily traffic (ADT) that moves through on an hourly basis over a 24-hour period. Results are weighted for a 24-hour period and then expressed as CNEL.

Noise contours were calculated using “soft-site” conditions in order to account for the effective noise attenuation over natural surfaces such as normal earth and ground vegetation. Noise drops off at a rate 4.5 dBA per doubling of distance over soft ground, as compared to 3.0 dBA per doubling of distance over hard ground, such as concrete, stone, or hard-packed earth. The acoustical analysis compared modeled results for existing conditions with the noise level measurements; based on this comparison, soft-site conditions are consistent with and appropriate for the development of noise contours boundaries in the planning area.

As shown on Table III-49, along major roadways such as State Route 18, Bear Valley Road, Central Road, Waalew Road and Corwin Road, noise levels at existing residential development approach the 65 dBA CNEL noise level limits at the road right of way. These are unmitigated, exterior noise levels.

Truck and Bus Routes

Truck Routes

The percentage of trucks along a roadway generally increases noise impacts. Currently, key truck routes in the planning area include State Route 18, Bear Valley Road, Corwin Road, Navajo Road, Yucca Loma Road, Central Road, and Apple Valley Road (also please see Exhibit III-31 in Traffic/Circulation, Existing Truck Routes). As shown in Table III-49, below, noise levels along truck routes in the City are currently high (for example, 71.1 dBA CNEL at 100 feet from the roadway centerline along Apple Valley Road between Sitting Bull Road and Bear Valley Road).

Bus Routes

Currently, there are three dedicated bus routes in the Town, operated by the Victor Valley Transit Authority (VVTA). These routes are illustrated in the Traffic and Circulation discussion (please see Exhibit III-30, Existing and Proposed Public Transportation Routes). The VVTA is a regional transit system designed to link the high desert cities along a network of interconnected routes. It is operated through a joint powers agreement between the communities of Adelanto, Apple Valley, Hesperia, and Victorville as well as the County of San Bernardino.

In terms of noise generation, buses are generally equivalent to heavy trucks, with noise impacts generated by bus brakes, shifting gears and engine noise during acceleration from bus stops. The ambient noise level at a particular location affects whether conditions or changes in bus service have an adverse impact on the noise environment, in that bus stops located near noise sensitive uses create greater noise impacts when they occur on local streets. Most of the existing bus routes in Apple Valley are located along major roadways.

Table III-49
Existing Noise Exposure Adjacent to General Plan Study Area Roadways

			Distance to Contour (Feet)			
Roadway	**Segment**	**CNEL at 100 feet (dBA)**	**70 dBA CNEL**	**65 dBA CNEL**	**60 dBA CNEL**	**55 dBA CNEL**
Alembic Street	between Norco Street & Saugus Road	-	-	-	-	-
	between Saugus Road & Stoddard Wells Road	-	-	-	-	-
	n/o High Desert Corridor	-	-	-	-	-
	s/o High Desert Corridor	-	-	-	-	-
Apple Valley Road	between Bear Valley Road & Tussing Ranch Road	64.3	RW	90	193	417
	between Sitting Bull Road & Bear Valley Road	71.1	118	255	550	1,184
	between SR-18 & Yucca Loma Road	69.5	92	198	427	920
	between Yucca Loma Road & Sitting Bull Road	70.5	109	234	504	1,086
	n/o SR-18	63.3	RW	77	166	357
Bear Valley Road	between Apple Valley Road & Deep Creek Road	72.5	146	315	678	1,461
	between Central Road & SR-18	66.3	RW	123	265	571
	between Deep Creek Road & Kiowa Road	72.6	148	319	687	1,480
	between Kiowa Road & Navajo Road	71.2	120	258	555	1,196
	between Navajo Road & Central Road	68.7	82	176	380	819
	w/o Apple Valley Road	73.5	170	366	789	1,700
Central Road	between Bear Valley Road & Tussing Ranch Road	62.0	RW	RW	135	291
	between Nisqually Road & Bear Valley Road	66.0	RW	116	250	539
	between SR-18 & Nisqually Road	64.8	RW	96	208	447
Central Road (cont)	between Thunderbird Road & SR-18	64.5	RW	93	201	432
	between Waalew Road & Thunderbird Road	63.8	RW	83	178	384
	n/o Waalew Road	56.6	RW	RW	RW	128
	n/o Lafayette Street	56.6	RW	RW	RW	128
Choco Road	between Norco Street & Saugus Road	-	-	-	-	-
Corwin Road	between SR-18 & Tao Road	63.8	RW	83	180	387
	between Tao Road & Waalew Road	63.4	RW	78	168	361
	between Waalew Road & Dale Evans Parkway	54.5	RW	RW	RW	93
	between Dale Evans Parkway & Dakota Road	-	-	-	-	-
Dachshund Avenue	n/o Fresno Road	-	-	-	-	-
Dakota Road	s/o Fresno Road	-	-	-	-	-

Table III-49
Existing Noise Exposure Adjacent to General Plan Study Area Roadways

			Distance to Contour (Feet)			
Roadway	**Segment**	**CNEL at 100 feet (dBA)**	**70 dBA CNEL**	**65 dBA CNEL**	**60 dBA CNEL**	**55 dBA CNEL**
Dale Evans Parkway	between Corwin Road & Waalew Road	60.4	RW	RW	107	231
	between Thunderbird Road & SR-18	62.2	RW	65	140	301
	between Waalew Road & Thunderbird Road	62.5	RW	RW	146	314
	n/o Fresno Road	62.1	RW	RW	137	296
	s/o I-15 Freeway	62.3	RW	RW	143	308
	between High Desert Corridor & Corwin Road	62.1	RW	64	138	298
	between High Desert Corridor & Norco Street	60.5	RW	RW	108	232
	s/o Quarry Road	62.1	RW	RW	137	296
Deep Creek Road	between Bear Valley Road & Tussing Ranch Road	61.9	RW	62	135	290
	s/o of Rock Springs Road	57.4	RW	RW	67	144
Falchion Road	between Apple Valley Road & Pauma Street	-	-	-	-	-
	between Pauma Street & Alembic Street	-	-	-	-	-
	w/o Apple Valley Road	-	-	-	-	-
	e/o Alembic Street	-	-	-	-	-
Fresno Road	between Dale Evans Parkway & Navajo Road	-	-	-	-	-
High Desert Corridor	between Alembic Street & I-15 freeway	-	-	-	-	-
	between Central Road & Waalew Road	-	-	-	-	-
	between Dale Evans Parkway & Alembic Street	-	-	-	-	-
	between Standing Rock Avenue & Central Road	-	-	-	-	-
	between Waalew Road & Dale Evans Parkway	-	-	-	-	-
Kiowa Road	between Bear Valley Road & Tussing Ranch Road	65.8	52	113	242	522
	between Sitting Bull Road & Bear Valley Road	66.8	61	131	283	610
	between SR-18 & Yucca Loma Road	64.3	42	90	194	418
	between Yucca Loma Road & Sitting Bull Road	65.6	RW	110	236	509
Lafayette Street	w/o Dale Evans Parkway	-	-	-	-	-
Navajo Road	between Bear Valley Road & Tussing Ranch Road	61.0	RW	54	117	253
	between Nisqually Road & Bear Valley Road	67.8	71	154	332	715
	between SR-18 & Nisqually Road	68.5	80	172	370	798
	between Thunderbird Road & SR-18	62.9	RW	72	155	335
	s/o Lafayette Street	-	-	-	-	-

Table III-49
Existing Noise Exposure Adjacent to General Plan Study Area Roadways

			Distance to Contour (Feet)			
Roadway	**Segment**	**CNEL at 100 feet (dBA)**	**70 dBA CNEL**	**65 dBA CNEL**	**60 dBA CNEL**	**55 dBA CNEL**
Norco Street	w/o Alembic Street	-	-	-	-	-
Outer Highway I-15 S	between Quarry Road & Dale Evans Parkway	-	-	-	-	-
	between Stoddard Wells Road & Quarry Road	-	-	-	-	-
Pauma Street	n/o Falchion Road	-	-	-	-	-
	s/o Saugus Road	-	-	-	-	-
Quarry Road	between Dale Evans Parkway & Navajo Road	-	-	-	-	-
	between I-15 Frontage Road & Stoddard Wells Road	-	-	-	-	-
	e/o I-15 freeway	-	-	-	-	-
	e/o Navajo Road	-	-	-	-	-
	w/o Dale Evans Parkway	-	-	-	-	-
Rincon Road	between SR-18 & Yucca Loma Road	62.8	33	72	154	333
Saugus Road	w/o Pauma Street	-	-	-	-	-
Sitting Bull Road	between Apple Valley Road & Kiowa Road	64.7	45	96	207	446
SR-18	between Apple Valley Road & Corwin Road	72.0	136	294	633	1,364
	between Central Road & Joshua Road	65.7	RW	111	239	516
	between Corwin Road & Tao Road	71.2	120	258	555	1,196
	between Dale Evans Parkway & Kiowa Road	71.4	125	268	578	1,245
	between Kiowa Road & Navajo Road	69.8	97	209	451	972
	between Navajo Road & Central Road	67.7	71	152	328	706
	between Rancherias Road & Dale Evans Parkway	71.8	132	284	611	1,317
	between Tao Road & Rancherias Road	71.6	128	276	595	1,282
	w/o Apple Valley Road	73.8	180	388	837	1,802
Stoddard Wells Road	e/o I-15 Freeway	60.5	RW	RW	108	232
	between Quarry Road & Dale Evans Parkway	60.2	RW	RW	103	221
	e/o Alembic Street	60.5	RW	RW	108	232
	n/o Johnson Road	60.2	RW	RW	103	221
	w/o Navajo Road	60.2	RW	RW	103	221
Thunderbird Road	between Dale Evans Parkway & Navajo Road	63.8	RW	83	180	387
	between Navajo Road & Central Road	61.2	RW	56	120	259
	between Rancherias Road & Dale Evans Parkway	64.1	RW	87	187	402

Table III-49
Existing Noise Exposure Adjacent to General Plan Study Area Roadways

			Distance to Contour (Feet)			
Roadway	**Segment**	**CNEL at 100 feet (dBA)**	**70 dBA CNEL**	**65 dBA CNEL**	**60 dBA CNEL**	**55 dBA CNEL**
Tussing Ranch Road	between Apple Valley Road & Kiowa Road	-	-	-	-	-
	between Kiowa Road & Navajo Road	-	-	-	-	-
	between Navajo Road & Central Road	-	-	-	-	-
	w/o Apple Valley Road	-	-	-	-	-
Waalew Road	between Corwin Road & Dale Evans Parkway	62.8	RW	71	153	329
Waalew Road (cont)	e/o Dale Evans Parkway	63.6	RW	80	173	372
	w/o Central Road	63.6	RW	80	173	372
Yucca Loma Road	between Apple Valley Road & Rincon Road	66.0	54	116	251	540
	between Kiowa Road & SR-18	62.2	RW	65	140	301
	between Rincon Road & Kiowa Road	64.7	RW	95	205	441
	w/o Apple Valley Road	62.6	RW	69	149	322

[1] RW: Noise contour located within the road right of way.

Rail Noise

Train pass-bys, although intermittent, generate high noise levels for short periods of time, generally ranging from one to five minutes. There are two rail lines in the planning area.

A single-track rail line is located within the northern portion of the Town along Quarry Road. It is privately owned, and is used exclusively by the Mojave Northern Mining Quarry, which is located easterly of the Town limits. There are generally 2 to 4 trains per day along this line, with up to 20 freight cars per train. Noise impacts were modeled using the Federal Transit Administration general assessment model. At a distance of 100 feet from the railroad line, train activity generates noise levels of 49 dBA CNEL. Based on a dispersal rate for train noise of approximately 3 dBA rate per doubling of distance, impacts at 200 feet are estimated to be 46 dBA CNEL. At 400 feet these impacts are reduced to 43 dBA CNEL.

A second single-track rail line is located within and adjacent to a portion of the southern Town limits. This rail line is used by quarry operations in San Bernardino County located east of the planning area. It generally runs along Tussing Ranch Road, following Kiowa Road south and Rock Springs Road west. There is an estimated one train per day along this line in the planning area, at speeds of up to 20 miles per hour. Lands adjacent to the line are mostly vacant, although single-family homes are located as close as 300 feet to the north. Noise from train operations along this rail line are modeled at approximately 44 dBA CNEL at 100 feet from the line, decreasing to 41 dBA CNEL at 200 feet, and to 38 dBA CNEL at 400 feet.

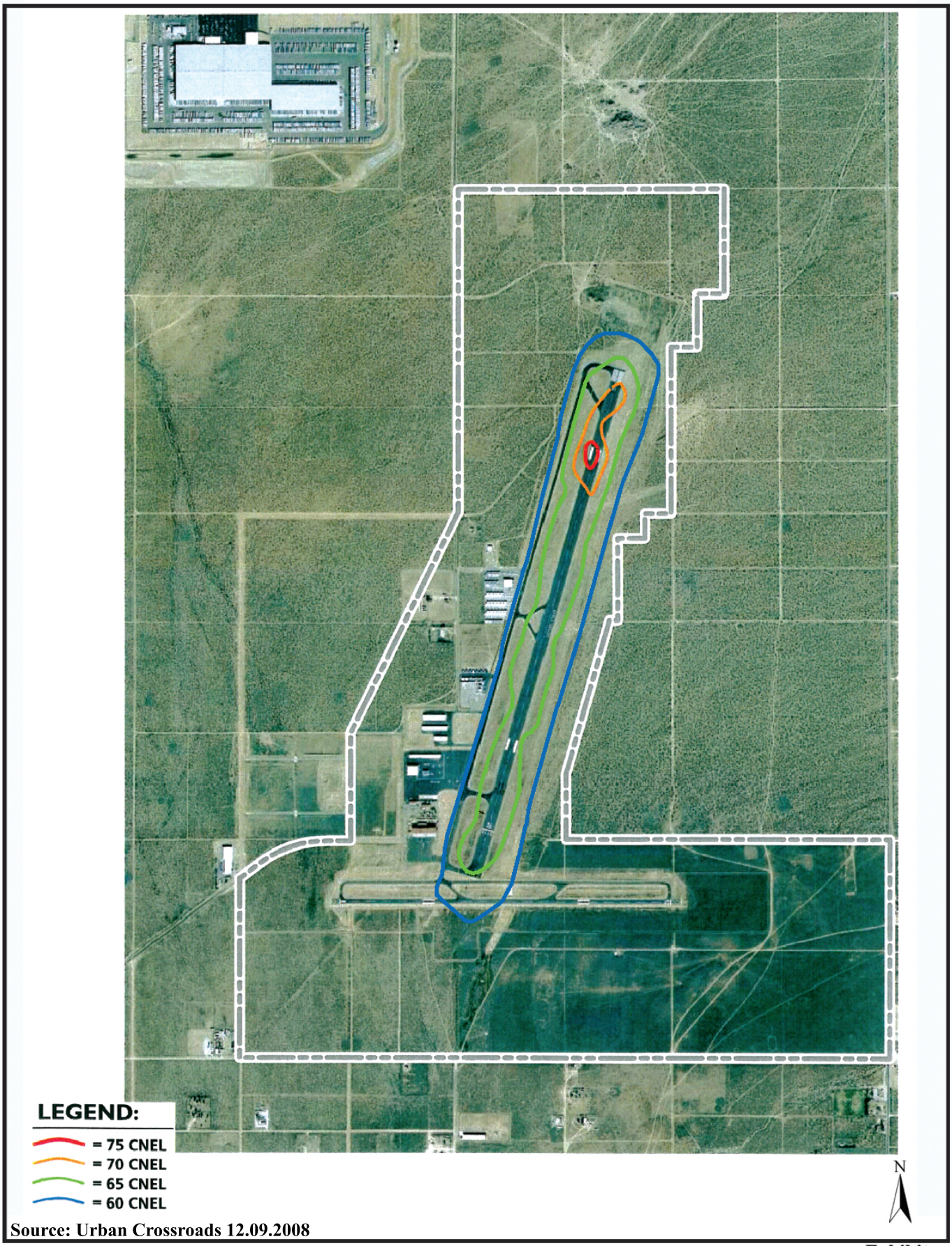
Noise impacts to residential uses are those primarily associated with train horns along at-grade crossings. The crossings closest to single-family homes are located at Navajo Road, approximately 900 feet from residences, and Kiowa Road, approximately 1,200 feet.

Each train pass-by event generates noise from the locomotive, horn, and cars. Noise level measurements have been collected for other spur lines with similar train compositions and speeds. Based on these measurements, it is expected that noise levels may approach 90 dBA Lmax at 100 feet, 87 dBA Lmax at 200 feet, and 84 dBA Lmax at 400 feet from the locomotive. These are readily perceptible noise levels, however they are of relatively short duration and occur only once daily based on current traffic levels along this rail line.

Aircraft Noise

Operation of the Apple Valley Airport is currently limited to general aviation aircraft, with noise impacts perceived as “barely perceptible” throughout most of the planning area. The airport houses approximately 119 aircraft, mostly single-engine airplanes. There are currently an average of 103 operations (takeoffs/landings) a day, or 38,000 annually. Of these operations, approximately 67% are associated with local general aviation.

Lands adjacent to the airport are generally vacant and are zoned for airport, industrial and commercial uses. Although overflights may occasionally be audible within the Town, these impacts are not considered significant. As shown on Exhibit III-19, Existing Airport Noise Contours, the noise contours of 65 dBA or greater are contained within the airport’s boundaries.



Source: Urban Crossroads 12.09.2008

TERRA NOVA®
Planning & Research, Inc.

Apple Valley General Plan Draft EIR
Existing Airport Noise Contours
Apple Valley, California

Exhibit
III-19

Industrial and Commercial Noise

Industrial and commercial uses can have a varying degree of impact on adjacent land uses. Noises from industrial and commercial uses are typically associated with mechanical equipment, generators, truck deliveries, loading/unloading docks, speakerphones, trash compactors and air conditioning units. Land use compatibility issues may arise when residential development is located adjacent to commercial/industrial areas and the resultant exposure of noise sensitive uses to noise from air conditioning units, truck deliveries, speakerphones associated with drive-through services such as those associated with fast food restaurants, and the use of mechanical equipment. All land uses are required to comply with exterior noise levels set forth in the Town's development code, as discussed above. These issues are further discussed below under Impacts.

Construction Noise

Construction noise is generated by construction equipment (including trucks, graders, bulldozers, concrete mixers and portable generators). As discussed previously, increases to the ambient noise environment from construction activities are short-term but can reach high levels, especially from grading activities. Noise levels from heavy equipment can range between approximately 68 dBA to 100 dBA at a distance of 50 feet; these noise levels diminish rapidly with a doubling of distance from the noise source.

Construction noise can be most effectively controlled through compliance with locally established construction hours. As discussed above, the Town of Apple Valley has established day and time restrictions on construction noise levels; these are set forth in the Town development code.

Sensitive Receptors

Sensitive receptors are those land uses that are particularly sensitive to noise intrusion, including residences, schools, libraries, churches, hospitals, nursing homes, and other health care facilities. Day care centers, parks, and other outdoor recreation areas may also be considered sensitive receptors. Moderately sensitive land uses include cemeteries, golf courses, hotels and motels, and dormitories.

Annexation 2008-001 and 2008-002

The existing noise environment in the proposed annexation areas is characteristic of a semi-rural region and is therefore relatively quiet. Motor vehicle traffic, occasional small aircraft overflights from the Apple Valley airport, and mechanical noise associated with household and agricultural equipment comprise the primary noise sources in these areas. The aforementioned rail line adjacent to Quarry Road serves existing quarry operations in the Northeast Industrial Area (Annexation No. 2008-002), however, as discussed there are currently few if any sensitive receptors in this area and train operations are generally limited to between 2 and 4 daily trips.

Potential noise impacts associated with buildout of the annexation areas is further discussed under Project Impacts, below.

2. Project Impacts

Traffic Noise Impacts at General Plan Build Out

Future noise contours along roadways in the General Plan area have been modeled to ascertain the extent of future noise impacts associated with General Plan build out. The Preferred Alternative build out traffic volumes, planned lane geometrics and posted speed limits were used as the basis for modeling these noise contours. The FHWA model that was used to model existing noise contours was applied to Average Daily Traffic (ADT) volumes obtained from the Town of Apple Valley General Plan Circulation Element Traffic Study prepared by Urban Crossroads, Inc.[79] This study is further discussed in section III-B, Traffic/Circulation, and is presented in the appendices of this EIR.

To determine vehicle mix inputs to the model, axle counts were collected at a location along Dale Evans Parkway in December 2008. Based on these counts, medium and heavy trucks account for a larger percentage of hourly traffic flow during daytime hours, however it is estimated that over a 24-hour period, automobiles account for approximately 90.8% of the vehicle mix. As truck traffic on a given roadway increases and constitutes a larger percentage of the vehicle mix, adjacent noise levels also increase. This can result in a significant effect on community noise levels.

Given the logarithmic nature of traffic noise levels, assuming no change in speed and truck mix, a doubling of the traffic volume would result in an increase in noise levels of 3 dBA. This increase is considered "barely perceptible" based on FHWA community noise assessment criteria. Based on these criteria, therefore, increases to noise levels of less than or equal to 3 dBA are considered less than significant.

Traffic Noise Contours

Noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway. Table III-50 presents the noise contours projected to result from build out of the proposed General Plan. It presents the CNEL noise contour boundaries for the 55, 60, 65 and 70 dBA noise levels, as well as a summary of the predicted noise contours and the estimated CNEL exterior noise level at a distance of 100 feet throughout the Town of Apple Valley. As shown on the table, the 65 dBA CNEL noise contours for the proposed High Desert Corridor will extend to up to 972 feet from the road centerline.

The values shown in Table III-50 are based upon soft site conditions, not accounting for the effects of any noise barriers, topography, or final roadway grades that may affect ambient noise levels. These assumptions are appropriate for this level of noise analysis, however, final noise studies prepared as future noise-sensitive development occurs should consider the effect of noise barriers and actual topography.

[79] "Town of Apple Valley General Plan Circulation Element Traffic Study," prepared by Urban Crossroads, Inc., November 24, 2008.

Table III-50
Anticipated Exterior Noise Exposures Adjacent to Major Roadways

Roadway	Segment	dBA CNEL at 100 ft.	Distance to Contour (Feet)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Alembic Street	between Norco Street & Saugus Rd	72.6	149	321	692	1,492
	between Saugus Road & Stoddard Wells Road	73.1	161	348	749	1,613
	n/o High Desert Corridor	75.3	227	488	1,051	2,265
	s/o High Desert Corridor	73.2	163	352	758	1,632
Apple Valley Road	between Bear Valley Road & Tussing Ranch Road	71.8	131	282	607	1,308
	between Sitting Bull Road & Bear Valley Road	73.9	181	391	842	1,815
	between SR-18 & Yucca Loma Rd	71.3	122	263	567	1,221
	between Yucca Loma Road & Sitting Bull Road	73.5	171	369	795	1,713
	n/o SR-18	69.4	91	196	422	910
Bear Valley Road	between Apple Valley Road & Deep Creek Road	74.3	193	416	896	1,931
	between Central Road & SR-18	69.7	95	205	442	952
	between Deep Creek Road & Kiowa Road	74.1	188	405	872	1,880
	between Kiowa Road & Navajo Rd	72.8	153	330	711	1,533
	between Navajo Road & Central Rd	71.6	128	275	593	1,279
	w/o Apple Valley Road	75.2	222	478	1,030	2,220
Central Road	between Bear Valley Road & Tussing Ranch Road	68.9	85	183	394	848
	between Nisqually Road & Bear Valley Road	71.4	125	268	578	1,245
	between SR-18 & Nisqually Road	71.8	131	283	610	1,314
	between Thunderbird Rd & SR-18	72.3	143	308	664	1,430
	between Waalew Road & Thunderbird Road	73.8	180	387	834	1,797
	n/o Waalew Road	72.9	155	334	720	1,552
	n/o Lafayette Street	70.8	112	242	522	1,124
Choco Road	between Norco Street & Saugus Rd	69.7	96	207	446	960
Corwin Road	between SR-18 & Tao Road	71.4	124	267	575	1,238
	between Tao Road & Waalew Road	70.5	108	233	502	1,081
	between Waalew Road & Dale Evans Parkway	70.2	103	222	477	1,029
	between Dale Evans Parkway & Dakota Road	72.1	138	297	640	1,379
Dachshund Avenue	n/o Fresno Road	67.7	70	151	326	702
Dakota Road	s/o Fresno Road	71.1	118	255	550	1,184
Dale Evans Parkway	between Corwin Road & Waalew Road	73.6	174	374	806	1,736
	between Thunderbird Rd & SR-18	70.4	106	228	492	1,059
	between Waalew Road & Thunderbird Road	72.1	139	299	645	1,389

Table III-50
Anticipated Exterior Noise Exposures Adjacent to Major Roadways

Roadway	Segment	dBA CNEL at 100 ft.	Distance to Contour (Feet)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Dale Evans Parkway cont'd	n/o Fresno Road	74.2	191	411	885	1,907
	s/o I-15 Freeway	74.2	191	412	889	1,914
	between High Desert Corridor & Corwin Road	75.1	219	472	1,017	2,190
	between High Desert Corridor & Norco Street	74.8	210	452	974	2,098
	s/o Quarry Road	74.1	187	402	866	1,866
Deep Creek Road	between Bear Valley Road & Tussing Ranch Road	63.9	RW	85	183	394
	s/o of Rock Springs Road	59.0	RW	RW	86	186
Falchion Road	between Apple Valley Road & Pauma Street	71.1	119	257	554	1,193
	between Pauma Street & Alembic Street	71.3	123	265	571	1,230
	w/o Apple Valley Road	68.2	76	163	352	759
	e/o Alembic Street	70.3	104	224	483	1,041
Fresno Road	between Dale Evans Parkway & Navajo Road	69.6	95	204	440	948
High Desert Corridor	between Alembic Street & I-15 freeway	79.8	451	972	2,094	4,510
	between Central Road & Waalew Road	76.4	268	577	1,243	2,677
	between Dale Evans Parkway & Alembic Street	79.1	405	872	1,878	4,046
	between Standing Rock Avenue & Central Road	73.6	174	374	806	1,736
	between Waalew Road & Dale Evans Parkway	78.0	341	735	1,583	3,411
Kiowa Road	between Bear Valley Road & Tussing Ranch Road	71.3	123	265	571	1,230
	between Sitting Bull Road & Bear Valley Road	71.2	121	261	562	1,210
	between SR-18 & Yucca Loma Rd	68.2	76	163	351	756
	between Yucca Loma Road & Sitting Bull Road	71.2	121	260	560	1,207
Lafayette Street	w/o Dale Evans Parkway	69.0	86	186	401	864
Navajo Road	between Bear Valley Road & Tussing Ranch Road	64.2	RW	89	192	413
Navajo Road (cont)	between Nisqually Road & Bear Valley Road	71.3	122	264	568	1,224
	between SR-18 & Nisqually Road	71.9	134	289	622	1,341
	between Thunderbird Rd & SR-18	69.6	94	202	436	940
	s/o Lafayette Street	67.3	66	142	305	658
Norco Street	w/o Alembic Street	70.6	110	237	510	1,099
Outer Highway I-15 S	between Quarry Road & Dale Evans Parkway	68.5	80	172	371	800

Table III-50
Anticipated Exterior Noise Exposures Adjacent to Major Roadways

Roadway	Segment	dBA CNEL at 100 ft.	Distance to Contour (Feet)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Outer Highway I-15 S cont'd	between Stoddard Wells Road & Quarry Road	69.9	98	212	456	982
Pauma Street	n/o Falchion Road	69.7	95	205	441	950
	s/o Saugus Road	70.3	104	224	483	1,040
Quarry Road	between Dale Evans Parkway & Navajo Road	69.9	99	214	460	992
	between I-15 Frontage Road & Stoddard Wells Road	73.6	175	377	812	1,749
	e/o I-15 freeway	75.1	219	472	1,018	2,193
	e/o Navajo Road	68.7	82	176	380	819
	w/o Dale Evans Parkway	72.2	140	301	649	1,397
Rincon Road	between SR-18 & Yucca Loma Rd	67.1	64	137	295	637
Saugus Road	w/o Pauma Street	69.1	88	189	407	877
Sitting Bull Road	between Apple Valley Road & Kiowa Road	66.3	57	122	262	565
SR-18	between Apple Valley Road & Corwin Road	74.0	184	397	856	1,845
	between Central Road & Joshua Road	67.7	71	152	328	706
	between Corwin Road & Tao Road	71.3	123	264	570	1,227
	between Dale Evans Parkway & Kiowa Road	72.8	153	330	711	1,533
	between Kiowa Road & Navajo Rd	70.8	114	245	528	1,137
	between Navajo Road & Central Rd	71.8	133	286	615	1,326
	between Rancherias Road & Dale Evans Parkway	72.1	139	299	644	1,387
	between Tao Road & Rancherias Road	72.8	154	333	716	1,543
	w/o Apple Valley Road	75.5	234	504	1,085	2,339
Stoddard Wells Road	e/o I-15 Freeway	74.6	202	436	939	2,022
	between Quarry Road & Dale Evans Parkway	71.2	120	258	556	1,199
	e/o Alembic Street	74.4	196	423	912	1,965
Stoddard Wells Road (cont)	n/o Johnson Road	71.2	120	259	558	1,201
	w/o Navajo Road	67.5	68	146	314	677
Thunderbird Road	between Dale Evans Parkway & Navajo Road	66.8	61	131	283	610
	between Navajo Road & Central Rd	68.8	83	178	383	826
	between Rancherias Road & Dale Evans Parkway	64.7	RW	96	207	446
Tussing Ranch Road	between Apple Valley Road & Kiowa Road	70.8	113	244	526	1,134
	between Kiowa Road & Navajo Road	70.2	103	223	480	1,033
	between Navajo Road & Central Road	69.7	95	205	442	952
	w/o Apple Valley Road	72.1	139	299	644	1,387

Table III-50
Anticipated Exterior Noise Exposures Adjacent to Major Roadways

Roadway	Segment	dBA CNEL at 100 ft.	Distance to Contour (Feet)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Waalew Road	between Corwin Road & Dale Evans Parkway	67.3	66	143	307	662
	e/o Dale Evans Parkway	67.6	69	148	320	688
	w/o Central Road	68.0	73	158	340	733
Yucca Loma Road	between Apple Valley Road & Rincon Road	72.5	148	319	686	1,479
	between Kiowa Road & SR-18	71.8	133	286	616	1,327
	between Rincon Road & Kiowa Rd	71.1	118	253	546	1,175
	w/o Apple Valley Road	73.3	166	357	769	1,656

[1] RW: Noise contour located within the road right of way.

Noise Level Increases Over Existing Conditions

Table III-51, below, shows the expected noise level contours for the proposed General Plan build out as compared to existing conditions. The proposed General Plan is expected to result in increases to noise levels of up to 16.3 dBA CNEL over existing conditions. Increases in noise levels are expected to be perceptible to land uses adjacent to 44 roadway segments in the planning area.

Table III-51
Noise Increases Over Existing Conditions

Roadway	Segment	CNEL AT 100 FEET (dBA)			Potentially Significant Impact?[1]
		Existing	Preferred Alternative	Increase	
Alembic Street	between Norco Street & Saugus Road	-	72.6	-	-
	between Saugus Road & Stoddard Wells Road	-	73.1	-	-
	n/o High Desert Corridor	-	75.3	-	-
	s/o High Desert Corridor	-	73.2	-	-
Apple Valley Road	between Bear Valley Rd & Tussing Ranch Road	64.3	71.8	7.5	YES
	between Sitting Bull Road & Bear Valley Road	71.1	73.9	2.8	NO
	between SR-18 & Yucca Loma Road	69.5	71.3	1.8	NO
	between Yucca Loma Road & Sitting Bull Road	70.5	73.5	3.0	NO
	n/o SR-18	63.3	69.4	6.1	YES
Bear Valley Road	between Apple Valley Rd & Deep Creek Road	72.5	74.3	1.8	NO
	between Central Road & SR-18	66.3	69.7	3.3	YES
	between Deep Creek Road & Kiowa Road	72.6	74.1	1.6	NO
	between Kiowa Road & Navajo Road	71.2	72.8	1.6	NO
	between Navajo Road & Central Road	68.7	71.6	2.9	NO
	w/o Apple Valley Road	73.5	75.2	1.7	NO
Central Road	between Bear Valley Rd & Tussing Ranch Road	62.0	68.9	7.0	YES
	between Nisqually Road & Bear Valley Road	66.0	71.4	5.5	YES
	between SR-18 & Nisqually Road	64.8	71.8	7.0	YES
	between Thunderbird Road & SR-18	64.5	72.3	7.8	YES
	between Waalew Road & Thunderbird Road	63.8	73.8	10.0	YES
	n/o Waalew Road	56.6	72.9	16.3	YES
	n/o Lafayette Street	56.6	70.8	14.2	YES
Choco Road	between Norco Street & Saugus Road	-	69.7	-	-
Corwin Road	between SR-18 & Tao Road	63.8	71.4	7.6	YES
	between Tao Road & Waalew Road	63.4	70.5	7.1	YES

Table III-51
Noise Increases Over Existing Conditions

Roadway	Segment	CNEL AT 100 FEET (dBA)			Potentially Significant Impact?[1]
		Existing	Preferred Alternative	Increase	
Corwin Road cont	between Waalew Road & Dale Evans Parkway	54.5	70.2	15.7	YES
	between Dale Evans Parkway & Dakota Road	-	72.1	-	-
Dachshund Avenue	n/o Fresno Road	-	67.7	-	-
Dakota Road	s/o Fresno Road	-	71.1	-	-
Dale Evans Parkway	between Corwin Road & Waalew Road	60.4	73.6	13.1	YES
	between Thunderbird Road & SR-18	62.2	70.4	8.2	YES
	between Waalew Road & Thunderbird Road	62.5	72.1	9.7	YES
	n/o Fresno Road	62.1	74.2	12.1	YES
	s/o I-15 Freeway	62.3	74.2	11.9	YES
	between High Desert Corridor & Corwin Road	62.1	75.1	13.0	YES
	between High Desert Corridor & Norco Street	60.5	74.8	14.4	YES
	s/o Quarry Road	62.1	74.1	12.0	YES
Deep Creek Road	between Bear Valley Rd & Tussing Ranch Road	61.9	63.9	2.0	NO
	s/o of Rock Springs Road	57.4	59.0	1.7	NO
Falchion Road	between Apple Valley Road & Pauma Street	-	71.1	-	-
	between Pauma Street & Alembic Street	-	71.3	-	-
	w/o Apple Valley Road	-	68.2	-	-
	e/o Alembic Street	-	70.3	-	-
Fresno Road	between Dale Evans Parkway & Navajo Road	-	69.6	-	-
High Desert Corridor	between Alembic Street & I-15 freeway	-	79.8	-	-
	between Central Road & Waalew Road	-	76.4	-	-
	between Dale Evans Parkway & Alembic St	-	79.1	-	-
	between Standing Rock Avenue & Central Road	-	73.6	-	-
	between Waalew Road & Dale Evans Parkway	-	78.0	-	-
Kiowa Road	between Bear Valley Rd & Tussing Ranch Road	65.8	71.3	5.6	YES
	between Sitting Bull Road & Bear Valley Road	66.8	71.2	4.5	YES

Table III-51
Noise Increases Over Existing Conditions

Roadway	Segment	CNEL AT 100 FEET (dBA)			Potentially Significant Impact?[1]
		Existing	Preferred Alternative	Increase	
Kiowa Road (cont)	between SR-18 & Yucca Loma Road	64.3	68.2	3.9	YES
	between Yucca Loma Road & Sitting Bull Road	65.6	71.2	5.6	YES
Lafayette Street	w/o Dale Evans Parkway	-	69.0	-	-
Navajo Road	between Bear Valley Rd & Tussing Ranch Road	61.0	64.2	3.2	YES
	between Nisqually Road & Bear Valley Road	67.8	71.3	3.5	YES
	between SR-18 & Nisqually Road	68.5	71.9	3.4	YES
	between Thunderbird Road & SR-18	62.9	69.6	6.7	YES
	s/o Lafayette Street	-	67.3	-	-
Norco Street	w/o Alembic Street	-	70.6	-	-
Outer Highway I-15 S	between Quarry Road & Dale Evans Parkway	-	68.5	-	-
	between Stoddard Wells Road & Quarry Road	-	69.9	-	-
Pauma Street	n/o Falchion Road	-	69.7	-	-
	s/o Saugus Road	-	70.3	-	-
Quarry Road	between Dale Evans Parkway & Navajo Road	-	69.9	-	-
	between I-15 Frontage Rd & Stoddard Wells Road	-	73.6	-	-
	e/o I-15 freeway	-	75.1	-	-
	e/o Navajo Road	-	68.7	-	-
	w/o Dale Evans Parkway	-	72.2	-	-
Rincon Road	between SR-18 & Yucca Loma Road	62.8	67.1	4.2	YES
Saugus Road	w/o Pauma Street	-	69.1	-	-
Sitting Bull Road	between Apple Valley Road & Kiowa Road	64.7	66.3	1.5	NO
SR-18	between Apple Valley Road & Corwin Road	72.0	74.0	2.0	NO
	between Central Road & Joshua Road	65.7	67.7	2.0	NO
	between Corwin Road & Tao Road	71.2	71.3	0.2	NO
	between Dale Evans Parkway & Kiowa Road	71.4	72.8	1.4	NO

Table III-51
Noise Increases Over Existing Conditions

Roadway	Segment	CNEL AT 100 FEET (dBA)			Potentially Significant Impact?[1]
		Existing	Preferred Alternative	Increase	
SR 18 (cont)	between Kiowa Road & Navajo Road	69.8	70.8	1.0	NO
	between Navajo Road & Central Road	67.7	71.8	4.1	YES
	between Rancherias Rd & Dale Evans Parkway	71.8	72.1	0.3	NO
	between Tao Road & Rancherias Road	71.6	72.8	1.2	NO
	w/o Apple Valley Road	73.8	75.5	1.7	NO
Stoddard Wells Road	e/o I-15 Freeway	60.5	74.6	14.1	YES
	between Quarry Road & Dale Evans Parkway	60.2	71.2	11.0	YES
	e/o Alembic Street	60.5	74.4	13.9	YES
	n/o Johnson Road	60.2	71.2	11.0	YES
	w/o Navajo Road	60.2	67.5	7.3	YES
Thunderbird Road	between Dale Evans Parkway & Navajo Road	63.8	66.8	3.0	NO
	between Navajo Road & Central Road	61.2	68.8	7.5	YES
	between Rancherias Rd & Dale Evans Parkway	64.1	64.7	0.7	NO
Tussing Ranch Road	between Apple Valley Road & Kiowa Road	-	70.8	-	-
	between Kiowa Road & Navajo Road	-	70.2	-	-
	between Navajo Road & Central Road	-	69.7	-	-
	w/o Apple Valley Road	-	72.1	-	-
Waalew Road	between Corwin Road & Dale Evans Parkway	62.8	67.3	4.5	YES
	e/o Dale Evans Parkway	63.6	67.6	4.0	YES
	w/o Central Road	63.6	68.0	4.4	YES
Yucca Loma Road	between Apple Valley Road & Rincon Road	66.0	72.5	6.6	YES
	between Kiowa Road & SR-18	62.2	71.8	9.7	YES
	between Rincon Road & Kiowa Road	64.7	71.1	6.4	YES
	w/o Apple Valley Road	62.6	73.3	10.7	YES

[1] A potential significant impact occurs when the resulting level is greater than 65 dBA and the increase is greater than 3 dBA.

Impacts from Proposed Truck and Bus Routes

Proposed Truck Routes

As shown on Exhibit III-31 (please see Section III-O, Traffic/Circulation), the majority of proposed new truck routes will be located in the North Apple Valley Industrial Specific Plan area, north of Waalew Road. In general residential areas will be impacted to a limited extent, if at all, by traffic along proposed truck routes in the NAVISP area, where routes will generally pass through vacant, industrial, and commercial areas.

No new truck routes are proposed in the most developed areas of Town, which generally occur south of State Route 18 and Waalew Road. Primary through truck routes will continue to be located along major roads including the Outer Highway 15, Bear Valley Road, State Route 18, Central Road, Deep Creek Road south of Bear Valley Road, and will be established along the future High Desert Corridor. Additional truck traffic along these roadways is expected to increase noise impacts to adjacent development, which along some roadway segments include sensitive receptors such as residential development, schools, the hospital, and others. Mitigation measures are set forth below to address noise impacts along truck routes.

Proposed Bus Routes

Future bus routes are expected to provide for new and expanded service along major roadways such as Central Road, Bear Valley Road, Kiowa Road and others in the intermediate term, and along Apple Valley Road, Corwin Road, and other roadways in the central and northern portions of the planning area over the long term. While additional bus service has potential to result n noise impacts to residential development and other sensitive receptors, these impacts are also expected to be at least partially off-set by reductions in other vehicular traffic associated with increased use of public transportation. The Town will need to continue to monitor noise impacts associated with expanded and additional bus routes and bus stops where these are planned near sensitive receptors. Mitigation measures are set forth, below, to address these issues.

Impacts from Railroad Noise

The proposed General Plan and annexations will not result in changes to operations along existing freight rail lines in the planning area. While the Town is not aware of plans for increased operations, these lines are owned by third parties over which the Town has no control. For purposes of this analysis, it was assumed that freight train traffic would double over existing conditions. As discussed under Existing Conditions, the rail line adjacent to Quarry Road carries from 2 to 4 trains daily. Noise levels were modeled at approximately 49 dBA CNEL at 100 feet from the rail line, decreasing by 3 dBA per distance doubling, to 46 dBA CNEL at 200 feet, and to 43 dBA CNEL at 400 feet. Based on a doubling of rail traffic, these impacts would occur approximately 4 to 8 times daily, as compared with existing conditions.

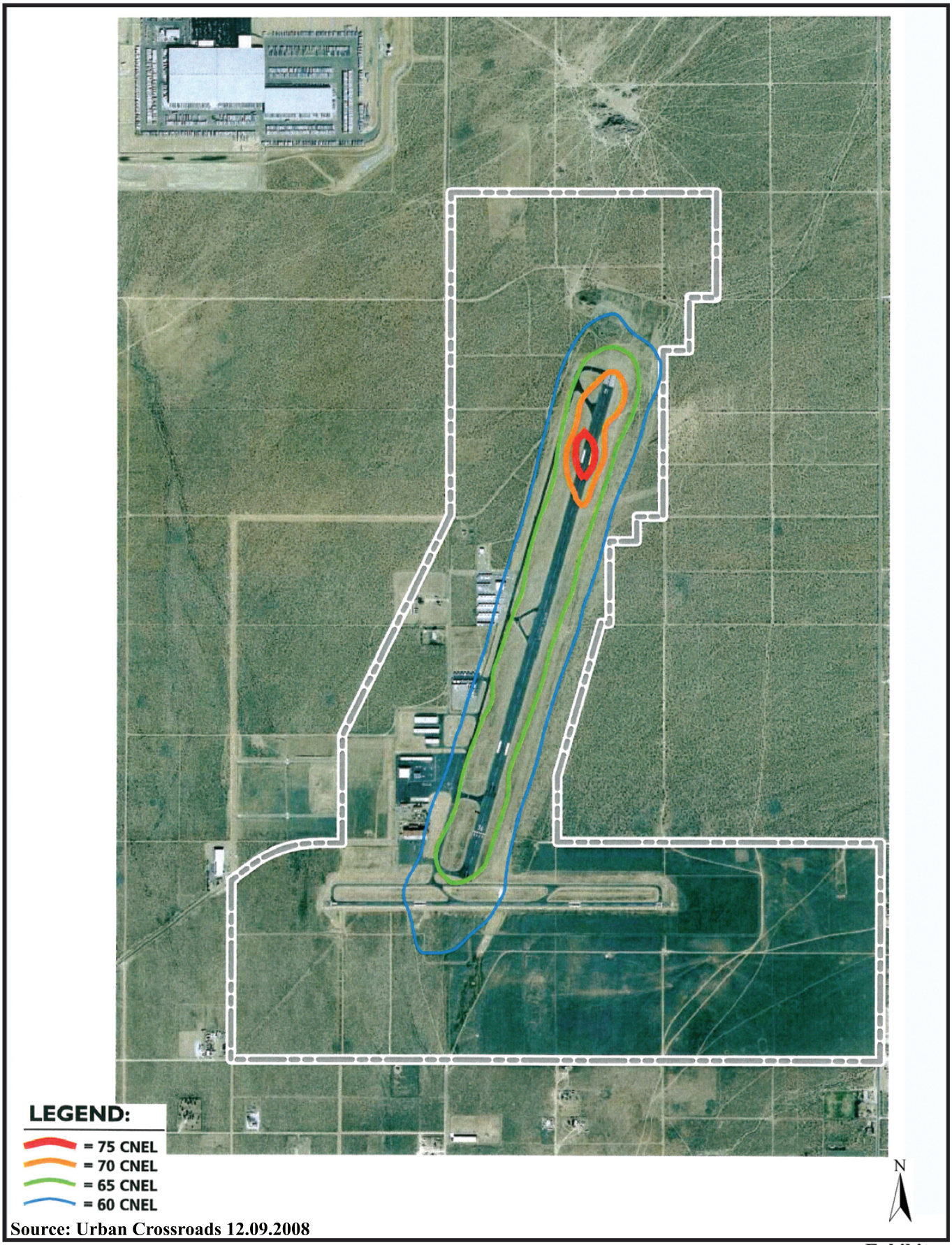
Based on modeling for existing conditions for the rail line that runs southerly of Tussing Ranch Road, at a distance of 100 feet from the railroad line, train activities produce noise levels of 44 dBA CNEL, at 200 feet 41 dBA CNEL, and at 400 feet 38 dBA CNEL. Doubling of train traffic

that currently occurs along this line would generate approximately 2 trips daily at these noise levels.

As previously discussed, noise levels from train pass-by events may generate noise levels may near 90 dBA Lmax at 100 feet, 87 dBA at 200 feet, and 84 dBA at 400 feet from the locomotive.

Impacts from Airport Operations

The County of San Bernardino County has plans to expand the Apple Valley Airport into a hub to better serve industrial and commercial development in and adjacent to the North Apple Valley Industrial Specific Plan area in which the airport is located. The County Board of Supervisors recently approved the construction of airport upgrades, including 18 new hangars at the Airport, and improvements to the terminal and taxiways to accommodate larger corporate aircraft. Surrounding lands are planned primarily for development of airport industrial and general commercial land uses. Adjacent land uses are largely compatible with existing and future aircraft operations at the Apple Valley Airport, and as shown on Exhibit III-I-3, future noise contour boundaries are generally contained within the boundaries of the airport. No significant impacts are anticipated to residential development or other land uses in the vicinity.



Source: Urban Crossroads 12.09.2008

TERRA NOVA®
Planning & Research, Inc.

Apple Valley General Plan Draft EIR
Future Airport Noise Contours
Apple Valley, California

Exhibit
III-20

Construction Noise

As discussed under Existing Conditions, above, heavy construction equipment can generate noise levels that are beyond the level of comfort of the human ear. Certain equipment can result in noise levels of up to 100 dBA at a distance of 50 feet. It should be noted, however, that these noise levels diminish at a rate of approximately 6 dBA as distance from the noise source is doubled. Construction noise is generally short term and may be mitigated to acceptable levels by a variety of measures, including equipping construction equipment with mufflers, locating stationary equipment away from noise sensitive receptors and placing equipment staging areas as far from sensitive receptors, such as residential development, as is practicable. Mitigation measures for construction noise impacts are set forth below.

Annexation 2008-001 and 2008-002

At build out, Annexation No. 2008-001 will include up to 4,236 residential units, 7,135,369 square feet of commercial development and 7,782,275 square feet of industrial development. Build out of Annexation No. 2008-002 will result in up to 7,676,379 square feet of industrial land uses. These represent substantial increases over existing development and have potential to result in adverse impacts to the existing noise environment. Noise impacts are expected to be primarily associated with temporary construction noises and gradually increasing traffic volumes as these areas develop. Site-specific design features that mitigate noise impacts may need to be implemented to limit noise impacts to acceptable levels. All noise associated with new development in the annexation areas will be subject to the Town's noise ordinance and other mitigation measures described below. Without mitigation, build out of the General Plan could result in significant impacts associated with noise in the two annexation areas.

Summary of Impacts

Under existing conditions, approximately 13 of the General Planned roadway segments in the planning area generate noise levels between 65 and 70 dBA CNEL at 100 feet from the centerline. This will increase to 27 roadway segments at buildout of the proposed General Plan and annexations. Currently there are 11 roadway segments in the General Plan area that generate noise levels between 70 and 75 dBA CNEL at 100 feet, however, proposed General Plan noise contours will increase to 59 the number of roadway segments between 70 dBA and 75 dBA CNEL. There are currently no master planned roadways that currently generate greater than 75 dBA CNEL at 100 feet, however at buildout of the proposed General Plan and annexations, there will be 9 roadways that generate greater than 75 dBA CNEL at 100 feet from the centerline. Increases in noise levels are expected to be perceptible to land uses adjacent to 44 roadway segments in the planning area.

Build out of the proposed General Plan and annexations will result in overall increases to community noise levels from increased urbanization and associated activities including short-term construction noise, increases in motor vehicle traffic and other modes of transportation. These impacts may be significant if not mitigated. The General Plan is a program-level document and site-specific development is not within the scope of this EIR, but will be analysed

and impacts mitigated on a project-by-project basis at the time such development is proposed. Measures set forth below, however, provide broad-based mitigation and are intended to ensure the reduction of potential noise impacts to acceptable levels. Additional noise reduction measures are included in the Town of Apple Valley Noise Element Technical Report (Appendix E of this EIR) for implementation on a project-specific basis.

3. Mitigation Measures

Noise impacts may be mitigated using a variety of design features. These include shielding those exposed to the noise source, or dampening the source itself. Motor vehicle can be reduced in a range of ways, such as enforcing truck route use, reducing vehicle speeds, regulating traffic flow using synchronized intersection signals, modifying parkway widths, using roadside acoustical barriers, and depressing roadways such that they are below the level of adjacent terrain. Local land use controls and enforcement of building construction/insulation codes is the best means to mitigate railroad noise. Commercial and industrial noise may be managed by means of strategic site layout that includes careful design of traffic access points, parking lots and loading areas, and solid waste collection areas.

The Town has adopted exterior noise standards in Section 9.73.050 of its Development Code (Noise Ordinance) and has therein also provided regulations for noise measurement/monitoring, as well as establishing penalties for violation of the Noise Ordinance. The Town's exterior noise standards for various land uses are consistent with those set forth by the State of California in its "Land Use Compatibility for Community Environments" matrix.

Mitigation measures that follow shall be implemented within the General Plan area to ensure the reduction of potential noise impacts to less than significant levels. Additional site-specific noise mitigation measures may also be required as appropriate for future development.

General Mitigation Measures

1. The Town shall continue to maintain and enforce its noise ordinance to ensure that noise impacts throughout the General Plan area are maintained at acceptable levels.

2. The Town shall continue to require that all project designs comply with Title 25 (California Noise Insulation Standards) by ensuring that interior noise levels for residential development do not exceed 45 dBA.

3. Final site plans for all proposed development projects in the General Plan area shall consider potential noise impacts, including residential site-orientation to shield outdoor living areas, incorporating additional setbacks from roadways, and constructing additional noise barriers where necessary.

4. All development shall be designed to include and comply with requirements of State Code for lateral and vertical unit-to-unit airborne sound isolation. For multi-family residential and hotel development, design shall include vertical impact sound isolation.

5. Project-specific development shall prepare construction drawings to determine exact specifications for window glass in buildings with unshielded first and second story windows.

6. The Town shall require an acoustical analysis for all commercial and industrial projects that are proposed adjacent to residential land uses or land use designations. The acoustical analysis shall evaluate potential noise impacts of the project and provide mitigation measures that are adequate to meet Town noise standards for residential land uses.

7. Sensitive receptors, which include schools, libraries and hospitals, shall, to the greatest extent feasible, be located always from major noise generators.

Off-Site Traffic Noise

8. The Town shall encourage a planning area-wide circulation pattern that loads primary traffic onto major arterials in order to limit local roadway traffic to the greatest extent feasible and thereby preserve local neighborhood noise environments.

9. The Town shall evaluate and monitor noise impacts associated with the addition of bus routes and bus stops near noise sensitive uses, in particular stops to be located along collector and local roads.

Construction Noise

10. All construction equipment operating in the General Plan area shall be equipped with properly operating and well-maintained mufflers to limit noise emissions.

11. To the greatest extent feasible, earth moving and hauling routes, and stockpiling and vehicle staging areas shall be situated away from existing residences.

12. Construction activities shall be conducted in compliance with the Town's Noise Ordinance to ensure that acceptable noise levels are achieved during sensitive time periods.

On-Site Stationary Noise Sources

13. Mechanical equipment for various buildings within the General Plan area shall be designed, selected and placed in consideration of the potential noise impacts on nearby residences within any development and in the surrounding community.

14. Appropriate sound barriers shall surround all public facilities generating disturbing levels of noise, such as water pumping stations.

15. Outdoor equipment such as cooling towers, air cooled condensers and refrigeration compressors and/or condenser units, as well as at air intake and discharge openings for

building ventilation systems, shall be provided with silencers and/or barriers at or surrounding them, where necessary.

Mitigation Monitoring/Reporting Program

A. The Town shall periodically review land-use patterns and the community noise environment, and amend the Land Use map as appropriate to ensure reasonable land use/noise compatibility.
Responsible Parties: Planning Division

B. The Town shall establish and review on a periodic basis and inventory of existing significant noise sources and areas where incompatibilities occur, and shall develop procedures to reduce noise effects on these areas as much as feasible economically and aesthetically.
Responsible Parties: Planning Division

C. The Town shall require that new development located in areas subject to potentially significant noise impacts monitor and document compliance with all applicable noise level limits.
Responsible Party: Planning Division

Pre-Construction

D. During project and site-specific building design, the Town shall ensure that acoustical analysis for all buildings considers the following for all buildings and/or outdoor living spaces, as applicable:

- Selection, placement and shielding of mechanical equipment;
- Strategic location of attached residences to provided shielded outdoor living areas;
- Acoustical specifications for window glass in buildings with unshielded first and second floor windows;
- Theme walls constructed to noise barrier specifications;
- Shielding and buffering of truck loading/unloading areas;
- Verification that project designs and plans comply with State code requirements for unit-to-unit airborne sound isolation.

Responsible Parties: Project Proponent, Project Acoustical Engineer, Planning Division, Building and Safety Division

E. Designate acceptable truck/construction equipment route(s), as appropriate.
Responsible Parties: Project Proponent, Planning Division, Public Works Division

During Construction

F. Ensure functional mufflers are installed on all construction equipment.
Responsible Parties: Project Proponent, General Contractor, Building and Safety Division

G. Ensure designated truck routes are being utilized.
Responsible Parties: General Contractor, Building and Safety Division

H. Ensure construction equipment operates only during those hours designated by the Town Noise Ordinance, except in emergencies.
Responsible Parties: Project Proponent, General Contractor, Building and Safety Division

M. Public Services and Facilities

Introduction

This section describes the current public services, utilities and service systems in the General Plan area and the vicinity, and assesses the potential constraints, risks and opportunities associated with these existing conditions. It analyzes the potential impacts associated with implementation of the proposed General Plan and annexations in relation to these public services, and establishes mitigation measures to reduce impacts. A variety of resources have been consulted to research and analyze these impacts, including personal communication with service providers and other sources. These resources are further described under Existing Conditions, below.

Thresholds of Significance/Criteria for Determining Significance

Standards and criteria have been drawn from Appendix G Environmental Checklist Form of the California Environmental Quality Act (CEQA) Guidelines. To ensure that the General Plan EIR adequately addresses potential impacts to public services and facilities that may result from the adoption and implementation development of the Apple Valley General Plan, the project would have a significant impact if it would:

a. Conflict with or obstruct construction of new public utilities or facilities, including above-ground and subsurface energy, fuel or telecommunication transmission facilities.

b. Conflict with or obstruct the operation and maintenance of existing public utilities or facilities, including aboveground and subsurface energy, fuel or telecommunication transmission facilities.

c. Result in substantial adverse physical impacts associated with or create substantial impediments to the provision of new or physically altered government facilities.

d. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.

e. Require or result in the construction of new or wastewater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

f. Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

g. Not have sufficient water supplies available to serve the project from existing entitlements and resources, or new expanded entitlements are needed.

h. Have inadequate landfill capacity to accommodate the project's solid waste disposal needs.

i. Fail to meet the water supply assessment requirements of Water Code Section 10910, et seq. (SB 610), and the requirements of Government Code Section 664737 (SB 221).

j. Fail to result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

k. Not be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs.

l. Fail to comply with federal, state, and local statues and regulations related to solid waste.

m. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or create a need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response time or other performance objectives for fire protection, police protection, schools, parks, and other public facilities.

Service Providers

The General Plan area is located within the service boundaries of a wide range of public services and facilities providers, which are listed below.

- Public Schools: Apple Valley Unified School District
- Library Services: San Bernardino County Library System
- Law Enforcement: Apple Valley Police Department/San Bernardino County Sheriff's Department
- Fire Protection: Apple Valley Fire Protection District
- Health Services: St. Mary Medical Center
- Electricity: Southern California Edison
- Natural Gas: Southwest Gas Company
- Telephone Services, Internet and Cable Television: Verizon, Charter Communications
- Domestic Water: Apple Valley Ranchos Water Company, Golden State Water Company, various small water purveyors
- Wastewater Collection/Treatment: Town of Apple Valley Public Works Division, Victor Valley Wastewater Reclamation Authority
- Solid Waste Management: Burrtec Waste Industries

Schools

1. Existing Conditions

Public Schools
The Apple Valley Unified School District (AVUSD) is the public school District in the Town of Apple Valley and portions of its Sphere of Influence, including the proposed annexation areas.

AVUSD currently operates 18 schools within its District, including 9 elementary, 3 middle and 2 high schools, as well as one continuation school. In addition, AVUSD operates an alternative education center offering adult education, a magnet school and a charter school. [80] [81] The following table lists AVUSD schools, locations, grades served, 2007-08 school enrollment, and total capacity.

Table III-52
Apple Valley Unified School District Schools

School	Location	Grades Served	Enrollment (2007-08)	Capacity
Elementary				
Desert Knolls	18213 Symeron Drive	K-5	529	795
Mariana	10601 Manhasset Rd.	K-5	609	702
Mojave Mesa	15552 Wichita Rd.	K-5	607	655
Rancho Verde	14334 Pioneer Road	K-5	716	725
Rio Vista	13590 Havasu Road	K-5	693	795
Sandia	21331 Sandia Rd.	K-5	757	795
Sitting Bull	19355 Sitting Bull Rd.	K-5	569	761
Sycamore Rocks	23450 South Road	K-5, Visual/Perf. Arts	557	725
Yucca Loma	21351 Yucca Loma Road	K-5	669	865
Middle				
Apple Valley	12555 Navajo Road	6-8	921	1,664
Sitting Bull	19445 Sitting Bull Road	6-8, Technology	1,267	1,231
Vista Campana	20700 Thunderbird Road	6-8	876	1,408
High Schools				
Apple Valley	11837 Navajo Road	9-12	1,978	2,813
Granite Hills	22900 Esaws Road	9-12	2,140	2,494
Willow Park	21950 Nisqually Road	9-12	147	406
Other				
Alternative Education Center	13063 Pawnee Road	K-12	498	N/A[1]
Academy for Academic Excellence (Lewis Center; Charter)	20702 Thunderbird Road	K-2	120	120
Academy for Academic Excellence (Lewis Center; Charter)	17500 Mana Road	3-12	855	880
Vanguard Preparatory (Magnet)	12951 Mesquite Road	K-8	1,192	1,086
Adult Education			39	N/A[3]

Sources: AVUSD, February 12, 2008; Teresa Dowd, Academy for Academic Excellence, April 10, 2008.
[1]Independent Study.
[2]Independent Charter.
[3]At Alternative Education Center

[80] Personal communication, Lynette Kachelmeyer, AVUSD Facilities Planning, February 2008.
[81] Personal communication, Teresa Dowd, Academy for Academic Excellence, February 2008.

The District also offers programs for gifted and talented students through the GATE program, after-school programs for elementary level students, peer tutoring, and other special programs.

Enrollment at AVUSD schools has generally increased by about 1.5% to 5% annually; however, enrollment declined by approximately 2% in 2007, consistent with a downturn in the local housing market. Currently, many District schools have excess capacity, as shown in Table III-52, above.

The District completed an update to its Master Plan in 2007, which plans for facilities over a six-year period, through 2012. The District generally purchases property and plans for new facilities in proximity to areas where the Town has approved Tract maps.[82]

Assembly Bill 2926, passed by the California State Legislature in 1986, allows school districts to assess development fees for construction and reconstruction of public schools. Currently the AVUSD development fees are:[83]

- Residential (new construction): $3.60 per square foot[84]
- Commercial (all): $0.47/sf

Other Public School Facilities

In addition to AVUSD schools, San Bernardino County serves special needs students in the region through staffing provided at AVUSD elementary schools or through private placement. The County intends to consolidate these services at three planned new facilities in Apple Valley, which are expected to be completed in 2009 and 2010. These facilities will include an early education center and State-mandated medical-therapy services adjacent to the AVUSD Sandia Elementary School. A second early education center near St. Mary Medical Center will include, among other facilities, four classrooms dedicated to serve autistic students and will serve regional needs as well as students within AVUSD boundaries. A junior/senior high school for special needs students in the western portion of the Town will serve approximately 156 students.[85]

Private Schools and Higher Education Institutions

There are several private schools in the Town, including Apple Valley Child Care Center, Apple Valley Christian School, Valley Christian Schools, Apple Valley Private School Learning Center, Apple Valley Village School, High Desert Haven, St. Timothy's Episcopal School, St. Mary's Regional Catholic School, and Mojave Christian.

Higher education institutions serving residents of the Town and the region include Victor Valley College in the City of Victorville, and Redlands University. In addition to its primary campus in

82 Op. Cit.

83 AVUSD Residential Development School Fee Justification Study, March 4, 2008.

84 Residential fees for additions are $2.97 per square foot. Commercial fees are the same for new construction and additions.

85 Personal Communication, David Reck, County of San Bernardino Facilities Planning, February 2008.

Redlands, the University offers evening courses at the AVUSD Academy for Academic Excellence (AAE) school site on Mana Road in Apple Valley.

Other Educational Initiatives

The AAE and Redlands are exploring the potential for future development of a four-year college or university at the campus. The college is currently envisioned as a partnership between several colleges and universities in the region and would focus on providing teacher education and credentialing. This initiative is still in the exploratory stage.

The Town is also considering the possibility of offering a branch of the San Bernardino County Museum within Apple Valley. The Museum is located in Redlands and is a regional cultural and natural history museum with branches at historic sites in Yucaipa, Colton, Chino, Rancho Cucamonga and Daggett. Housing collections focusing on anthropology, biological and geological science, and history, the Museum offers special programs and events for families, school children, and scout troops.

2. Impacts

At build out, the proposed General Plan and annexation areas is expected to result in the construction of approximately 63,749 dwelling units of which it is assumed that 36,619 will be single-family units and 27,130 will be multi-family units. Based on AVUSD student generation factors by grade level and type of residential development, the following table provides an estimate of total student enrollment at build out of the General Plan area.

Table III-53
Potential School Enrollment at General Plan and Annexation Build Out

Grade Level	Potential Build Out Units	Student Generation Rate	Build Out Enrollment
K-5			
Single-Family	36,619	0.2401	8,792
Multi-Family	27,130	0.1826	4,954
6-8			
Single-Family	36,619	0.1418	5,193
Multi-Family	27,130	0.0743	2,016
9-12			
Single-Family	36,619	0.1838	6,731
Multi-Family	27,130	0.0816	2,214
		TOTAL	**29,899**

Based on Student Generation Rates, Apple Valley Unified School District Residential Development School Fee Justification Study, March 4, 2008.

Table III-53 provides a benchmark for estimating future student enrollment using both existing and potential new dwelling units to calculate build out enrollment. It assumes a moderate rate of development. Actual student enrollment figures will be based on actual development that occurs

in the future, as regulated by the General Plan. However, as the table demonstrates, implementation of the General Plan has the potential to generate a substantial increase in student enrollment in public schools and thereby have a significant impact on AVUSD schools in the area. The State-mandated funding mechanism that AVUSD uses provides for the District to receive developer fees for school construction.

Annexation 2008-001 and 2008-002

The AVUSD District boundaries include the two proposed annexation areas, and AVUSD will provide public education services and facilities to those areas. Build out of the proposed annexation areas is expected to result in development of 4,236 dwelling units, of which 722 will be single-family and 3,513 will be multi-family. It should be noted that all of these units will be developed in Annexation Area 2008-001, since based on land use designations in Annexation Area 2008-002, build out of that area will be for Planned Industrial uses only.

The following table provides an estimate of future school enrollment at build out of the proposed annexation areas.

Table III-54
Potential School Enrollment at Build Out of Annexation No. 2008-001 and 2008-002

Grade Level	Potential Build Out Units	Student Generation Rate	Build Out Enrollment
K-5			
Single-Family	722	0.2401	173
Multi-Family	3,513	0.1826	642
6 - 8			
Single-Family	722	0.1418	102
Multi-Family	3,513	0.0743	261
High School			
Single-Family	722	0.1838	133
Multi-Family	3,513	0.0816	287
		TOTAL	**1,598**

Based on Student Generation Rates, Apple Valley Unified School District Residential Development School Fee Justification Study, March 4, 2008

The estimated student enrollment figure shown on Table III-54 includes students in existing and future dwelling units. Further, this estimate is included in the total shown on Table III-53, which estimates build out population of the General Plan area and the annexations. Since new development will occur over time, student populations are also expected to increase gradually, and are therefore not expected to significantly impact AVUSD schools. AVUSD facilities planning provides for new school sites as population within the District increases, based on tract map approvals within the Town. Further, AVUSD will continue to receive developer's impacts

fees for residential, commercial and industrial development. While these measures are expected to minimize impacts to AVUSD schools, mitigation measures are set forth below to ensure that any potential adverse effects to public schools are reduced to less than significant levels.

Calculation of potential developer impact fees would require site-specific development data that is not available at this level of analysis, particularly as the fees are periodically adjusted. However, fees are expected to be substantial and will assist AVUSD in off-setting impacts of new development on District schools.

3. Mitigation

The following mitigation measures shall be implemented to ensure that impacts to schools in the Apple Valley Unified School District are reduced to less than significant levels.

1. Statutory school mitigation fees for residential and commercial development shall continue to be assessed to developers.

2. Should developers in the General Plan study area use Mello-Roos or other types of public facilities financing districts, AVUSD shall be included in discussions to determine how the developer may cooperate with the District in its funding mechanism. The following alternatives are available to AVUSD to mitigate significant impacts to District schools:

    - Leroy F. Green State School Building Lease-Purchase Law: Under an agreement between the school district and the State of California, this Act provides for construction, reconstruction or replacement of school facilities by the State Allocation Board. Districts with 1) substantial enrollment in year-round schools, 2) the ability to raise a percentage of project costs, and 3) opening a new facility as a year-round school receive first priority for future State funding.

    - Lease-Purchase Arrangements: Lease-purchase agreements may be made between school districts and private builders of portable classrooms, as authorized under Sections 39240 and 39290 of the State Education Code. Under this method, school districts can also finance capital outlay. Lease-purchase agreements also provide the benefit of offering long-term financing without the need for voter approval of special taxes or benefit assessments.

    - Developer Fees: Assembly Bill 2926 (Chapter 887) was approved by the State Legislature in 1986, authorizing school districts to assess development fees to fund school construction or reconstruction. Currently these fees are $3.60 per square foot of residential construction and $0.47 per square foot of commercial construction. Under Government Code Section 53080, proof of compliance with the school district's resolution may be required prior to issuance of building permits.

    - Mello-Roos Community Facilities Act: Government Code Section 55311, et. seq., establishes provisions for this funding option. In order to benefit from this Act, a

school district is responsible to initiate proceedings to declare itself a "Community Facilities District" (CFD), which is defined as a government entity created to perform specific activities within set boundaries. It provides for the CFD to purchase, construct or rehabilitate real or tangible property with an estimated useful life of five years or longer.

Mitigation Monitoring/Reporting Program

A. The Town of Apple Valley shall continue to confer and consult with the Apple Valley Unified School District to monitor public schools in the General Plan area to ascertain whether and to what extent the following occur: overcrowding, security issues, low performance on standardized tests, and other adverse impacts on District schools.
Responsible Parties: Planning Division, Town Council, Apple Valley Unified School District

B. The Town shall continue to cooperate with Apple Valley Unified School District to ensure the collection of statutory developer impact fees.
Responsible Party: Planning Division

Libraries

1. Existing Conditions

The Newton T. Bass Apple Valley Library, part of the San Bernardino County Library System, is a 19,142 square foot facility located adjacent to Town Hall off of Dale Evans Parkway. The library provides Apple Valley residents access to over 20,000 hardcopy books as well as to an online database containing electronic periodicals, magazines and encyclopedias. The library offers a number of programs and community events including resources for illiterate and visually impaired residents, the LITE program for younger children, the Kids and Crafts program for children ages 5 to 12, and programs geared towards teens. Adult programs include the free literacy program, book and poetry clubs, and volunteer opportunities. [86]

The County Master Library Facility Plan (2001)[87] indicates that the desirable size of a public library in the County system within communities with populations of between 35,000 and 100,000 persons is 0.5 to 0.6 square feet per capita. For libraries across the United States, it estimates the average at 0.46 square feet per capita. Based on the Town's current estimated population of 70,092, the public library in Apple Valley provides approximately 0.27 square feet of library space per capita. The County Plan further indicates that additional library funding would be needed to meet a standard of 0.5 to 0.6 square feet per capita, and addresses expansion of the library in Apple Valley to provide facilities consistent with the national average, approximately 0.45 square feet per capita.

86 Personal Communication, Cheri Cervantes, Apple Valley Library References, February 12, 2008.

87 "San Bernardino County Library Master Facility Master Plan," prepared by PROVIDENCE Associates, December 2001.

Library facilities may require expansion to meet future demand as the Town's population increases. The Town and the County of San Bernardino monitor library circulation data and plan for expansion of services and facilities as needed. Currently there is no indication that the library in Apple Valley is over-utilized or unable to meet the demand generated by residents.

2. Impacts

Based on provision of library facilities at a standard of 0.45 square feet per capita, as planned for in the County Library Master Facilities Plan, and a General Plan and annexations build out population of 194,931, an approximately 87,719 square foot facility will be needed to serve the build out population.

Annexations 2008-001 and 2008-002

At build out the proposed annexation areas are expected to have a population of 4,236, all of which will occur within Annexation 2008-001. Based on the standard of 0.45 that is indicated in the County's Master Plan, the build out population of the annexation areas would be adequately served by approximately 1,906 square feet of library facilities. It should be noted that this population is included in the total General Plan build out population and therefore provision of library services is also accounted for therein.

Development facilitated by the General Plan and the proposed annexations is expected to occur gradually and will therefore not result in immediate impacts to County library services. The Town and the County will need to continue to monitor growth in this area to ensure that adequate library services are available to serve the build out population within the annexation area.

Without mitigation, impacts associated with build out of the proposed General Plan and annexations are expected to be significant.

3. Mitigation

The following mitigation measures will ensure that impacts to libraries are reduced to less than significant levels.

1. The Town and the County of San Bernardino shall, by continuing to monitor and evaluate library usage rates and the level of service provided at County libraries in the General Plan area, determine the need for additional services and facilities.

2. In order to determine appropriate mitigation fees necessary to provide adequate library services, the Town shall continue to consult and coordinate with San Bernardino County, and consider the addition of library facilities to Developer Impact Fees in the future.

Mitigation Monitoring/Reporting Program

A. The Town and County shall regularly monitor utilization of the County library facilities in Apple Valley to determine needs and ensure provision of essential adequate library services to local residents.
Responsible Parties: Town Manager, County Librarian

Law Enforcement

1. Existing Conditions[88]

The Town of Apple Valley contracts with the San Bernardino County Sheriff's Department for law enforcement services within the Town limits. The Sheriff also currently patrols both annexation areas.

The Apple Valley Police Department is located in the Apple Valley Civic Center at 14931 Dale Evans Parkway in Apple Valley. There is also an un-staffed substation used for report writing and other administrative tasks located at 21989 Outer State Highway 18.

Staffing at the Apple Valley Police Department currently consists of 49 sworn personnel and 14 civilian/general employees, six of whom are qualified to perform non-suspect-involved crimes or calls for service. The Department has set a target ratio of 1 deputy per 1,500 residents.

2. Impacts

Implementation of the proposed General Plan and annexations are expected to result in a total build out population of approximately 194,931 residents. To maintain the target ratio of 1 deputy per 1,500 residents at General Plan build out will require a total of 130 deputies, which is an increase of 81 deputies as compared with current staffing levels. This will require a significant increase in the number of deputies and level of police protection afforded to the residents of the Town. An increase in the number of deputies, associated staff, equipment, and patrol vehicles could result in substantial costs to the Town. However, the demand for additional police protection services will increase gradually, and an increase in Town revenue is also expected with General Plan build out. Actual demand for police protection will be dependent upon future levels of development.

3. Mitigation Measures

1. New development projects shall be reviewed by the Sheriff's Department to ensure the Department's ability to provide adequate police protection. New developments shall comply with established Sheriff's Department standards.

[88] Personal communication, Trish Hill, Apple Valley Police Department, November 24, 2008.

2. The Town shall continue to monitor Town population and Sheriff's Department staffing levels to insure that sufficient levels of police protection are afforded.

Mitigation Monitoring/Reporting Program

A. The Sheriff's Department shall monitor calls in the planning area. The Town shall annually review response times and police activity to ensure adequate protection.
Responsible Parties: Sheriff's Department, Town Manager.

Fire Protection

1. Existing Conditions[89], [90]

The Town of Apple Valley receives fire protection services from the Apple Valley Fire Protection District (AVFPD). AVFPD is an independent District that serves the Town and unincorporated areas of San Bernardino County. The District's approximately 206 square mile service area extends easterly from the Mojave River as far as the dry lakes toward Lucerne Valley.

District Staffing
The District currently has 20 paid-call, 5 part-time, and 54 career (paid, full-time) staff. Of these staff, 50 are currently assigned to the seven stations within the District:

- Station No. 331 at 22400 Headquarters Drive has 12 staff, and is equipped with a Type-1 engine, a Type-2 water tender, and a medium-level rescue vehicle.
- Station No. 332 at 18857 Highway 18 has 9 staff. Equipment includes a Type-1 engine and a Type-3 engine.
- Station No. 333 at 20604 Highway 18 is staffed with private ambulance company personnel.
- Station 334 at 12143 Kiowa Road has 9 staff, a Type-1 engine, and a Type-3 engine.
- Station No. 335 at 21860 Tussing Ranch Road is staffed by paid-call staff only. This means that staff members are alerted via pager to calls within the response area. The station is equipped with a Type-1 engine and a Type-3 water tender.
- Station No. 336 at 19235 Yucca Loma Road has 6 career and 10 paid-call staff, and is equipped with a rescue squad vehicle, a Type-1 engine, a Type-4 engine, an Incident Command bus, an Incident Support unit and a Type-2 truck.
- Station No. 337 at 19305 Jess Ranch Parkway was added in October 2007. Staffing has been expanded, as of April 2008, from 2 to 4 staff members. The station is equipped with a Type-4 Medic Patrol, a Hazmat Trailer, and a Reserve Squad.

AVFPD and the Town are considering construction of an eighth fire station on approximately 12 acres at the northwest corner of Johnson Road and Navajo Road in north Apple Valley. AVFPD

[89] Personal communication, Cindy Serrano, Apple Valley Emergency Services, January – May 2008.
[90] Personal communication, Luann Hopkins, Apple Valley Fire Protection District, February – July 2008.

has indicated that it expects to relocate fire training classes from Victor Valley College to the new station, if developed.

The AVFPD maintains a mutual aid agreement with other agencies in the region, including the City of Victorville, San Bernardino County, and the Bureau of Land Management. A joint dispatch center is located in Victorville and serves the mutual aid agencies.

Standards and Response Times
The AVFPD has established a desired staffing ratio of approximately 1 full-time fire personnel per 1,500 persons. With a current population of 70,092 in the Town, the current staffing level meets and slightly exceeds the desired staffing ratio.

The District's desired response time is 6 minutes. Currently, the District averages a response time within the Town limits of 6 minutes 25 seconds.

District Rating
The Insurance Service Office (ISO), which provides rating and statistical information for the insurance industry in the United States, has developed a rating scale to assess community's fire protection services. The ratings are based on a community's fire suppression delivery system, dispatch, fire department equipment, staff and distribution, and water supply. This scale is used to determine insurance rates, and ranges from Class 1 (best) to Class 10 (worst). The AVFPD is currently rated "Class 4."

2. Impacts

Build out of the proposed General Plan and annexation areas is estimated to result in a population of approximately 194,931 residents. This increased population would increase demand for fire protection services including personnel, equipment, and facilities. In outlying or previously undeveloped areas, new fire hydrants and the extension of water mains may also be required. Costs associated with the provision of new fire facilities and equipment, as well as the infrastructure to deliver adequate fire flows, can be significant and the need for these facilities should be thoroughly assessed as build out occurs.

Based on the AVFPD desired ratio of 1 full-time personnel per 1,500 population, at buildout of the General Plan there would be 130 full-time fire personnel on staff. This represents an increase over current staffing that is commensurate with projected population growth in the planning area.

Annexations 2008-001 and 2008-002

At build out the two annexation areas will be developed with additional residential, commercial and industrial uses that will result in increased demand for fire protection services. Based on the desired ratio cited above, at build out these areas will require 9 full-time fire personnel. This is included in the General Plan build out staffing figure cited above.

Without mitigation, build out of the General Plan will result in significant impacts associated with the provision of fire protection services. Mitigation is set forth below to reduce these impacts to less than significant levels.

3. Mitigation

The following mitigation measures will reduce impacts associated with provision of fire protection services to less than significant levels.

1. The Town shall continue to coordinate closely with the Apple Valley Fire Protection District to assure the timely expansion of facilities and services.

2. The Town and Apple Valley Fire Protection District shall continue to enforce fire codes and other applicable standards and regulations as part of building plan review and conducting building inspections.

3. Industrial facilities that involve the storage of hazardous, flammable or explosive materials shall be sited so as to ensure the highest level of safety in strict conformance with Uniform Fire Code and other applicable codes and regulations.

4. The Apple Valley Fire Protection District shall continue to review new development proposals and evaluate project plans to assure that it can provide adequate fire protection.

5. The Town and Apple Valley Fire Protection District shall coordinate with the Apple Valley Ranchos Water Company, Golden States Water Company, and all other water purveyors serving the General Plan and annexation areas, to ensure adequate water supplies and pressure for existing and proposed development.

Mitigation Monitoring/Reporting Program

A. Apple Valley Fire Protection District shall review all development plans prior to issuance of building permits to ensure that development complies with Town and District standards.
Responsible Parties: Planning Division, Apple Valley Fire Protection District

Health Care Services

1. Existing Conditions

The St. Mary Medical Center is a 186-bed hospital, and the largest health care facility in the Town. It is located at 18300 Highway 18 in Apple Valley. The approximately 90-acre campus provides acute, general, medical-surgical, and intensive care, and includes a 24-hour emergency room and a variety of other in- and out-patient medical services. The current facilities, encompass approximately 215,000 square feet, including offices. The hospital is currently designated as a Level III trauma care center, which is the lowest level of trauma care. Near-term

(5-year) plans include construction of new acute care facilities with the intention of attaining Level I trauma care status.

The hospital has also purchased lands in Victorville and plans to break ground for facilities there within approximately three years. Located within the Apple Valley Regional Commercial Corridor, this planned 733,500 square-foot facility will include a 120-bed, 100,000 square-foot general acute-care hospital, a convalescent care facility, medical office buildings, and office/professional buildings. A 99-bed sub-acute facility is proposed to be developed adjacent to the hospital. [91] The hospital maintains backup facilities such as diesel-powered generators and food and water stockpiles, as well as a decontamination tent. Its role as a critical facility in the event of an emergency is further discussed in the Emergency Preparedness Element of the General Plan.

Other Medical Facilities in Apple Valley

There are a number of private practice physician's offices and clinics in the Town, including Choice Medical Group, Formula Medical Group and All Points Medical Group. There is one urgent care center in Apple Valley. Dr. Mike's Walk-In Clinic at 12413 Navajo Road is affiliated with the Choice Medical Group.

There are also psychiatric and rehabilitation facilities available to high desert residents, although many located in other high desert communities in the region. Within Apple Valley, Desert Behavioral Health is a private family counseling/behavioral health services practice located at 16195 Siskiyou Road. Desert Behavioral Health provides therapeutic groups and classes to individuals, families, children and couples.

The County of San Bernardino High Desert Juvenile Detention and Assessment Center (HDJDAC) is located at 21101 Dale Evans Parkway. Opened in 2004, the 200-bed facility is a short-term residential facility wherein short-term juvenile offenders can receive special programs and public schooling while awaiting hearing before a judge.[92]

Several residential senior care facilities are located in Apple Valley and provide services ranging from independent to assisted living facilities and skilled nursing care. Some facilities also offer specialized care for persons with Alzheimer's or other forms of dementia.

Other Medical Facilities in the Region

There are two other hospitals in the vicinity of the General Plan area, the Victor Valley Community Hospital, located approximately 5 miles west of Apple Valley, and the Desert Valley Hospital, located approximately 10 miles to the southwest. Victor Valley Community Hospital, licensed for 115 beds, includes 24-hour/7-day a week emergency services and an on-site heliport. Desert Valley is licensed for 83 beds. Both centers include acute care hospitals.

91 Town of Apple Valley, http://www.applevalley.org/pgs/market_profile.asp, accessed November 24, 2008.

92 Personal Communication, Robert Suchomel, St. Mary Medical Center, January 18, 2008.

Currently, injured persons requiring Level I care are transported to the Loma Linda Medical Center, approximately 51 miles from Apple Valley. Loma Linda has 900 beds and is currently the only Level I trauma center for Inyo, Mono, San Bernardino, and Riverside counties.

2. Impacts

All health care facilities inside and outside the planning area may be impacted by build out of the General Plan and annexations, and should continue to plan for regional growth. The planned St. Mary Medical Center facility in Victorville is expected to substantially contribute to the provision of acute-care and other general medical-surgical services to residents and visitors to the General Plan area and the region. Further, other health care providers such as Victor Valley Community Hospital and DVMC are also expected to continue to expand to maintain adequate service as needs are identified.

3. Mitigation

Local and regional medical care facilities are privately operated and will continue to plan for growth. Therefore, no mitigation measures are necessary.

Electricity

1. Existing Conditions

Southern California Edison (SCE) provides electrical service to the General Plan area. SCE has four major electric transmission corridors in the region, each with 115kV lines. Power from these lines is provided to businesses, industrial plants, institutions and residences in the planning area via distribution facilities and circuits ranging from 33kV to 6.9kV. There are three SCE substations in Apple Valley, with voltages of 33kV to 115kV.[93] All new electric lines of 34.5kV or less in Apple Valley are undergrounded, in compliance with Town Ordinance 14.28.020. SCE is conferring with the Town to determine a location for a new planned 115/12kV substation to serve newly developing areas by year 2013.[94]

SCE plans for new infrastructure to serve existing and new development. Based on its current 10-year load forecasts, SCE expects to be able to provide electrical service to future development in the Town and Sphere of Influence, including the proposed annexation areas. Additional lines may be required to serve future growth.

As discussed in Section III-C, Air Quality, the South Coast Air Quality Management District (SCAQMD) estimates that residential customers use an average of 5,626 kilowatt ours per year. Estimated electricity usage rates by land use type are shown in Table III-56.

[93] Letter of correspondence, Nancy Jackson, Southern California Edison, July 25, 2008.

[94] E-mail correspondence, Nancy Jackson, Southern California Edison, November 10, 2008.

Table III-56
Estimated Electricity Usage Rates

Land Use	Annual Usage Rate
Residential	5,626 Kilowatt-hour/unit/year
Retail Commercial	13.55 Kilowatt-hour/square feet/year
Restaurant	47.45 Kilowatt-hour/square feet/year
Hotel/Motel	9.95 Kilowatt-hour/square feet/year
Office	12.95 Kilowatt-hour/square feet/year
Food Store	53.30 Kilowatt-hour/square feet/year

Source: SCAQMD Air Quality Handbook, Appendix to Chapter 9, April 1993.

2. Impacts

Based on annual usage rates shown above, build out of the proposed General Plan and annexation areas is estimated to result in electrical consumption of 1,807,978,891 kilowatt-hours per year (kwh/year). Of this amount, 353,683,749 kwh/year would for residential uses, 924,262,572 kwh/year would be for commercial uses, and 525,032,571 kwh/year would be used by industrial establishments.[95]

Annexations 2008-001 and 2008-002

At build out, Annexation 2008-001 is estimated to result in electrical consumption of 220,749,040 kwh/year, which includes existing and future residential, commercial and industrial development. Build out of Annexation No. 2008-002 is expected to consume approximately 68,799,547 kwh/year. These consumption estimates are included in the estimated consumption figure for the General Plan build out area cited above. As previously discussed, Annexation 2008-002 is designated for Planned Industrial uses only.

No development projects are immediately planned for construction in either annexation area, and therefore adoption of the implementation of the proposed annexations is not expected to result in an immediate increase in demand for electricity. The gradual expansion of SCE infrastructure will be required at build out of these areas, which will contribute to the regional demand for electricity.

Southern California Edison is a publicly traded company whose rate structure includes the expansion of facilities to accommodate growth. As development and build out of the General Plan and annexation areas is expected to occur over time, SCE's expansion plans will be adjusted to accommodate it. Impacts are therefore expected to be less than significant.

[95] Based on CEQA Air Quality Handbook, Appendix to Chapter, prepared by South Coast Air Quality Management District, April 1993. Please see Section III-H of this document for calculations.

3. Mitigation

As expansion of electrical service is expected to occur over time, and SCE's rate structure includes expansion of facilities, no significant impact is expected, and no mitigation measures are required.

Natural Gas

1. Existing Conditions

Southwest Gas Company provides natural gas service to the Town and its planning area through a series of pipelines of differing sizes and pressure capabilities. Transmission, supply, and distribution lines provide service to most portions of the Town and its Sphere of Influence.

Natural gas is delivered to the area through high-pressure facility corridors located at Central Road-Quarry Road to Ottawa Road; Thunderbird Road-Central Road to Highway 18 and Quantico Road; Ottawa Road-Central Road to Kiowa Road; Del Oro Road-Kiowa Road to Tussing Ranch Road; Del Oro Road-Kiowa Road to Joshua Road; Bear Valley Road-Kiowa Road to the Mojave River; and Apple Valley Road-Bear Valley Road to Yucca Loma Road. This high-pressure system consists of a combination of 4-inch, 6-inch, 8-inch, and 12-inch high-pressure lines that operate at 240 psig. They use 36-inch lines with pressure levels ranging from 400 to 700 pounds per square inch (psi). The pressure is reduced at different limiting stations, which then direct the gas to distribution lines. Distribution lines are 2 to 8 inches in diameter, with pressure levels ranging from 175 to 400 psi, and are located within most public right-of-ways. The pressure is reduced again at regulator stations, which transfer natural gas to distribution lines for transportation to homes and businesses. Distribution lines are 2 to 4-inch diameter steel or plastic pipes that operate at 45 to 55 psi.[96]

Natural gas is not currently provided in some areas within the service area; these include those without existing facility extensions, undeveloped areas, or extreme rural areas. Southwest Gas Company has indicated that it will accommodate new development in the planning area by working closely with developers to build extensions for build out areas. Where natural gas services and facilities are not available, propane is utilized as an alternative source of fuel.

The average household in Southwest Gas Company's service area for Apple Valley is expected to consume approximately 6,665 cubic feet of natural gas per month, as shown in the following table.

[96] Personal communication, Kevin Lang, Southwest Gas, April 2008.

Table III-57
Natural Gas Consumption Factors

Land Use	Monthly Use Rate
Single Family Residential	6,665.0 cf/unit/month
Multiple Family Residential	4,011.5 cf/unit/month
Retail/Shopping Center	2.9 cf/sq.ft./month
Office	2.0 cf/sq.ft./month
Hotel/Motel	4.8 cf/sq.ft./month
Industrial	4.8 cf/sq.ft./month

Note: Industrial usage factor used is equivalent to the highest commercial usage factor provided by SCAQMD.
Source: South Coast Air Quality Management District Air Quality Handbook, Appendix to Chapter 9, April 1993.

2. Impacts

At General Plan build out, the planning area is expected to contain approximately 36,619 single-family dwelling units, 27,130 multi-family dwelling units, 51,860,766 square feet of commercial space, and 281,188,992 square feet of industrial space.

Using the factors described in Table III-57, above, single-family units will use approximately 244,065,635 cubic feet per month (cf/month), and multi-family units will use approximately 108,831,995 cf/month.

Commercial use will consume approximately 145,002,703 cf/month, while industrial use will consume about 281,188,992 cf/month. Total development at General Plan build out is projected to consume about 779,089,325 cubic feet per month. This figure represents both existing and future development in the General Plan and annexation areas. Future levels of development, individual project designs, and the effectiveness of energy-conserving measures will be the determining factors in actual consumption of natural gas.

Annexation 2008-001 and 2008-002

The implementation of Annexation 2008-001 will facilitate residential, commercial and industrial development that will result in increased natural gas consumption. Based on the factors for these uses cited above, it is estimated that all development in the annexation area will consume approximately 76,209,944 cubic feet per month. Future industrial development in Annexation 2008-002 is expected to result in consumption of approximately 36,846,619 cubic feet per month of natural gas.

Consumption estimates for the annexation areas are accounted for under the General Plan build out figures cited about. New facilities, including natural gas distribution lines, will need to be constructed to serve new development in the annexation areas. This development is expected to build out gradually over time. Further, Southwest Gas coordinates closely with the Town to ensure the adequate provision of natural gas facilities and services to new development within

the SWG service area. Nonetheless, the Town and SWG will need to monitor growth in these areas to ensure that these services can be extended in a timely manner to serve new development.

SWG's rate structure includes the expansion of facilities to accommodate growth. As development and build out of the General Plan and annexation areas is expected to occur over time, SWG's expansion plans will be adjusted to accommodate it. Impacts are therefore expected to be less than significant.

3. Mitigation

As expansion of natural gas service is expected to occur over time, and SWG's rate structure includes expansion of facilities, no significant impact is expected, and no mitigation measures are required.

Telephone, Internet and Television Service

1. Existing Conditions

Telephone and high-speed internet services are provided in the area by Verizon. Verizon facilities in the planning area include a standard telephone network comprised of copper lines. Verizon's fiber optic network (FiOS) is available within the Town's limits and transmits high-speed Internet service and high-definition television. Verizon serves business clients in Apple Valley with point-to-point data transmission services via data service transmission lines (DS3) or T1 high-speed data transmission lines.[97]

In most areas of Apple Valley, Charter Communications also provides telephone service, high-speed Internet and cable television. Charter facilities in the planning area include approximately 446 miles of coaxial cable, of which about 65% is aerial and approximately 35% is underground. Bandwidth speeds range from 550 megahertz (MHz) to up to 820 MHZ in some parts of Charter's service area. Charter also has approximately 380 miles of fiber optic network within several high desert communities, including Apple Valley.[98]

2. Impacts

Build out of the General Plan will result in increased demand for telephone, Internet and television services and thereby to facilities and equipment owned and maintained by Verizon and Charter Communications. Future development is expected to require expansion of services to areas not currently serviced. It is expected that impacts to the ability of Verizon and Charter Communications to provide service to the planning will not be significant.

97 Personal Communication, Paul Elsebusch, Verizon, April 9, 2008.

98 Personal Communication, Sandra Magana, Charter Communications, May 29, 2008.

Annexations 2008-001 and 2008-002

Development facilitated by these annexations is expected to result in construction of additional residences, as well as additional commercial and industrial development. This development is expected to occur gradually; nonetheless, it will increase the demand for additional telephone, Internet and television services. Both Verizon and Charter Communications plan for extension of infrastructure throughout the region, based on future development. Implementation of the proposed annexations is not expected to result in significant impacts to their facilities or equipment, nonetheless, these service providers will need to monitor growth trends in their service areas to ensure the orderly and efficient of services and facilities.

Both Verizon and Charter incorporate expansion into their rate structure to accommodate growth. As development and build out of the General Plan and annexation areas is expected to occur over time, their expansion plans will be adjusted to accommodate it. Impacts are therefore expected to be less than significant.

3. Mitigation

As expansion of telephone service is expected to occur over time, and Verizon's and Charter's rate structure includes expansion of facilities, no significant impact is expected, and no mitigation measures are required.

Domestic Water Services

1. Existing Conditions

There are several water purveyors responsible for providing domestic water to the Town of Apple Valley and areas within its Sphere-of-Influence. The Apple Valley Ranchos Water Company serves approximately 19,000 customer connections, or approximately 80% of residential, commercial, industrial and institutional development in the Town. Golden States Water Company provides service to approximately 2,500 active connections in the Town and its Sphere-of-Influence. Several other smaller water purveyors also provide water to within the General Plan area.

Apple Valley Ranchos Water Company (AVWRC)[99]
AVWRC provides domestic water to its customer base in the Town from 23 wells. AVRWC has a total groundwater production capacity of approximately 37.79 million gallons per day (MGD). The AVRWC water system includes approximately 400 miles of water lines ranging from 4 inches to 20 inches in diameter, and approximately 11 MG of elevated storage capacity distributed over 15 pressure zones.[100]

[99] Apple Valley Ranchos Water Company Pressure Zone Discussion, prepared for Terra Nova Planning and Research for the Apple Valley General Plan Update by Apple Valley Ranchos Water Company, April 2008.

[100] "Apple Valley Ranchos Water Company Pressure Zone Discussion," prepared by Apple Valley Ranchos Water Company, 2008.

Golden State Water Company

As noted above, Golden State Water Company serves approximately 2,500 active service connections within an approximately 4 square mile area in the General Plan area, which includes areas within the Town's corporate limits and in the Sphere-of-Influence. [101]

Neither of the two annexation areas is currently located within a service area served by a local water purveyor. Water users in both annexation areas utilize domestic water from private wells or from storage tanks filled with water deliveries from private haulers. This is further addressed under Impacts and Mitigation, below.[102]

2. Impacts

As discussed in Section III-I, Water Resources/Quality, build out of the proposed General Plan and annexations will result in water demand associated with increased residential, commercial, industrial and other types of development, such as open space amenities, street rights-of-way, etc. This increased demand has been estimated based on water consumption factors from a variety of sources. These include, but are not limited to, historical water use for residential development in AVWRC's service area. Based on these factors, General Plan build out is estimated to generate water demand of 95,999 acre-feet per year for all types of development.

Development facilitated by General Plan build out will increase the cumulative impact of urban development to groundwater supplies in the region, and will reduce the amount of potable groundwater in storage. These increases will occur gradually as development takes place in the region. Section III-I provides a more thorough discussion of impacts to water resources and quality.

Annexations 2008-001 and 2008-002

The same factors used to estimate water consumption associated with General Plan build out have been used to calculate water consumption in each of the annexation areas. As shown in Section III-I, at build out it is estimated that residential, commercial, industrial and other development in Annexation 2008-001 will result in water demand of 6,476 acre-feet per year. Industrial development in Annexation 2008-002 is estimated to result in demand of 1,290 acre-feet per year.

Since these areas are not currently served by local water purveyors, implementation of the annexations will require the extension of infrastructure to provide domestic water service to future development. This is expected to occur over time as development takes place. The Town and applicable water purveyors will need to monitor growth in these areas and plan for extension of future infrastructure. Appropriate mitigation is set forth below.

[101] E-mail Correspondence, Perry Dahlstrom, Golden State Water Company, August 21, 2008.
[102] Personal Communication, Jerry Bender, Apple Valley Ranchos Water Company, November 25, 2008.

Build out of the proposed General Plan and annexations will result in significant impacts to domestic water resources without mitigation (please also see Section III-I).

3. Mitigation

The following mitigation measures shall be implemented to reduce potential impacts associated with domestic water to less than significant levels.

1. All future development projects shall be subject to review by the Town and the applicable water purveyor to assess their potential impact on local groundwater supplies.

2. The Town and applicable water purveyor shall coordinate for the extension of infrastructure to serve future development in Annexations 2008-001 and 2008-002.

3. The use of drought tolerant landscaping shall be encouraged in public and private development.

4. Future development shall required to conform to standards set forth in Section 17921.3 of the Health and Safety Code, Title 20, California Administrative Code Section 1601(b), and applicable sections of Title 24 of the State Code. These measures include the installation of low-flush toilets, low-flow showerheads and faucets in all new construction.

Mitigation Monitoring/Reporting Programs

A. The Planning Division and Town Engineer shall review all development proposals for their potential to adversely affect water quality and quantity, and shall require that any potential significant impacts be mitigated prior to project approval.
Responsible Parties: Planning Division, Town Engineer, Apple Valley Ranchos Water Company, Golden State Water Company, other water purveyors.

Wastewater Collection and Treatment

1. Existing Conditions

Apple Valley owns, operates and maintains the local wastewater collection system. Wastewater facilities needed to serve the Town are identified in the Town's Sewer Master Plan (1993). This document is slated for an update within the next few years to ensure the system's adequacy to meet future needs of the Town's build out.

Currently the Town has force main lines and gravity sewer lines of from 6 inches to 24 inches in diameter that connect to regional intercept lines that convey wastewater to a wastewater treatment plant operated by the Victor Valley Wastewater Treatment Authority (VVWRA) in Victorville. Regional intercept lines, which are owned and maintained by VVWRA, are located along Dale Evans parkway, trending southeasterly along Stoddard Wells road to Victorville, as

well as from Nanticoke Road along Standing Rock Avenue and then along Highway 18 to the Town's western boundary.[103]

The VVWRA wastewater treatment plan is located at 20111 Shay Road in Victorville. It has a design and current treatment capacity of 18 MGD; on a daily basis, the plant averages treatment of 13 million gallons.[104]

Approximately 30% of development in the Town is currently connected to sewer facilities.[105] Costs associated with transport of wastewater from many areas of the Town to the VVWRA have been cost-prohibitive. The Town and VVWRA have identified the need for sub-regional wastewater treatment plants to serve existing and future development but there is no specified schedule for their construction.

The Town adopted a Sewer Connection Policy in January 2006 that requires new single-family subdivisions with lots of less than one acre, and within one-half mile of existing sewer infrastructure, to connect to the Town sewer system; or where development occurs more than one-half mile from existing sewer lines, to install a dry sewer system on-site. Subject to Town and/or California Regional Water Quality Control Board (CRWQCB) approval, compliance with the Town's Sewer Connection Policy may also be obtained through construction of an interim holding tank system or a community septic system, both of which are designed as sewage collection and treatment systems located within the developments they serve. New users connecting to sewer facilities are subject to a sewer connection fee collected by the Town and remitted to VVWRA.

Tertiary Treated Water

Currently there is no tertiary treated water available for irrigation within the Town. The Town and VVWRA have discussed improvement plans to provide reclaimed water for use within the Town, and such facilities are expected to be constructed pending funding approval by VVWRA[106].

2. Impacts

Development facilitated by build out of the General Plan and annexation areas will increase demand on existing wastewater collection and treatment facilities. It is estimated that domestic wastewater flows average approximately 100 gallons per capita per day. Applying this factor to the estimated build out population of 194,931, wastewater generation in the General Plan and annexation areas would be approximately 19,493,069 gallons per day.

This increase in wastewater generation and demand for collection and treatment facilities is significant when compared with the current level of service, in that it will exceed current

[103] Town of Apple Valley Sewer System Map, prepared by So and Associates Engineers, Inc., October 29, 2007.
[104] Personal communication, Sandra Perea and Gilbert Perez, VVWRA, October 14, 2008.
[105] Personal Communication, Rodger Lopez, Town of Apple Valley Public Works Division, April 21, 2008.
[106] Personal communication, Sandra Perea and Gilbert Perez, VVWRA, October 14, 2008.

treatment capacity at the VVWRA treatment plant in Victorville. This estimate assumes that all new residential construction in the Town will be connected to sewer facilities.

Development in the General Plan and annexation areas will occur gradually over time, giving the Town and VVWRA the opportunity to plan for increased development and bring additional treatment capacity on-line. Nonetheless, they will need to continue to monitor growth trends in the planning area to ensure the adequate provision of wastewater treatment facilities and to secure funding for their construction. Future development connecting to sewer facilities will continue to be subject to connection fees.

Annexation 2008-001 and 2008-002
Build out of the proposed annexation areas will result in additional demand for wastewater collection and treatment facilities. Based on the factor used above, Annexation No. 2008-001 is expected to result in generation of 1,323,750 gallons of wastewater per day. This figure is accounted for under the estimated wastewater generation figure cited for General Plan build out, above.

New development is not expected to occur immediately in the annexation areas, and the Town and VVWRA will monitor growth to ensure adequate wastewater treatment capacity to serve development that is connected to sewer collection facilities in these areas as well as throughout the General Plan area.

3. Mitigation

1. To the greatest extent feasible, all new development shall connect to the existing wastewater treatment collection system, or otherwise comply with the Town's Sewer Connection Policy.

2. The Town shall cooperate and coordinate with VVWRA to ensure that there are adequate wastewater collection and treatment facilities to serve development in the General Plan study area.

3. The Town shall continue to confer and coordinate with VVRWA to secure funding for sub-regional wastewater treatment facilities to serve development in the Town.

4. The Town shall continue to confer and coordinate with VVWRA to secure funding for tertiary treated water facilities to serve development in the Town.

Mitigation Monitoring/Reporting Program

A. The Town Planning and Public Works Divisions shall confer and consult with Victor Valley Waste Reclamation Authority to implement Town-wide wastewater collection and treatment facilities and service.
Responsible Parties: Planning Division, Public Works Division, Victor Valley Waste Reclamation Authority

Solid Waste Management

1. Existing Conditions

The Town of Apple Valley contracts with Burrtec Waste Industries of Fontana, California for the collection and disposal of solid waste. Burrtec provides weekly curbside pick-up of recyclable materials for residential, commercial and industrial development. Solid waste collected in the planning area by Burrtec is hauled to the Victorville landfill, approximately 12 miles to the northwest and is a part of the San Bernardino County landfill system.

The operating permit for the Victorville landfill allows for a maximum of 3,000 tons a day. Currently, it receives an average of 900 tons per day. Receipts in first quarter 2007 reflected higher averages of approximately 1,401 tons per day, which decreased in first quarter 2008 to 1,293 tons per day. This decrease over the past year is likely due to slow downs in the housing and construction markets.

In 2006, commercial sources generated approximately 43,382 tons of solid waste at the Victorville landfill annually, while residential sources generated about 25,479 tons. Based on estimates prepared in June 2008, the remaining capacity of the site is estimated at 82 million cubic yards. The County has acquired additional acreage at the landfill to expand capacity. Based on this expansion, the Victorville landfill is estimated to have a closing date of 2047.[107]

The Victorville landfill accepts non-hazardous industrial wastes. Hazardous industrial waste is collected by private contractors and disposed of elsewhere by County-approved hazardous waste disposal firms. Disposal of hazardous waste is coordinated through the County Fire Department. Disposal of such wastes has commonly taken place at Cattleman's Hill in central California. Hazardous waste and hazardous waste disposal is discussed in further detail in Section III-G, Hazards and Hazardous Materials.

Source Reduction and Recycling

In 1989, the Integrated Waste Management Act (AB 939) was passed by the State of California. The objective of the bill was to reduce the amount of solid waste being generated throughout the state. The legislation required that each city and county enforce programs that would reduce, recycle, and compost 50 percent of its solid waste by the year 2000. According to the California Integrated Waste Management Board, recycling efforts resulting from the enactment of this legislation save enough energy annually to power 1.4 million California homes, reduce water pollution by 27,047 tons, save 14 million trees, reduce air pollution by 165,142 tons, and reduce greenhouse gas emissions by an amount equal to taking 3.8 million passenger cars off the highway.[108]

AVCO, a hauling division of Burrtec Waste Industries, Inc., provides weekly curbside pick-up of recyclable materials for residential, commercial and industrial development. It transports and

[107] Personal Communication, Diana Torres, San Bernardino County Solid Waste Management, December 3, 2008.
[108] National Recycling Coalition's Environmental Benefits Calculator using California data from 2001studies by UC Berkeley and the National Recycling Coalition.

recycles materials at its materials recovery facility located in Victorville, discussed below. Burrtec has significantly reduced the amount of solid waste disposed of within the planning area through the operation of a curbside recycling program. The program allows for a weekly collection of recyclable materials including glass, aluminum, and newspaper. Based on Department of Public Works records, in 2006, Burrtec collected approximately 68,861 tons of recyclable materials from sources in the Town, 43,382 tons of which came from commercial sources, and 25,479 tons from residential sources.[109]

The Town is part of the Zero Waste Communities of San Bernardino County (ZWC), a collective effort by 16 townships and cities in the County to educate residents on ways to reduce, reuse and recycle to extend the lives of the County's landfills. Recycling services also address issues of sustainability and global warming by resulting in energy and resources conservation.

Greenwaste generated in the Town of Apple Valley is accepted at the California Bio-Mass composting facility on Shay Road in Victorville. The facility uses greenwaste for composting. The Victorville facility processes approximately 18,000 tons of greenwaste annually. Of this amount, approximately 1,771 tons were generated from sources in Apple Valley in 2006, and 925 tons in 2007. California Bio-Mass in Victorville has a daily processing capacity of 200 tons, and has a permitted expansion area for an additional 500 tons per day.[110]

Mojave Desert & Mountain Recycling Joint Powers Authority

The Town of Apple Valley is a member of the Mojave Desert and Mountain Recycling Joint Powers Authority, (JPA), a joint powers authority that oversees the solid waste contracts and facilities for its member cities and some unincorporated areas of San Bernardino County. Other jurisdictions that comprise the JPA include Adelanto, Barstow, Big Bear Lake, Needles, San Bernardino County, Twentynine Palms, Victorville and Yucca Valley. Formed in 1991 in response to the above-mentioned California's Integrated Waste Management Act of 1989, the JPA began coordinated efforts to divert waste from landfilling through recycling, composting, and waste reduction, and improve public awareness of environmental issues.

Materials Recovery Facility (MRF)

Offered as an alternative to landfill usage, the Victor Valley Materials Recovery Facility (MRF), co-owned by the Town of Apple Valley and the City of Victorville, receives all the commercial and residential recycling loads picked up in both jurisdictions. The facility was built in 1994 and underwent an extensive upgrade and modernization in 2006. Improvements included state-of-the-art optical sorting equipment, computerized controls, and several new conveyor systems, increasing the facility's processing capability to approximately 20 tons per hour. Materials received at the MRF are sorted, baled for shipment, and sold to various markets. Monies received from the sale of materials are applied to operational costs of the MRF. The facility processes over 710 tons of solid waste per week.[111] The MRF also includes a buy-back center for the

[109] E-mail Correspondence, Diana McKeen, Town of Apple Valley Municipal Services Division, March 24, 2008.
[110] E-mail Correspondence, Michael Hardy, California Biomass, May 29, 2008.
[111] Ibid.

public's recyclables, further encouraging efforts to decrease reliance on landfill disposal and provide alternative solid waste management practices.

Hazardous Waste

Hazardous wastes are generated by industrial, commercial, and household operations. Gas stations, dry cleaners, pest control companies, and other commercial operations produce small amount of hazardous waste. Limited quantities are also generated by the use of pesticides and fertilizers on agricultural lands and golf courses.

The County Fire Department coordinates and facilitates household hazardous waste disposal. Under the authority of the County Fire Department's Household Hazardous Waste program, the Town operates a collection center located at the Town's Public Works Yard at 22411 South Outer Highway 18. Materials accepted for disposal at this location include pesticides, wood preservatives and solvents, automobile batteries, and small electronic items such as television sets and computer monitors, as well as other materials. The center is open the first and third Saturdays of each month from 10:00 a.m. to 2:00 p.m. Approved County contractors categorize, sort, pack and haul wastes to approved facilities. Wastes are processed and packaged for off-site recycling or incineration, as applicable. Oil filters, oil, latex pain, antifreeze and batteries are among those items that are further recycled.

Small-scale generators of industrial hazardous wastes qualify for the County's "Conditionally Exempt Small Quantity Generators" (CESQGs) program. To qualify for the program, a business must generate less than 27 gallons or 220 pounds of hazardous waste, or 2.2 pounds of extremely hazardous waste, on a monthly basis. The San Bernardino County Fire Department will collect hazardous waste, or businesses can deliver waste to the County's collection facility, if such delivery can be accomplished safely and in compliance with all regulatory requirements. Wastes are then transported to a state-permitted processing facility located in San Bernardino and further recycled or incinerated.[112]

Hazardous waste from businesses that generate more than the threshold amounts is collected by private contractors collect for disposal by County-approved hazardous waste disposal firms in accordance with state and federal regulations for such waste. Disposal efforts for the generation of hazardous wastes are discussed in further detail in Section III-L, Hazards and Hazardous Materials.

2. Impacts

Implementation and build out of the proposed General Plan and annexations will increase the generation of solid waste and the need additional disposal sites. Burrtec Waste Industries plans on providing service to accommodate future development. Continued and increased recycling within the planning area will help lessen the impacts to regional landfills and assist with the

[112] Personal Communication, John Schwab, San Bernardino County Environmental Health Department, April 2008.

Town's compliance with AB 939. As shown in the following table, solid waste generation factors provided by the California Integrated Waste Management Board have been used in conjunction with the Apple Valley General Plan Land Use Plan calculations to project future solid waste generation at build out.

Table III-58
Estimated Solid Waste Generation for Apple Valley
General Plan Build Out

Land Use Type	Generation Rate[9]	Unit Type	Units (DU/Sq. Ft.)	Annual Tons of Solid Waste
Single Family[1]	2.0400	tons/unit/year	36,619	74,702.76
Multi Family[2]	1.1700	tons/unit/year	27,130	31,742.10
Office/Professional	0.0108	tons/sf/year	10,372,153	112,019.25
Hotel/Motel	0.0024	tons/sf/year	2,074,431	4,978.63
Retail/Commercial[3]	0.0024	tons/sf/year	39,414,182	94,594.04
Industrial	0.0108	tons/sf/year	58,581,040	632,675.23
Total				**950,712.02**

Source: California Integrated Waste Management Board compilation of waste generation rates. Rates used are from Ventura County Solid Waste Management Department, "Guidelines for Preparation of Environmental Assessments of Solid Waste Impacts", September 1992, and "DEIR for North Hills Development in Santa Clarita", December 1991.

Build out of the General Plan and annexation areas is expected to result in approximately 63,749 dwelling units, which includes both existing and potential residences. Of these, approximately 36,619 will be single-family units, and about 27,130 multi-family units. Build out could also result in up to 51,860,766 square feet of commercial development and 58,581,040 square feet of industrial development. This level of development could generate a total of approximately 950,712 tons of solid waste per year, or 2,603 tons per day (including both existing and future development). This estimate assumes moderate densities at build out, and actual waste generation may vary, depending on future levels of development.

None of the land uses proposed within the planning area are expected to create high quantities of solid waste or severe hazardous waste conditions. Nonetheless, the project will increase the volume of solid waste generated, and waste management will need to carefully monitor these levels to assure safe and cost-effective disposal of the Town's solid waste.

Annexation 2008-001 and 2008-002

Future development facilitated by Annexation 2008-001 will include residential, commercial and industrial development. Based on the solid waste generation factors shown in Table III-58, this development has potential to generate approximately 118,744 tons of solid waste at build out.

Industrial development in Annexation Area 2008-002 is estimated to generate approximately 82,905 tons of solid waste at build out.

Estimates of solid waste generation for the two proposed annexation areas are included in those for build out of the General Plan area described above. These impacts will occur over time as development occurs. Further, actual solid waste generation will depend on actual development.

3. Mitigation

Source reduction of solid waste is the most effective way of lessening the impacts to landfills. The following measures will aid in reducing the amount of waste generated, thereby mitigating the impacts to landfills and promoting the Town's compliance with AB 939.

1. The Town and its solid waste disposal service provider shall continue to consult and coordinate to maintain and surpass, where possible, the provisions of AB 939 by means of expanded recycling programs to divert resources from the waste stream that can be returned to productive use.

2. To the greatest extent feasible, the Town shall encourage commercial and industrial establishments to minimize the amount of packaging and potential waste associated with product manufacturing and sales.

3. Recycling provisions for single-family and multi-family residential dwelling units shall continue to be included in the Town's solid waste disposal contracts.

4. Recycling provisions for commercial and business establishments should include separate recycling bins. Items to be recycled at commercial establishments may include white paper, computer legal paper, cardboard, glass, and aluminum cans.

5. As landscaping debris comprises a significant percentage of residential solid waste, developers shall contract for professional landscaping services from companies which compost green waste. Several landscaping companies in the Apple Valley/Victorville area are currently composting for waste disposal. On-site composting and grass recycling (whereby grass clippings are left on the ground) is also encouraged wherever possible.

Mitigation Monitoring/Reporting Program

A. The Town Planning Division and Building and Safety Division shall review project development plans and confer and coordinate with project developers to assure the provision and maintenance of recycling containers that correspond with current Town programs and those planned in the future.
Responsible Parties: Planning Division, Building and Safety Division, Burrtec Waste Industries, Inc.

N. Recreational Resources

Introduction

This section describes the existing condition of recreational resources within the planning area and vicinity. It analyzes the potential impacts of the General Plan and annexations on these resources. The Town of Apple Valley General Plan and the Apple Valley Parks and Recreation Services Master Plan have been used in researching and analyzing the project and its potential effects.

Thresholds of Significance/Criteria For Determining Significance

The following thresholds or criteria are derived from Appendix G of CEQA. The proposed General Plan will have a significant effect on recreational resources if it will:

a. Increases the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

b. Includes recreational facilities, or requires the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment.

1. Existing conditions

Local Recreational Resources

There are a wide variety of natural and man-made recreational resources in the Town of Apple Valley and vicinity.

Currently, the Town of Apple Valley has 346.87 acres of developed parkland that are open to the public, and provide a range of recreational amenities both locally, within neighborhoods and regionally, within the Parks and Recreation service boundary. There are seven Mini-Parks, two Neighborhood Parks, three Community Parks and two Special Use Parks in Town.

In November 2008, the Town Council announced that subject to the successful resolution of water rights issues, the Town will purchase the Apple Valley Country Club and open its facilities to the public. The country club includes an 18-hole golf course, lighted tennis courts, a pool, pro shop, sports bar, lounges and locker rooms, meeting and dining rooms and a banquet facility.

In addition, the Town has a further 65 acres of BLM and privately owned land for two parks that are approved within Specific Plans, but not yet developed: The Bridle Path Park and the North Pointe Park. The Town also owns a further 27 acres of land identified for park use, but not yet developed. Based on these holdings, the Town currently has 438.87 acres of developed or developable parklands.

A comprehensive, year round recreational program is offered by the Town, providing leisure time activities to all segments of the Apple Valley population. In 2007, the Town opened an amphitheatre and community swimming pool on the grounds of the Civic Center. The Town of Apple Valley and Sphere of Influence also have an integrated system of bicycle paths and equestrian trails.

In addition to the Town's parks, other recreational resources include the Mojave river-bottom and the Apple Valley Dry Lake designated open space areas. Various rock outcrops, knolls and riverside bluffs in the planning area are also designated open spaces that provide further recreational opportunity to the Town's residents and visitors.

Regional Parks

Regionally available recreational resources include Mojave Narrows Regional Park, the Desert Conservation Area, the San Bernardino National Forest, Rodman Mountains and Grapevine Canyon Recreational Areas, Deep Creek Hot Springs and the Stoddard Valley Open Area.

Quimby Act

The Quimby Act of 1975 authorizes a City or Town to adopt a local ordinance that can require dedications of land or in-lieu fees for development of new, or rehabilitation of existing, park facilities. The fees and land shall be given to the local public agency that provides park and recreation services. As set forth in the Town of Apple Valley Development Code Section 9.71.055(C), the Town has adopted a park standard of five acres of parkland per 1,000 persons.

2. Project Impacts

Local Recreational Impacts

Implementation of the General Plan and annexation areas will result in the construction of an additional 38,824 residential units. At build out, the total number of dwelling units in the planning area is expected to be 63,749. The total build out population will be approximately 194,931. The Town has adopted a Town wide standard of 5 acres of parkland per 1,000 persons. Therefore, build out of the General Plan will require a provision of approximately 975 acres of parkland. The Town currently owns 438.87 acres of parklands. Therefore, in order to provide parks and recreational opportunities at the desired level of service, the Town will need to provide an additional 536.13 acres within the planning area prior to build out of the General Plan and annexation areas.

Build out of the General Plan could impact the Town’s recreational resources as it will introduce approximately 38,824 dwelling units and 194,931 new residents who will have a need for recreational opportunity. However, the impact on local recreational resources is expected to be reduced to less than significant levels by the development of additional parkland that will be required through implementation of the Quimby Act, which will require:

- In lieu fees for projects under 1 acre.
- Staff discretion of in lieu fees or dedications for projects of 1 to 2.5 acres.
- Dedication of park land for projects of 2.5 acres or more.

The fees and dedication of land are designed to mitigate the potential impacts to recreational resources generated by new development. To facilitate the acquisition of further areas of parkland the Town may, in addition to the Quimby Act, implement Development Agreements and/or Developer Impact Fees, as well as a range of other funding mechanisms, as described in detail in the Parks and Recreation Element of the General Plan.

Annexations 2008-001 and 2008-002

Build out of Annexation Area 2008-001 will result in 4,236 residential units. Based on an average household size of 3.125[113] persons, Annexation 2008-001 will have a build out population of 13,238. Build out of the area will require the provision of approximately 66 acres of Parkland to meet the recreational needs of the residents of Annexation 2008-001.

Annexation 2008-002 will have 7,676,379 square feet of industrial land uses at build out, and will have no residential component. As a result, this annexation area will not require parkland to accommodate residents.

3. Mitigation Measures

1. The Town will require developers to participate in the Town's parkland fee programs/Quimby requirements.

2. The Town will actively pursue a range of supplementary funding sources to acquire additional parklands.

Mitigation Monitoring/Reporting Program

A. The Town's approval process shall assure that Quimby fee requirements are met.
Responsible Party: Planning Division; Parks and Recreation Services

[113] Source: Terra Nova staff estimates based on land use tables provided by AIS and California Dept of Finance Average HH Size for San Bernardino County.

O. Transportation and Traffic

Introduction

This section describes existing transportation and traffic conditions within the planning area and the region, and analyzes the potential impacts of buildout of the proposed General Plan and annexations. It also presents the results of a traffic impact study prepared by Urban Crossroads, Inc.[114] for the General Plan, and sets forth transportation-related mitigation measures to effectively reduce traffic and circulation impacts to acceptable levels. The traffic impact study is included in Appendix F.

Thresholds of Significance/Criteria For Determining Significance

The following thresholds or criteria are derived from Appendix G of the CEQA Guidelines, which are used to determine the level of potential effect. Based on these thresholds, buildout of the proposed General Plan and annexations will have a significant effect on transportation and traffic if it:

a. Causes an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections);

b. Exceeds, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways;

c. Results in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;

d. Substantially increases hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);

e. Results in inadequate emergency access;

f. Results in inadequate parking capacity;

g. Conflicts with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

[114] Town of Apple Valley General Plan Circulation Element Traffic Study, prepared by Urban Crossroads, November 2008.

1. Existing Conditions

Factors that impact traffic conditions include not only the land use designations set forth in the proposed General Plan, which directly impact traffic conditions in the planning area, but also background traffic that results from land uses in other communities in the region. Therefore, the adequacy of the local transportation network is affected by decisions made by the Town of Apple Valley as well as by those of surrounding jurisdictions. A variety of other regional planning efforts may impact the circulation system in Apple Valley. These are further discussed below, along with current roadway projects that the Town is constructing or has recently completed.

Regional and Local Roadways

The circulation network in the Town currently is comprised of 500 miles of paved roadways on a one-mile grid framework. Approximately 80% of the roads in Apple Valley are local streets that serve existing residential neighborhoods. Other local roadways provide connection between areas of Town to larger roadways in the planning area.

The following describes major regional and local roadways in the planning area traffic circulation system.

Major Regional Roadways

The high desert region and the planning area are intersected by U.S. Interstate 15, a major trans-continental interstate highway that extends from southern California to the U.S.-Canadian border in Montana. I-15 runs southwest to northeast in the region and abuts a portion of the Town's northwestern boundary. The region and the planning area are also served by State Route 18 (Happy Trails Highway), which runs generally southeast to northwest through the Town, crossing the Mojave River as it exits the Town on the west.

I-15 and State Route 18 are identified as the only two regionally significant roadways in the Town by the San Bernardino Congestion Management Plan.[115]

U.S. Interstate 15

U.S. Interstate 15 constitutes a major transportation corridor and provides the high desert region and Apple Valley with inter-regional and inter-state access. It connects the high desert with Las Vegas, Salt Lake City and markets to the north. In the planning area, I-15 includes 3-lanes in each direction. There are two freeway interchanges in the planning area; these occur at Dale Evans Parkway and at Stoddard Wells Road.

State Route 18

As noted above, State Route 18 runs generally southeast-to-northwest in the planning area. In Apple Valley it is a 4-lane divided highway along which are situated substantial portions of the Town's existing commercial development, and pockets of residential development. It is designated a Divided Major Arterial Roadway in the Town's adopted General Plan.

[115] Ibid.

Major Local Roadways

The planning area is linked by a network of local roadways. Roadway functions, mobility and access are defined within a system of classifications, further discussed below.

Major roadways in Town include the following:

Dale Evans Parkway is a north-south roadway that is designated a Major Divided Parkway with a minimum 142-foot right-of-way from I-15 south to Thunderbird Road. It is the only road so classified in the General Plan area. South of Thunderbird Road is it is classified as a Major Road (minimum 104-foot of right-of-way). Currently it is a 2-lane undivided road from I-15 south to Otoe Road, and a 4-lane divided roadway between Otoe Road and State Route 18.

State Route 18 enters the Town at its eastern boundary and runs east-west to Navajo Road. From there it turns northwest and continues as "Outer State Route 18" in a generally southeast-northwest direction to the western limits of the Town. It is a 2-lane undivided roadway between Joshua Road and Central Road, and a 4-lane divided roadway through the remainder of Town. State Route 18 is signalized at its intersections with Central Road, Navajo Road, Dale Evans Parkway, Rancherias Road, Toa Road, Corwin Road, and Apple Valley Road, and left-turn channelization occurs at most of these intersections. It is classified a Major Divided Arterial roadway throughout the Town.

Bear Valley Road is an east-west roadway classified as a Major Divided Arterial. It intersects with State Route 18 easterly of the Town limits and spans the Town from east to west. Between the eastern boundary of Apple Valley and Central Road it is a 2-lane undivided highway, expanding to 4-lanes divided to Apple Valley Road. From there it becomes 6 lanes divided and crosses the Mojave River as it exits the Town at an all-weather crossing. Bear Valley is signalized with left-turn channelization at Central Road, Navajo Road, Kiowa Road, and Apple Valley Road. At Apple Valley there is also a designated right-turn-only lane. At Deep Creek Road there is left-turn channelization but no traffic signal.

Tussing Ranch Road is an east-west roadway that forms a portion of the Town's southern boundary. It is designated a Major Divided Arterial within the Town, and a major road easterly of the Town limits. It is a 2-lane undivided road in the Town. There is a stop sign controlling westbound traffic at the intersection of Tussing Ranch Road and Central Road.

Central Road is a north-south road that forms a portion of the Town's eastern boundary. It is designated a Major Divided Arterial south of Johnson Road. It is 2-lanes undivided throughout the Town, with the exception for one roadway segment just north of Cahuilla Road where it is a 3-lane undivided roadway. Central Road crosses the Mojave Northern Mining Railroad line at Quarry Road. There is an all-way stop at the intersection of Central Road and Waalew Road, and a traffic signal at the Central Road intersections with Yucca Loma Road and with Bear Valley Road.

Kiowa Road is a north-south street from Yucca Loma Road to the Town's southern boundary, and runs southwest to northeast from Yucca Loma, crossing State Route 18 and terminating at Navajo Road. Kiowa Road is classified as a Major Road between Bear Valley Road and Yucca Loma Road, and as a Major Divided Arterial south of Bear Valley Road. It is a 2-lane undivided road with a traffic signal and left-turn channelization at Bear Valley Road. A 4-way stop sign is located at the intersection of Kiowa Road and Nisqually Road.

Apple Valley Road runs north-south from its initiation point at Falchion Road south to State Route 18. It trends southwest to its intersection with Seneca Road, and thence north-south to the Town's southern boundary. Throughout most of the planning area Apple Valley Road is classified a Major Divided Arterial roadway. The Town recently completed widening of Apple Valley Road to its ultimate cross section of 2-lanes in each direction between State Route 18 and Yucca Loma Road. Currently Apple Valley Road is a 4-lane divided highway north of State Route 18, becoming 2-lane divided south of Seneca Road, and 2-lane undivided further south to and beyond its intersection with Yucca Loma Road, south to Sitting Bull Road. South of Sitting Bull Road it remains 2-lane undivided, then becomes 4-lane divided, and expands to 6-lanes divided at Bear Valley Road. South of Bear Valley Road it returns to a 4-lane divided roadway. Apple Valley road is signalized and left-turn channelization occurs at the following intersections: State Route 18, Yucca Loma Road, Sitting Bull Road, and Bear Valley Road.

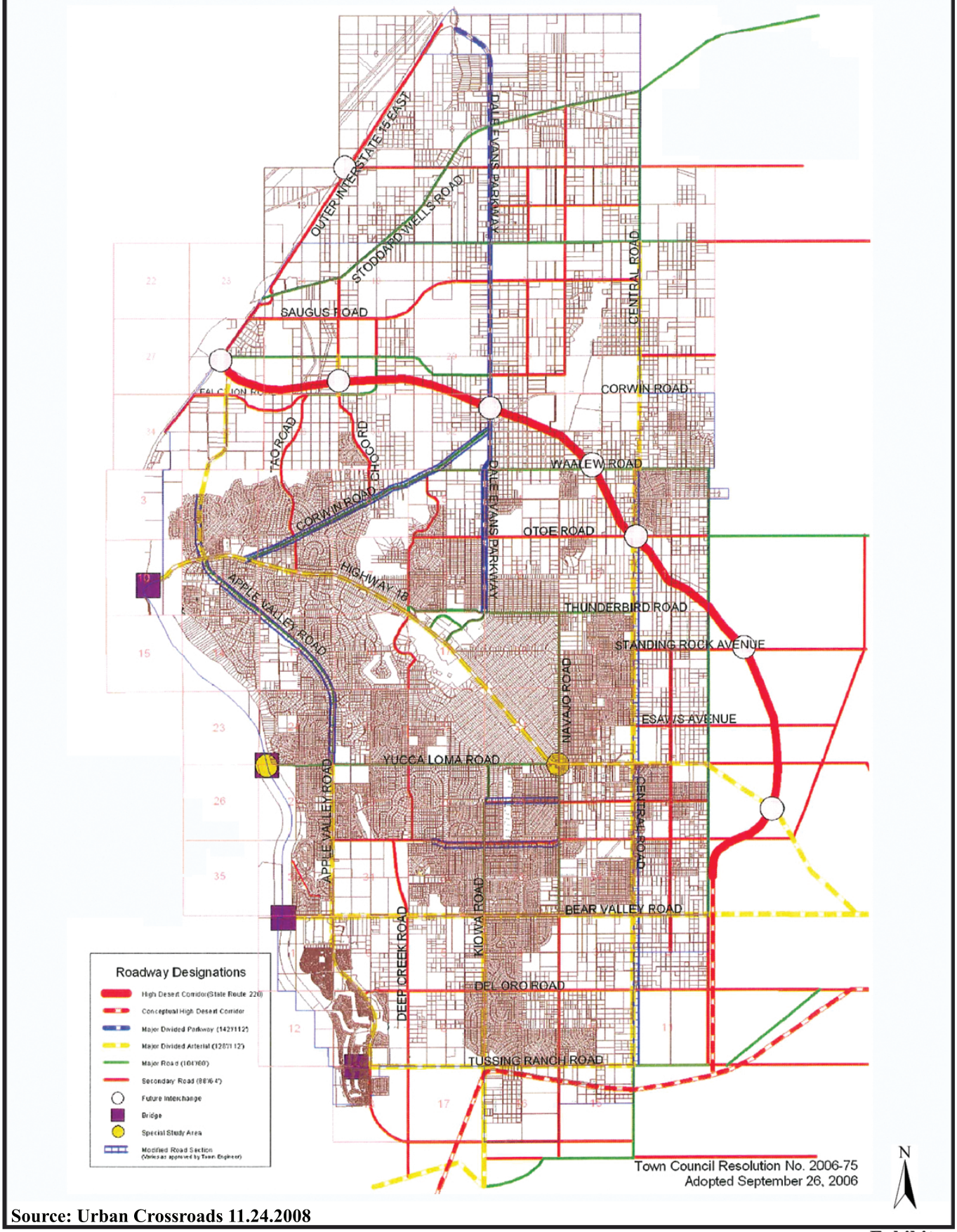
As described above, portions of Kiowa Road and Apple Valley Road are classified as Major Divided Arterial roadways in the planning area. Certain segments of these roadways are also classified as Major Roads (minimum 104 foot right-of-way). The following are also classified as Major Roads in the local circulation network: [116]

- Navajo Road (N-S)
- Joshua Road (N-S)
- Stoddard Wells Road (E-W)
- Johnson Road (E-W)
- Waalew Road (E-W)
- Thunderbird Road (E-W)
- Yucca Loma Road (E-W)

A number of secondary roads (minimum 88-foot right-of-way) in the Town connect major roads and serve to carry local traffic to larger streets.

Existing roadway through lanes and intersection controls are shown in the Traffic Impact Study in Appendix F of this EIR. Exhibit III-21 shows the currently adopted General Plan circulation plan in Apple Valley.

[116] N-S = North – South; E-W = East - West



Source: Urban Crossroads 11.24.2008

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Apple Valley General Plan Draft EIR
Adopted General Plan Circulation Plan
Apple Valley, California

Exhibit
III-21

Truck Routes

Based on the San Bernardino County Congestion Management Plan, there are two types of truck routes within the planning area: the National Network and the Terminal Access. I-15 is considered part of the National Network, which provides facilities for vehicles meeting specifications of the Surface Transportation Assistance Act (STAA)[117], including longer and wider vehicles such as semi trailers. The CMP identifies State Route 18 as a Terminal Access route, also providing access for STAA vehicles between designated National Network routes or to truck operating or freight origination, destination or handling facilities. In addition to those regional truck routes identified by the County of San Bernardino, key truck routes identified by the Town include Corwin Road, Navajo Road, Bear Valley Road, Yucca Loma Road, Central Road, Dale Evans Parkway, Waalew Road, Stoddard Wells Road and Apple Valley Road. Currently adopted truck routes in Apple Valley are shown on Exhibit III-22

Transportation Programs and Plans

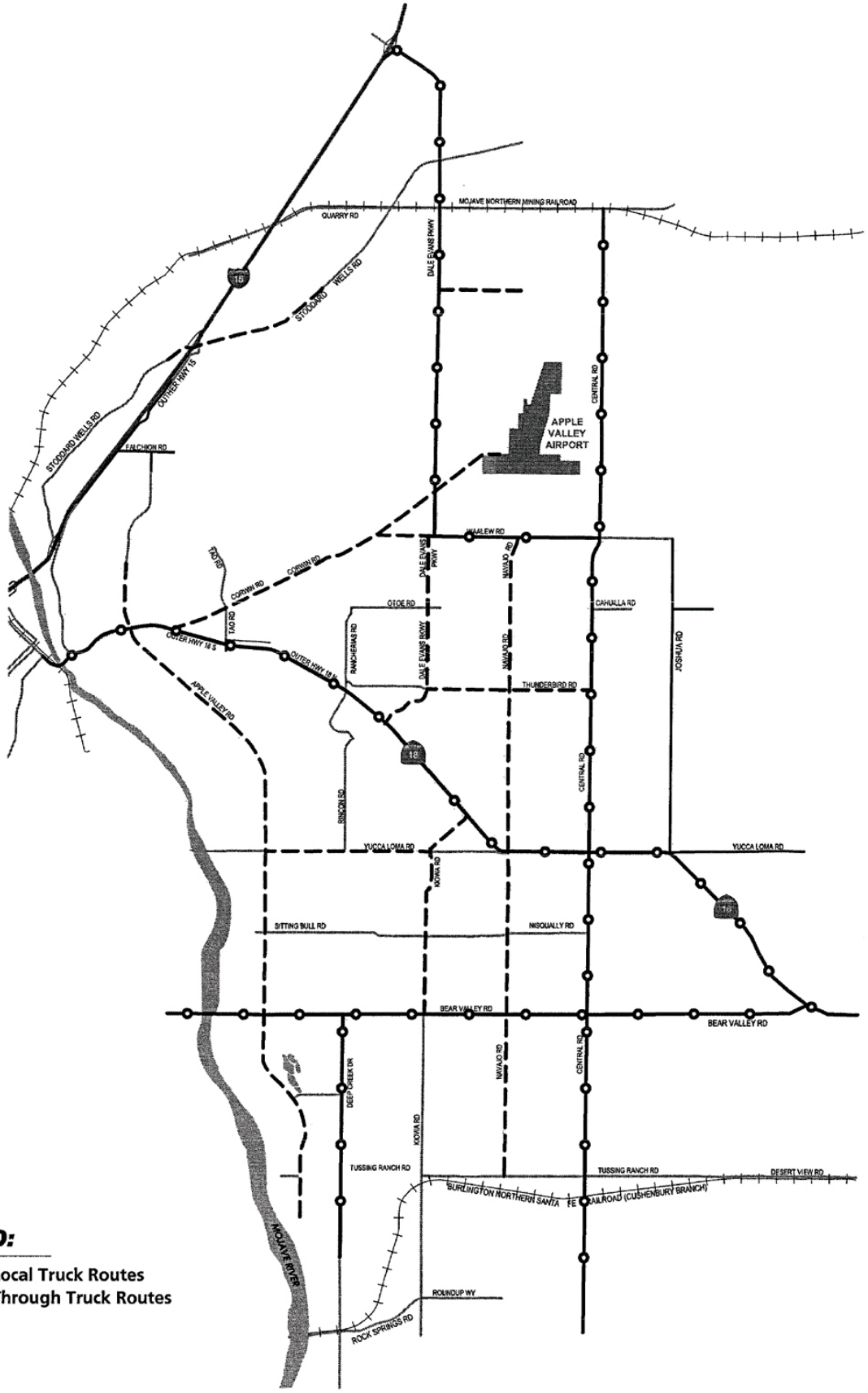
As previously noted, traffic conditions in the Town are affected not only by local policies but also by those of other jurisdictions and regional planning agencies. The following describes traffic programs and policies that may affect circulation in the General Plan area:

- The County of San Bernardino Congestion Management Plan (CMP): a State mandated program that is designed to promote effective growth management, and link transportation planning to land use and air quality issues.
- The County of San Bernardino General Plan Network: provides the policy framework for lands under the County's jurisdiction; it establishes roadway standards throughout unincorporated areas of the County.
- The Regional Transportation Plan (RTP): prepared by the Southern California Association of Governments (SCAG) to address transportation planning throughout its region, including San Bernardino County.
- The Victor Valley Area Transportation Study (VVATS): this study is currently being prepared to identify long-term regional roadway system needs in the Victor Valley.
- The High Desert Corridor (SR-220): this project is planned by California Department of Transportation (CalTrans); it will bisect Apple Valley, and ultimately provide access between the Victor Valley and Antelope Valley to the west. This is further discussed under Project Impacts, below.
- The Interstate 15/Nisqually Road Interchange: this project is proposed by CalTrans as a new east-west connection to the Interstate 15 freeway.
- Measure I: this measure was adopted by voter initiative; throughout San Bernardino County it is being implemented as a ½ cent sales tax, allocated specifically towards regional roadway improvement projects. In Apple Valley, 65% of the sales tax generated by Measure I is applied to regional roadways, 30% to local roadways, and 5% to transit projects.

[117] Section 405 of the Surface Transportation Assistance Act of 1982 (STAA), 49 U.S.C. 31105, as amended by section 1536 of the Implementing Recommendations of the 9/11 Commission Act of 2007, Pub. L. No. 110-53.

- SB 375 Sustainable Communities Strategies,: these strategies were adopted in 2008, and require that regional transportation agencies reduce vehicle miles traveled on RTP roadways through land use planning strategies that incorporate sustainable growth and reduce air emissions.

Locally, the Town is currently constructing two local roadway projects, and has recently completed a third. Those under construction include: 1) widening State Route 18 from the Narrows to Tao Road to improve the intersection of Apple Valley and State Route 18; and 2) construction of the Yucca Loma Bridge to four lanes, providing an additional Mojave River crossing into Victorville. A project that resulted in widening Apple Valley Road to its ultimate cross section has recently been completed.



Source: Urban Crossroads 11.24.2008

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Apple Valley General Plan Draft EIR
Existing Truck Routes
Apple Valley, California

Exhibit
III-22

Current Traffic Conditions

In order to document existing traffic conditions, and to evaluate future impacts to circulation in the planning area, a wide range of traffic data were collected and analyzed. As previously discussed, a technical analysis was conducted by Urban Crossroads, Inc. (please see Appendix F). The traffic study utilized data regarding traffic volumes and conditions in the planning area, including mid-block roadway segment counts and intersection turning movements.

Several methods are used to assess the effective operation of the circulation system. These include Levels of Service within intersections and at mid-block, as well as average daily traffic during peak morning and evening hours. These are further discussed below.

Levels of Service

Roadway capacity refers to the number of vehicles that pass through a roadway segment or intersection in a particular time period under prevailing conditions. It is determined by factors such as roadway surface conditions, lane widths, alignment, grade and intersection design. This capacity is characterized as "Level of Service" (LOS), which provides a qualitative means to measure the efficiency of traffic flow (mid-block travel), and/or quantitatively by the number of seconds of delay for a vehicle passing through an intersection. To describe roadway-operating conditions, LOS values are indicated over a range of alphabetical designations from "A" through "F." LOS A represents the best, free flow conditions, and LOS F indicates the worst conditions and system failure. Table III-59 describes the Level of Service designations.

Levels of Service are also sometimes represented as volume-to-capacity ratios, or vehicle demand divided by roadway capacity. Ratios closer to 0.00 indicate higher efficiency and better flow, and as the ratio approaches 1.00, roadway operations are defined LOS F, characterized by extreme traffic congestion.

Mid-block LOS is qualitative as opposed to quantitative, therefore the usefulness of LOS assignment for mid-block is limited to characterizing capacity, rather than determining actual volumes that a roadway segment can carry.

Table III-59
Roadway Level of Service Description

Level of Service	Quality of Traffic Flow
A	Free flow. Individual users are virtually unaffected by the presence of others in the traffic stream.
B	Stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver.
C	Stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream.
D	High-density but stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a generally poor level of comfort and convenience.
E	Operating conditions at or near the capacity level. All speeds are reduced to a low, but relatively uniform value. Small increases sin flow will cause breakdowns in traffic movement.
F	System failure; forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount that can traverse the point. Queues form behind locations.

Source: 2000 Highway Capacity Manual (HCM) (Transportation Research Board Special Report 209).

Intersection Capacity Analysis

Intersection capacities can be evaluated to gain a realistic picture of the maximum volume of traffic that can be accommodated on urban roadways. The Level of Service at an intersection is characterized by the quality of traffic flow and the length of delays. Intersections are generally the most constrained portion of the roadway network, and LOS is measured qualitatively by the average time of delay per vehicle at a signalized and unsignalized intersections. The following table defines intersection LOS.

Table III-60
Level of Service at Signalized and Unsignalized Intersections

	Average Total Delay Per Vehicle (Seconds)	
Level of Service	**Signalized**	**Unsignalized**
A	0 to 10.00	0 to 10.00
B	10.01 to 20.00	10.01 to 15.00
C	20.01 to 35.00	15.01 to 25.00
D	35.01 to 55.00	25.01 to 35.00
E	55.01 to 80.00	35.01 to 50.00
F	80.01 and up	50.01 and up

Existing Intersection Conditions

Service levels at intersections are of the highest concern. In coordination with the Town, 46 key intersections were identified and analyzed. These are illustrated on Exhibit III-23.

Existing 2008 peak hour traffic operations at intersections in the planning area have been assessed during morning and afternoon/evening (AM and PM) peak hours of traffic. This analysis yields intersection LOS data, as calculated using methodologies set forth in the San Bernardino County Congestion Management Program analysis. The analysis is also based on existing intersection geometrics and traffic control devices at the respective analysis locations.

The Town of Apple Valley has previously established a minimum intersection Level of Service (LOS) "C". However, as shown on Table III-61, below, the following eight (8) intersections are currently operating at LOS D, E or F during AM and/or PM peak hours:

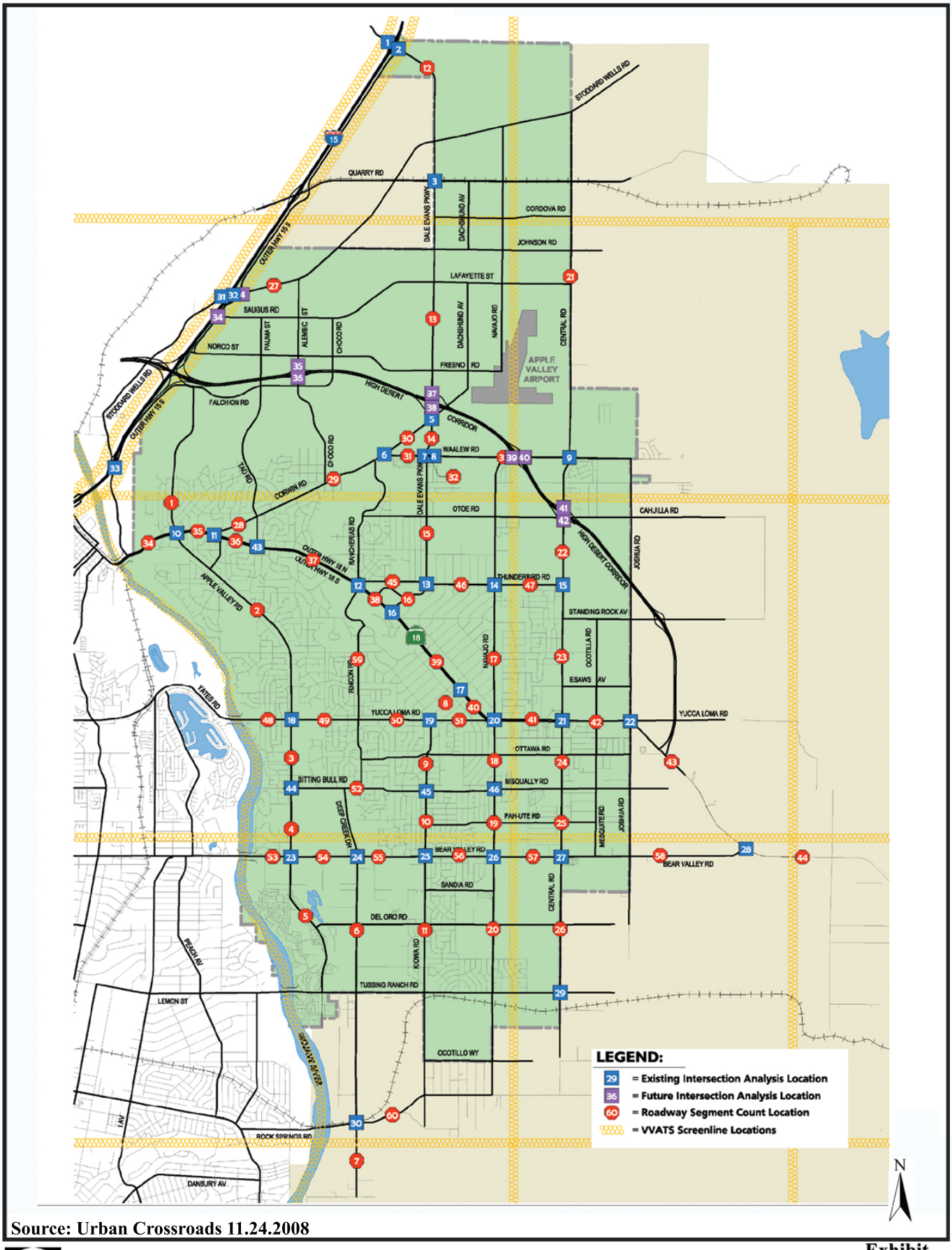
Apple Valley Road (NS) at:
- State Route 18 (EW) operates at LOS D in both the AM and PM peak hours
- Yucca Loma Road (EW) operates at LOS D in the PM peak hour
- Bear Valley Road (EW) operates at LOS D in the PM peak hour
- Sitting Bull Road (EW) operates at LOS D in both the AM and PM peak hours

Deep Creek Road (NS) at:
- Bear Valley Road (EW) operates at LOS F in both the AM and PM peak hours

State Route 18 (NS) at:
- Bear Valley Road (EW) operates at LOS D in the PM peak hour

Kiowa Road (NS) at:
- Sitting Bull Road (EW) operates at LOS E in the PM peak hour

Navajo Road (NS) at:
- Nisqually Road (EW) operates at LOS D in the AM peak hour



Source: Urban Crossroads 11.24.2008

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Apple Valley General Plan Draft EIR
Traffic Analysis Locations
Apple Valley, California

Exhibit
III-23

Table III-61
Existing 2008 Conditions
Intersection Operations Analysis Summary

Intersection		Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (sec.)		Level of Service		LOS Criteria
			Northbound			Southbound			Eastbound			Westbound							
No.	Name		L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	
1	I-15 SB Ramps (NS) at:																		C
	• Dale Evans Pkwy. (EW)	CSS	0	0	0	0.5	0	0.5	0	1	0	0	1	0	9.2	9.9	A	A	
2	I-15 NB Ramps (NS) at:																		C
	• Dale Evans Pkwy. (EW)	CSS	0.5	0	0.5	0	0	0	0	1	0	0	1	0	9.1	9.5	A	A	
3	Dale Evans Pkwy. (NS) at:																		C
	• Quarry Rd. (EW)	CSS	0	1	0	0	1	0	0	1	0	0	1	0	10.3	10.2	B	B	
5	Dale Evans Pkwy. (NS) at:																		C
	• Corwin Rd. (EW)	CSS	0	1	0	0	1	0	0	1	0	0	1	0	10.1	11.1	B	B	
6	Corwin Rd. (NS) at:																		C
	• Waalew Rd. (EW)	CSS	0	1	0	0	1	0	0	0	0	1	0	1	10.5	10.0	B	B	
7	Dale Evans Pkwy. (NS) at:																		C
	• Waalew Rd. West (EW)	CSS	0.5	0	0.5	0	0	0	0	1	0	0	1	0	10.4	13.0	B	B	
8	Dale Evans Pkwy. (NS) at:																		C
	• Waalew Rd. East (EW)	CSS	0	0	0	0.5	0	0.5	0	1	0	0	1	0	11.2	12.3	B	B	
9	Central Rd. (NS) at:																		C
	• Waalew Rd. (EW)	AWS	0	1	0	0	1	0	0	1	0	0	1	0	8.1	8.5	A	A	
10	Apple Valley Rd. (NS) at:																		C
	• State Route 18 (EW)	TS	1.5	0.5	1	1	1	1	2	2	1>>	1	2	1	37.3	40.8	D	D	

Table III-61
Existing 2008 Conditions
Intersection Operations Analysis Summary

Intersection		Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (sec.)		Level of Service		LOS Criteria
			Northbound			Southbound			Eastbound			Westbound							
No.	Name		L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	
11	Corwin Rd. (NS) at: • State Route 18 (EW)	TS	0	0	0	1	0	2>	1	2	0	0	2	1	11.9	8.1	B	A	C
12	Rancherias Rd. (NS) at: • State Route 18 (EW)	TS	1	1	0	1	1	1	1	2	1	1	2	1	34.9	25.8	C	C	C
13	Dale Evans Rd. (NS) at: • Thunderbird Rd. (EW)	AWS	1	1	1	1	1	1	1	1	1	1	1	1	12.3	11.4	B	B	C
14	Navajo Rd. at: • Thunderbird Rd. (EW)	AWS	0	1	0	0	1	0	0	1	0	0	1	0	9.4	10.3	A	B	C
15	Central Rd. (NS) at: • Thunderbird Rd. (EW)	CSS	0	1	0	0	1	0	0.5	0	0.5	0	0	0	13.2	11.7	B	B	C
16	Dale Evans Pkwy. (NS) at: • State Route 18 (EW)	TS	0	1	1	1	1	1	1	2	1	1	2	1	20.0	23.0	B	C	C
17	Kiowa Rd. (NS) at: • State Route 18 (EW)	TS	1	1	0	1	1	0	1	2	1	1	2	1	20.2	18.2	C	B	C
18	Apple Valley Rd. (NS) at: • Yucca Loma Rd. (EW)	TS	1	1	1	1	1	1	1	1	1	1	1	1	34.8	36.2	C	D	C
19	Kiowa Rd. (NS) at: • Yucca Loma Rd. (EW)	AWS	0	1	0	0	1	0	1	1	0	1	1	0	9.5	12.8	A	B	C
20	Navajo Rd. (NS) at: • State Route 18 (EW)	TS	1	1	1	1	1	1	1	2	1	1	2	1	19.8	20.9	B	C	C

Table III-61
Existing 2008 Conditions
Intersection Operations Analysis Summary

Intersection		Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (sec.)		Level of Service		LOS Criteria
			Northbound			Southbound			Eastbound			Westbound							
No.	Name		L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	
21	Central Rd. (NS) at:																		C
	• State Route 18 (EW)	TS	0	1	1	0	1	1	1	2	1	1	2	1	15.9	16.2	B	B	
22	Joshua Rd. (NS) at:																		C
	• State Route 18 (EW)	CSS	0	1	0	0	1	1	1	1	0	1	1	0	13.8	22.5	B	C	
23	Apple Valley Rd. (NS) at:																		C
	• Bear Valley Rd. (EW)	TS	2	2	1	2	1	2>	2	2	1	1	2	1>	33.0	35.5	C	D	
24	Deep Creek Rd. (NS) at:																		C
	• Bear Valley Rd. (EW)	CSS	0	1	0	0	0	0	0	2	1	1	2	0	80.0	--	F	F	
25	Kiowa Rd. (NS) at:																		C
	• Bear Valley Rd. (EW)	TS	1	2	1	1	2	1	1	2	1	1	2	1	36.8	38.8	D	D	
26	Navajo Rd. (NS) at:																		C
	• Bear Valley Rd. (EW)	TS	1	2	0	1	2	1	1	2	1	1	2	1	22.9	26.7	C	C	
27	Central Rd. (NS) at:																		C
	• Bear Valley Rd. (EW)	TS	1	1	1	1	1	0	1	1	1	1	1	1	25.7	24.9	C	C	
28	State Route 18 (NS) at:																		C
	• Bear Valley Rd. (EW)	CSS	1	1	0	0	1	0	1	0	1>>	0	0	0	8.3	28.9	A	D	
29	Central Rd. (NS) at:																		C
	• Tussing Ranch Rd. (EW)	CSS	0	1	0	0	1	0	0	1	0	0	1	0	10.0	9.8	B	A	
30	Deep Creek Rd. (NS) at:																		C
	• Rock Springs Rd. (EW)	TS	0	1	0	0	1	0	1	1	0	1	1	0	15.4	15.8	B	B	

Table III-61
Existing 2008 Conditions
Intersection Operations Analysis Summary

Intersection		Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (sec.)		Level of Service		LOS Criteria
			Northbound			Southbound			Eastbound			Westbound							
No.	Name		L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	
31	I-15 SB Ramps (NS) at:																		C
	• Stoddard Wells Rd. (EW)	CSS	0	0	0	0	1	0	0	1	0	0	1	0	8.7	9.2	A	A	
32	I-15 NB Ramps (NS) at:																		C
	• Stoddard Wells Rd. (EW)	CSS	0	1	0	0	1	0	0	1	0	0	1	0	9.4	11.3	A	B	
33	Outer Highway 15 (NS) at:																		C
	• Stodddard Wells Rd. (EW)	CSS	0	1	0	0	1	0	0	1	1	0	1	0	10.3	24.4	B	C	
43	Tao Rd. (NS) at:																		C
	• State Route 18 (EW)	TS	1	1	0	1	1	1	1	2	1	1	2	1	19.2	20.2	B	C	
44	Apple Valley Rd. (NS) at:																		C
	• Sitting Bull Rd. (EW)	TS	1	2	1	1	2	1	1	1	0	1.5	0.5	1	36.4	38.9	D	D	
45	Kiowa Rd. (NS) at:																		C
	• Sitting Bull Rd. (EW)	AWS	1	1	0	1	1	0	0	1	0	0	1	0	12.8	37.1	B	E	
46	Navajo Rd. (NS) at:																		C
	• Nisqually Rd. (EW)	TS	1	2	1	1	2	1	0	1	1	0	1	1	38.8	33.5	D	C	

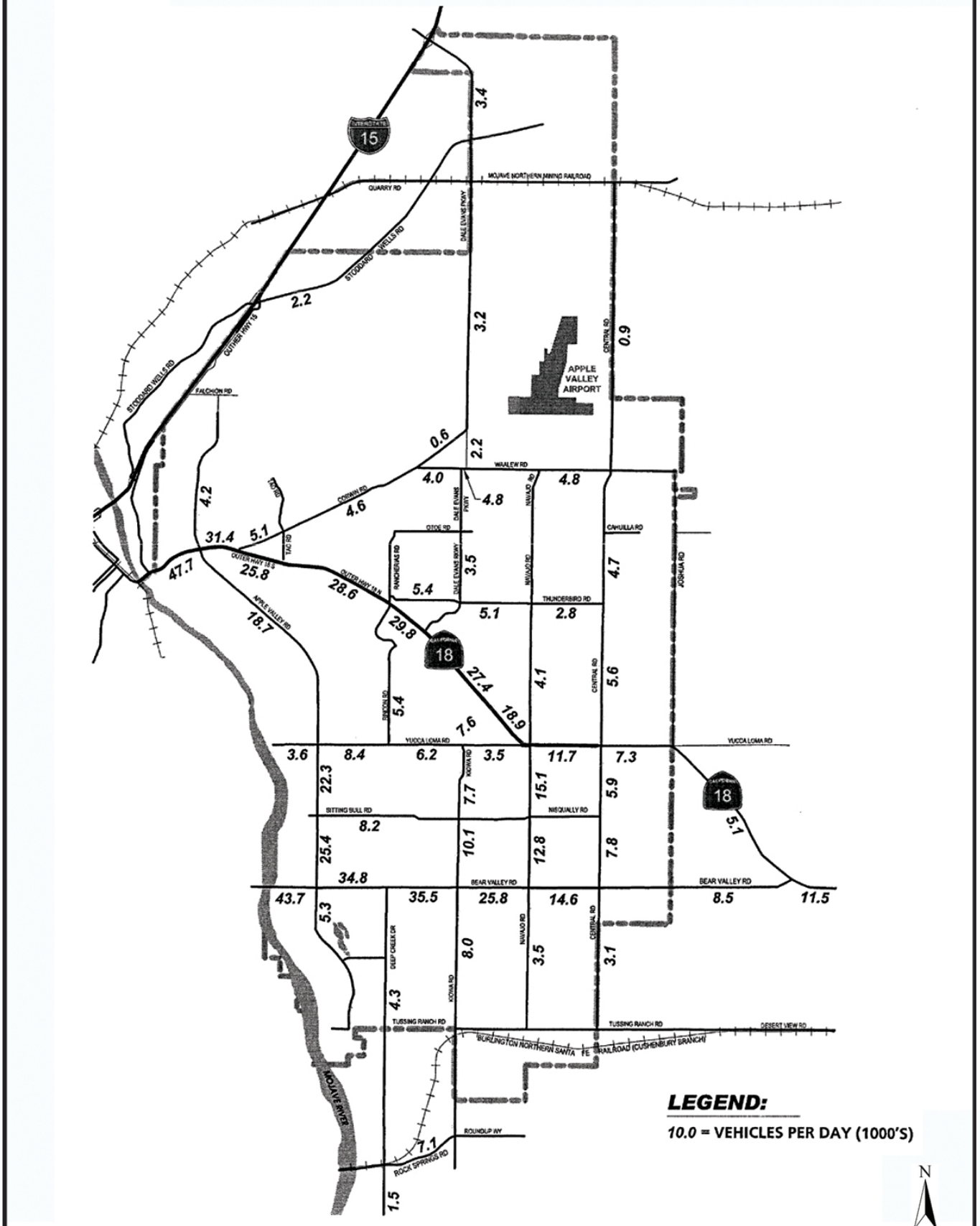
[1]When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right; >> = Free Right Turn Lane
[2]Delay and level of service calculated using the following analysis software: Traffix, Version 7.9 R3 (2008). Per the 2000
Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown.
CSS = Cross Street Stop; AWS = All Way Stop; TS = Traffic Signal

Average Daily Traffic

Existing 2008 ADT volumes in the planning area have been derived based on most current traffic data collected in 2008, or estimated based on 2007 counts. Where 2007 counts are used, they have been adjusted with an ambient growth rate for the study area. The ambient growth rate is estimated based on available historic traffic data for a selected roadway segment that is considered representative of typical traffic growth trends in the planning area. This analysis uses the roadway segment along State Route 18, east of Yucca Loma Road/Navajo Road. Traffic data was collected along this segment and used as a basis to estimate the rate of growth in traffic in the planning area between 2000 and 2006:

- 2000 Daily Traffic Volumes: 10,500 vehicles per day
- 2006 Daily Traffic Volumes: 13,000 vehicles per day
- Annual Growth between 2000 and 2006 = 2.97% (rounded to 3%)

Exhibit III-24 shows the existing 2008 average daily traffic (ADT) volumes in the study area.



Source: Urban Crossroads 11.24.2008

TERRA NOVA®
Planning & Research, Inc.

Apple Valley General Plan Draft EIR
Existing 2008 Average Daily Traffic
Apple Valley, California

Exhibit
III-24

Existing Roadway Classifications and Improvements

The following describes the adopted Town of Apple Valley General Plan roadway classifications, as illustrated on the currently adopted circulation plan in Apple Valley (please see Exhibit III-21).

The *Major Divided Parkway* has a minimum 142-foot right-of-way with as 20-foot median and 15 foot parkway on each side of the roadway. As previously noted, there is one roadway segment in Apple Valley with this classification: Dale Evans Parkway from I-15 south to Thunderbird Road.

Divided Major Arterials provide for travel from freeways to major and secondary arterials. They have a minimum of six lanes and a 128-foot right-of-way comprised of two ten-foot parking lanes and a twelve-foot wide continuous left turn lane or median strip. Major intersections are often signalized and parking is generally restricted at intersections. Divided major arterials must have curbs, gutters, and sidewalks. As noted above, there are a number of Divided Major Arterials roadway segments in Apple Valley. Examples include segments of Apple Valley Road (NS), State Route 18 (EW), and Bear Valley Road (EW).

Major Roads are used to transport traffic from freeways and Divided Major Arterials to Secondary Roads. Major Roads have a minimum 104-foot right-of-way and are comprised of at least four traffic lanes, two shoulders which may be used as parking or bicycle lanes, and a twelve-foot wide median strip or two-way left turn lane. Primary intersections are generally parking restricted and include traffic lights, and sidewalks are generally required. The following roadway segments are examples of Major Roads in Apple Valley: Kiowa Road (NS), Navajo Road (NS), and Stoddard Wells Road (EW).

Secondary Roads allow for connections between Major Roads, and provide local traffic with routes to larger streets. Secondary Roads have a minimum right-of-way of 88 feet. While they are required to include curbs and gutters in industrial areas in Apple Valley, these requirements may be waived in low-density residential areas. This is a common roadway classification in Apple Valley. As an example, the following are Secondary Roads in Apple Valley: Tao Road (NS), Mesquite Road (NS), Laguna Seca Drive (NS), and Nisqually Road (EW).

Local Industrial/Commercial Streets provide routes for increased trip generation associated with industrial areas, and larger turning radii for delivery trucks. These roadways have 66-foot rights-of-way.

Local Streets comprise the majority of roadways within residential neighborhoods in Apple Valley. They generally have a 60-foot right-of-way. Local streets provide direct entry to adjacent properties and are used to transport local traffic from these properties to roadways used for higher volumes and faster speeds. Local streets do not carry through traffic.

The currently adopted and proposed roadway classification cross sections are shown under Project Impacts on Exhibit III-26.

Roadways in Annexation Areas[118], [119]
Currently there is a small network of paved and unpaved roadways within the annexation areas. No major roadways occur in the annexation areas, although the are bordered by major roadways, including Dale Evans Parkway on the east side of Annexation 2008-001; and Central Road on the west side of Annexation 2008-002. These areas are currently within unincorporated San Bernardino County but are planned for under the Apple Valley General Plan. The following describes existing General Plan roadways that occur within the annexation areas.

Johnson Road is an east-west road that enters the planning area on the eastern boundary of Annexation Area 2008-002, extends across the northern portion of the Town, continues through Annexation Area No. 2008-001, terminating at Stoddard Wells Road. It is designated a Secondary Road.

Quarry Road is an east-west road that runs parallel to and north of Johnson Road. It originates easterly of the Town limits within Annexation Area 2008-002 adjacent to the Mojave Northern Railroad Line, continuing westerly through Annexation Area 2008-001. It crosses I-15 and continues west. It is designated a Secondary Road. It is a 2-lane undivided roadway.

Stoddard Wells Road runs through the northern portion of the planning area from the southwest to the northeast, entering the Town at an interchange with I-15. It intersects the southeastern quadrant of Annexation Area 2008-001 as a 2-lane undivided roadway and is designated as a Major Road in the adopted General Plan.

All Weather Crossings

In the event of an emergency, it is critical that access into and out of the area be available. Portions of the planning area and several local and regional roadway are located within the Mojave River floodplain, including portions of State Route 18, Rock Springs Road and Bear Valley Road. Rock Springs is an at-grade crossing and is frequently impassable during major storms. Both State Route 18 and Bear Valley Road at the Mojave River are all-weather crossings. As previously discussed, the Town is currently constructing an all-weather crossing at Yucca Loma Road. All bridges on Interstate-15 in the planning area are designed to withstand the 100-year flood and to have 2 feet of freeboard for the 50-year flood.[120]

[118] Exhibit 2, Planning Area Circulation, Apple Valley Community Issues Report, prepared by Terra Nova Planning and Research, Inc., October 2007.
[119] Exhibit 3-B, Existing Number of Through Lanes and Traffic Controls (North Study Area), Town of Apple Valley General Plan Circulation Element Traffic Study, prepared by Urban Crossroads, November 2008.
[120] Personal communication, Darin Cooke, Caltrans District 8, August 11, 2008.

Public Transportation Services

There are 16 regional bus routes operated by the Victor Valley Transit Authority (VVTA), of which three operate regularly in the planning area. The three dedicated routes in the planning area are:

- Route 40 (Apple Valley North);
- Route 41 (Apple Valley/Victorville);
- Route 43 (Apple Valley/Victor Valley College).

Existing and proposed bus routes in Apple Valley are shown on Exhibit III-30, below. The potential for the fixed route system to be augmented through route or point deviation with a specified distance of existing bus stops is further discussed under Project Impacts, below.

Apple Valley Airport

The Apple Valley Airport is a general aviation airport located in the northern portion of the planning area. It serves fixed wing aircraft and helicopters. Currently airport operations are generally limited to small, private aircraft and flight schools, although California Highway Patrol and the San Bernardino County Sheriff's Department share a hangar.[121] The airport operates approximately 103 flights daily, or 38,000 operations annually.

Facilities at the airport include two box hangars, two rectangular for multiple aircraft, seven sets of T-hangars, and 60 pilot-owned "portaport" hangars, which are now stationary. There are 50 tie downs. There are two runways: runway 18/36 is approximately 6,500 feet long by 150 feet wide, and runway 8/26 is approximately 4,100 feet long by 60 feet wide.

Rail Service

There are two rail lines in the planning area. The Mojave Northern Mining Railroad intersects the northern portion of the planning area and runs south of Quarry Road; it serves the existing Mojave Northern Mining Quarry that operates through both annexation areas, as well as within the Town. Approximately 2 to 4 train trips occur along this line daily.

A second rail line intersects a small portion of the Town limits, south of Tussing Ranch Road between Central Road and Kiowa Road. It serves mining operations to the east in San Bernardino County. Approximately one trip runs along this rail line per day.

Non-Motorized Transportation: Pedestrian, Equestrian and Bicycle Circulation

Planning for non-motorized access to schools, commercial services, workplaces and recreational facilities is supported by the General Plan. Therefore, it is important that the master planning of sidewalks, bicycle lanes, and off-street trails along major roadways in the community be

[121] Personal communication, Terry Stover, Apple Valley Airport, January 17, 2008.

considered in circulation analysis. Such dedicated facilities ensure safety and reduce or avoid potential conflicts between motorized and non-motorized users. Residential design should emphasize connectivity and ease of access within and between neighborhoods and services used by residents daily, such as schools, commercial establishments and other uses to maximize access by pedestrians, bikers and equestrian users, as well as to decrease vehicle trip length and volume.

Bike Paths

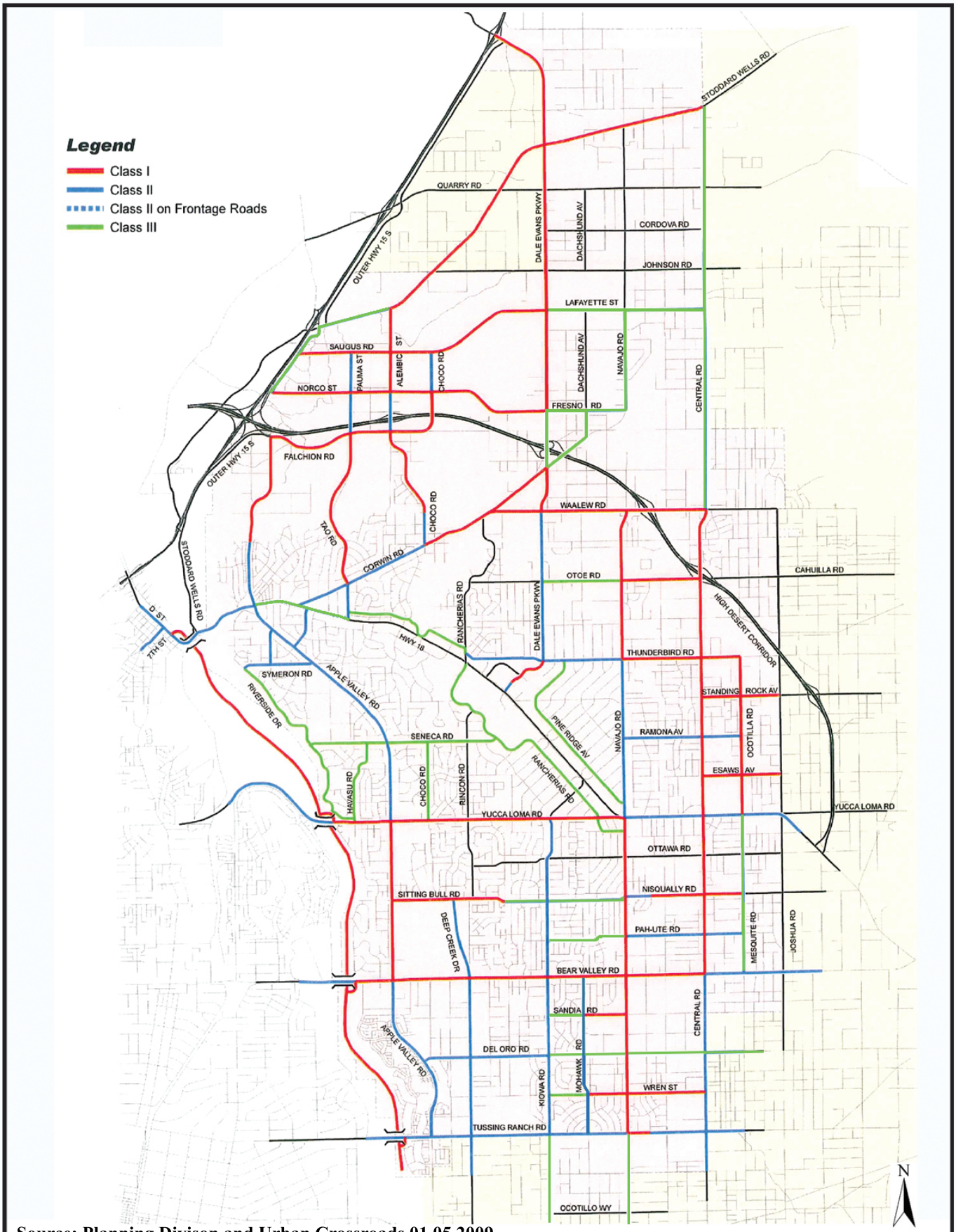
California has established three types of bicycle lanes:

- **Class I Bikeway** –provide a separate, paved right-of-way for bicycle travel, outside the roadbed, but within the right of way.
- **Class II Bikeway** – provide a striped and stenciled lane for one-way travel on a street or highway.
- **Class III Bikeway** –are unmarked routes identified only by signage, which allow shared travel with pedestrians and motor vehicles.

Currently all three bikeways are part of the Apple Valley circulation system. The currently adopted bike path system is shown on Exhibit III-25. Further, bicycle travel is allowed on all public roadways, except freeways and freeway ramps. The proposed General Plan Circulation Plan revises bikeway designations on some roadways, providing for several new Class II bike lanes. Proposed changes to the bikeway system are described and illustrated under Project Impacts, below.

Pedestrian Crossings

According to California Vehicle Code, a pedestrian crosswalk implicitly exists on every leg at every intersection. As a practical matter, visibility and safety are primary factors in determining where people will attempt to cross a street. Recommended guidelines for signalized and unsignalized pedestrian crosswalks include: a minimum width of 6 feet, or 10 feet in commercial districts, with wider crosswalks recommended in areas where pedestrian volumes are high. High visibility crosswalks, such as “zebra” style, are recommended along busy streets, in school zones, on pedestrian-oriented streets. Adequate lighting, unimpeded sight distance and freedom from obstructions such as landscaping and poles, are especially important at unsignalized crosswalks.



Source: Planning Divison and Urban Crossroads 01.05.2009

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Apple Valley General Plan Draft EIR
Currently Adopted Plan of Bike Paths
Apple Valley, California

Exhibit
III-25

2. Project Impacts

Traffic Counts and Growth Rate Assumptions

The traffic study prepared for the General Plan utilizes the Apple Valley Traffic Model (AVTM), which was developed to support the preparation of General Plan Circulation Element and the analysis of impacts associated with implementation of the proposed General Plan and annexations. The AVTM provides long-range future traffic volume forecasts to analyze the circulation system in the planning area. It integrates data from the entire Southern California region (Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties), with the General Plan area as the primary analytical focus. The AVTM is based on and consistent with a sub-regional model, the Victor Valley Area Transportation Study (VVATS). The AVTM model bases forecasts on the following procedures: trip generation, trip distribution, time of day factoring, and traffic assignment.

The model considers the characteristics of land uses as traffic producers (for example, residential land uses) or as traffic attractors (for example, commercial land uses) to determine a means by which modeled traffic can be distributed on the circulation system. The traffic model divides the planning area into Traffic Analysis Zones (TAZs), and the amount of traffic, or number of trips that the respective land uses within a TAZ would generate is calculated. Trip generation calculations are based on factors for each land use determined using regional modeling data as well as planning area-specific data, including the proposed land use plan and associated socio-economic data. Trip generation rates for General Plan buildout are based on data collected by the Institute of Transportation Engineers (ITE).[122]

Once trip generation has been estimated, the directional orientation of traffic along the roadway network, or trip distribution, can then be determined. Trip distribution is influenced by a number of factors, such as the circulation network itself, the relationship between various types of land uses, and traffic patterns and volumes. For purposes of this analysis, these factors, along with extensive consultations with Town staff, have been considered in order to determine trip distribution for the proposed General Plan and annexations.

The traffic study has assumed the use of individual vehicles at buildout of the proposed General Plan and annexations. Although reductions in traffic associated with use of public transportation may be substantial, they are not accounted for in this analysis.

In the traffic study prepared for the General Plan, the traffic modeling considered both intersection impacts and street segment impacts. Impacts at intersections were analyzed for morning and evening peak hours (the hour in the morning or evening when the highest concentration of trips occurs, primarily controlled by commuter trips), while street segments were analyzed for average daily trips (ADT). A total of 46 intersections were analyzed for both existing and future conditions, and the locations shown on Exhibit III-23. The resultant data

[122] Institute of Transportation Engineers (ITE), "Trip Generation Manual," 7th Edition, 2003.

indicated what size of street would be required to allow smooth flow of traffic, and further identified where the existing street system would not function effectively.

Proposed Roadway Classifications and Circulation System

Proposed Roadway Classifications
The following describes the proposed General Plan roadway classifications. These are illustrated in Exhibit III-26. General Plan Roadway Cross Sections. The proposed Circulation Plan adds one roadway classification, Collector roadway.

Major Divided Parkway: 142 feet of right-of-way, with a 112 foot street section from curb to curb; six travel lanes with parking lanes on each side, a center median, and 15 feet of parkway with sidewalk on each side.

Major Divided Arterial: 128 feet of right-of-way, with a 104 foot street section from curb to curb. This represents six travel lanes with parking lanes on each side, a center median, and 12 feet of parkway with sidewalk on each side.

Major Road: 104 feet of right-of-way, with an 80 foot street section from curb to curb. This represents four travel lanes with parking lanes on each side, a center median, a 6 foot sidewalk and a 6 foot landscaped parkway on each side.

Secondary Road: 88 feet of right-of-way, with a 64 foot street section from curb to curb. This represents four travel lanes with a parking lane, a 6 foot sidewalk and a 6 foot landscaped parkway on each side.

Collector: 60 - 66 feet of right-of-way, with a 40 to 44 foot street section from curb to curb. This represents two travel lanes and a center median, with a 10 to 11 foot parkway on each side.

Industrial and Commercial Local Street: 66 feet of right-of-way, with a 44 foot street section from curb to curb. This represents four travel lanes and an 11 foot parkway on each side.

Local Street: 60 feet of right-of-way, with a 36 foot street section from curb to curb. This represents two travel lanes with a center median and a 12 foot parkway with sidewalk on each side.

Rural Street (Less than 1,000 ADT): 50' right-of-way with a 36 foot street section from curb to curb. This represents two travel lanes, with a center median and a 7 foot parkway on each side.

Cul-De-Sac: 50 foot right-of-way with a 36-foot street section from curb to curb. This represents two travel lanes, with a center median and a 7-foot parkway on each side.

Proposed Circulation System

The proposed Circulation Plan for Apple Valley is illustrated in Exhibit III-27, and shows proposed roadway classifications. All public roadways within the planning area will be constructed to meet General Plan standards. As noted above, the proposed circulation system

modifies the existing system by adding a "Collector roadway" classification to enhance network connectivity. Further, some roadways in the northerly part of the Town have been reclassified as Major and Secondary to provide needed parallel capacity to key north-south routes. The following describes how the proposed Circulation Plan differs from the currently adopted Circulation Plan:

Pauma Street
- between Saugus Road and Norco Street – new Secondary Road
- between Norco Street and Falchion Road – new Secondary Road

Alembic Street
- between Stoddard Wells Road and Saugus Road – upgrade from Secondary Road to Major Road
- between Saugus Road and Norco Street – upgrade from Secondary Road to Major Road

Rincon Road
- between Seneca Road and Yucca Loma Road – upgrade to Collector

Kiowa Road
- between SR-18 and Yucca Loma Road – upgrade to Collector
- between Bear Valley Road and Sandia Road – change from Major Divided Arterial to Major Road
- between Sandia Road and Del Oro Road - change from Major Divided Arterial to Major Road
- between Del Oro Road and Tussing Ranch Road - change from Major Divided Arterial to Major Road
- between Tussing Ranch Road and Ocotillo Way - change from Major Divided Arterial to Major Road

Dakota Road
- between Fresno Road and Corwin Road – upgrade to Collector

Navajo Road
- between Waalew Road and Otoe Road – upgrade to Collector
- between Otoe Road and Thunderbird Road – upgrade to Collector

Stoddard Wells Road
- between I-15 Freeway and Alembic Street – upgrade from Major Road to Major Divided Arterial
- between Alembic Street and Johnson Street - upgrade from Major Road to Major Divided Arterial

Quarry Road
- between I-15 Freeway and Stoddard Wells Road – upgrade from Secondary Road to Major Divided Arterial
- between Stoddard Wells Road and Dale Evans Road - upgrade from Secondary Road to Major Divided Arterial

Johnson Road
- east of Central Road – change from Major Road to Secondary Road

Falchion Road
- between Apple Valley Road and Tao Road – upgrade from Secondary Road to Major Road

Corwin Road
- between Dakota Road and Dale Evans Parkway – new Major Road

Yucca Loma Road
- west of Apple Valley Road – upgrade from Major Road to Major Divided Arterial

Ottawa Road
- between Rincon Road and Kiowa Road – upgrade to Collector

Pah-Ute Road
- between Kiowa Road and Navajo Road – upgrade to Collector
- between Navajo Road and Central Road - upgrade to Collector
- between Central Road and Mesquite Road – upgrade to Collector

Sandia Road
- between Kiowa Road and Navajo Road - upgrade to Collector

Rancherias Road
- between Hwy 18 and Thunderbird Road – upgrade from a Secondary to a Major Road.

Thunderbird Road
- between Navajo and Central Roads – upgrade to a Major Road.

As compared with the currently adopted Circulation Plan, the proposed changes are intended to provide for additional connectivity, particularly across the High Desert Corridor. The new Collector roadway classification and re-classifying roadways to Major and Secondary in the northerly portion of the planning area provide additional parallel capacity to north-south routes. Changes have also been recommended based on sustainability objectives, further discussed below.

Proposed Roadway Classifications in Annexations 2008-001 and 2008-002

Several of the proposed roadway classification changes are expected to be relevant to future development in the proposed Annexation 2008-002. Specifically, they include changes to

roadway classifications to segments of Stoddard Wells Road and Quarry Road, as described above.

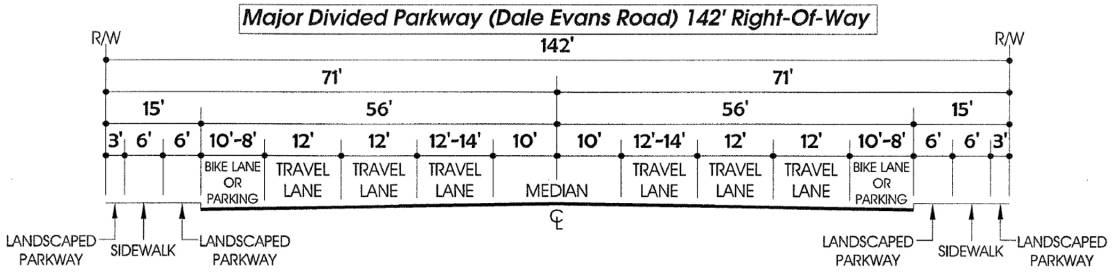
Sustainability Principles

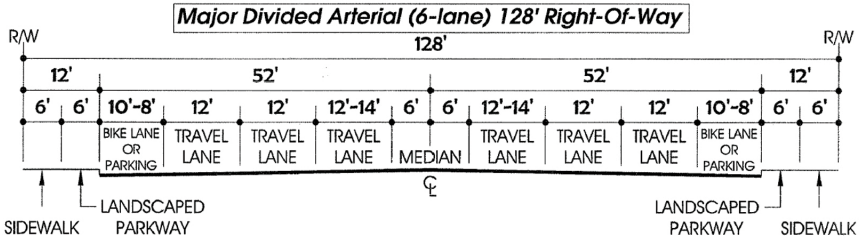
The following objectives have been considered in the design of the proposed Circulation system to improve and further develop its ability to be sustainable:

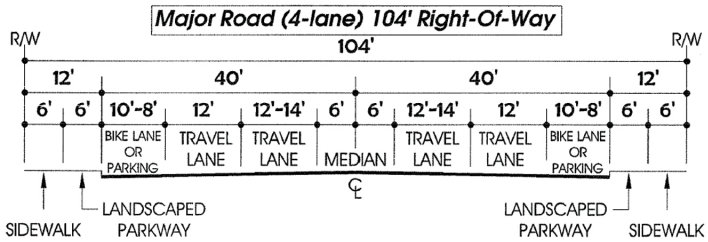
- *Network Connectivity*: where possible, more than one route between land uses is provided;
- *Operational Balance:* flexibility so as to realize community objectives and allow the Town to further its goals towards place making while preserving safety and mobility;
- *Emissions Reduction/Energy Efficiency*: gives priority to design that provides for minimizing idling times and reducing vehicle miles traveled, contributes towards resource conservation and minimizes waste;
- *Pedestrian Accommodations:* fully integrates pedestrian walkways and bike paths;
- *Transit Readiness:* provides access to transit stops and promotes effective inter-modal connections;
- *Quality Public Space*: spatial definition of roadways using structures and landscaping.

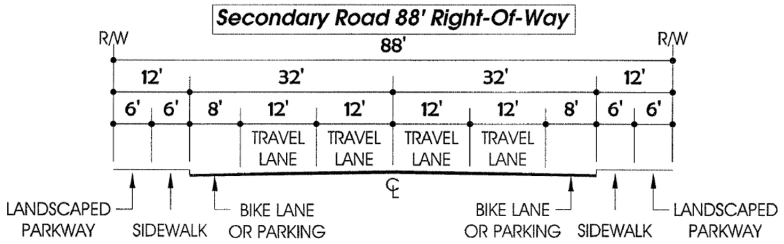
High Desert Corridor (SR-220)

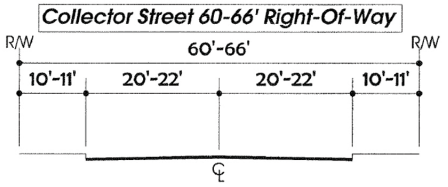
As previously discussed, the High Desert Corridor proposed by CalTrans will bisect the northern portion of the planning area. The Preferred Alternative Alignment is from southeast to northwest, providing a freeway connection between the southeastern portion of the Town with I-15. It will also connect the Victor Valley and the Antelope Valley to the west, as well as providing additional regional access to Los Angeles, the Inland Empire and Barstow, the Central Valley, and Nevada to the north. The Proposed Circulation Plan for the Apple Valley General Plan, Exhibit III-27 shows the preferred alignment for the Corridor as set forth by Caltrans. Plans include entrance and exit ramps at Choco/Alembic Street, Dale Evans Parkway and Waalew Road.

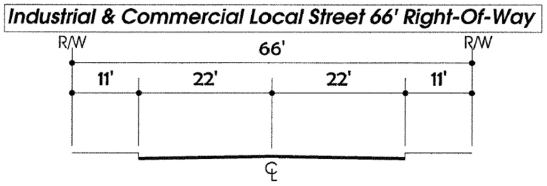


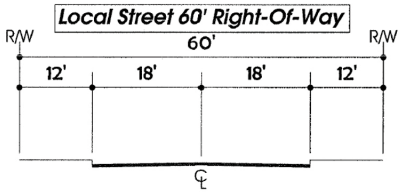


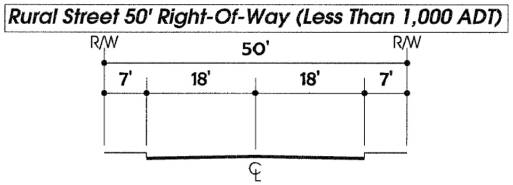


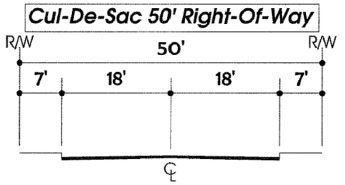












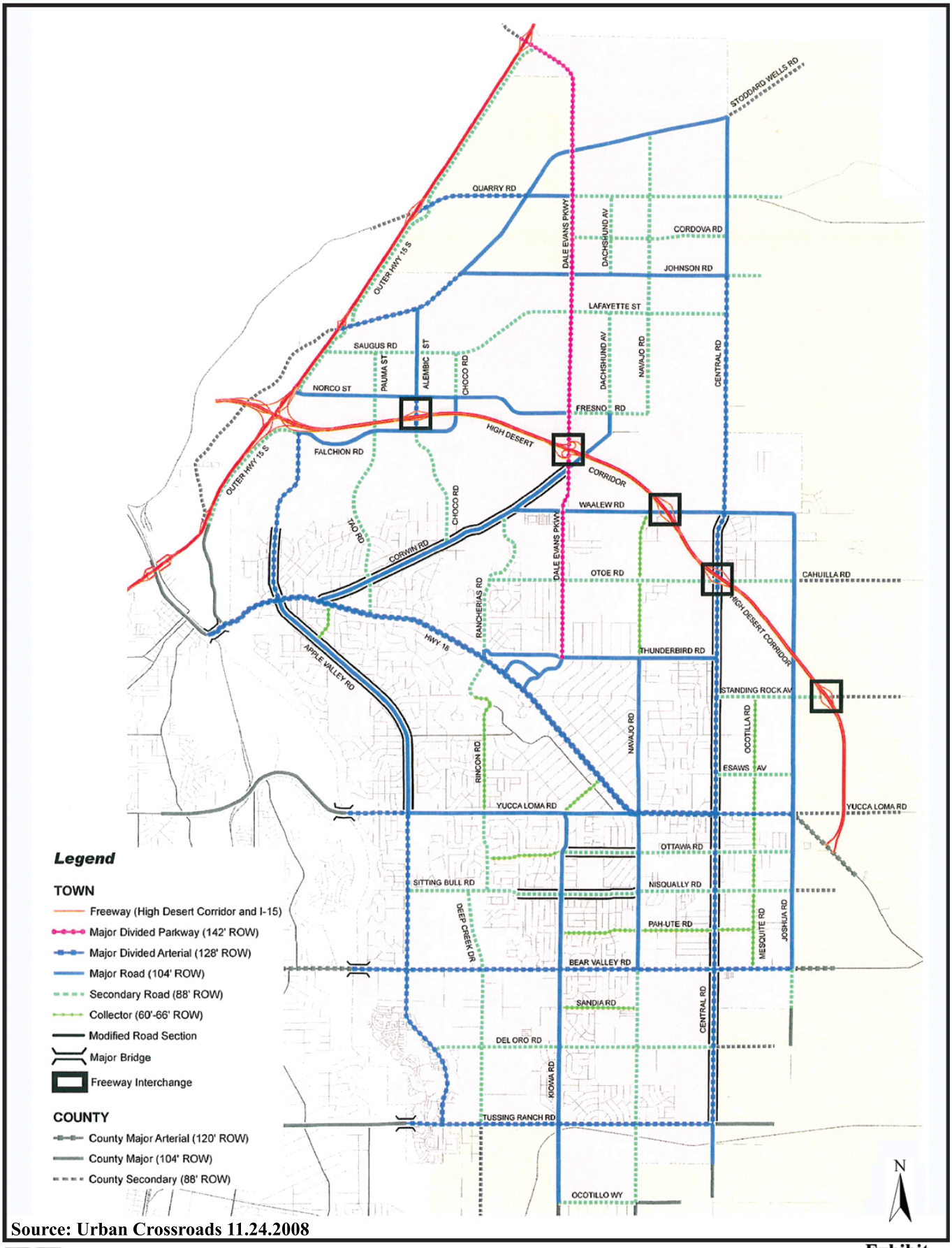


Source: Urban Crossroads 11.24.2008

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Apple Valley General Plan Draft EIR
General Plan Roadway Cross Sections
Apple Valley, California

Exhibit
III-26



Source: Urban Crossroads 11.24.2008

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Planning & Research, Inc.

Apple Valley General Plan Draft EIR
Proposed General Plan Circulation Plan
Apple Valley, California

Exhibit
III-27

Traffic Impact Analysis

In order to quantify potential traffic impacts associated with buildout of the proposed General Plan and annexations, the traffic study determined the number of trips potentially generated by, or attracted to, the various land uses. Buildout of the proposed Apple Valley General Plan and the annexations will result in the construction of up to 63,749 dwelling units, approximately 51,860,766 square feet of commercial land uses and approximately 58,581,040 square feet of industrial land uses.

Buildout Daily Traffic Evaluation

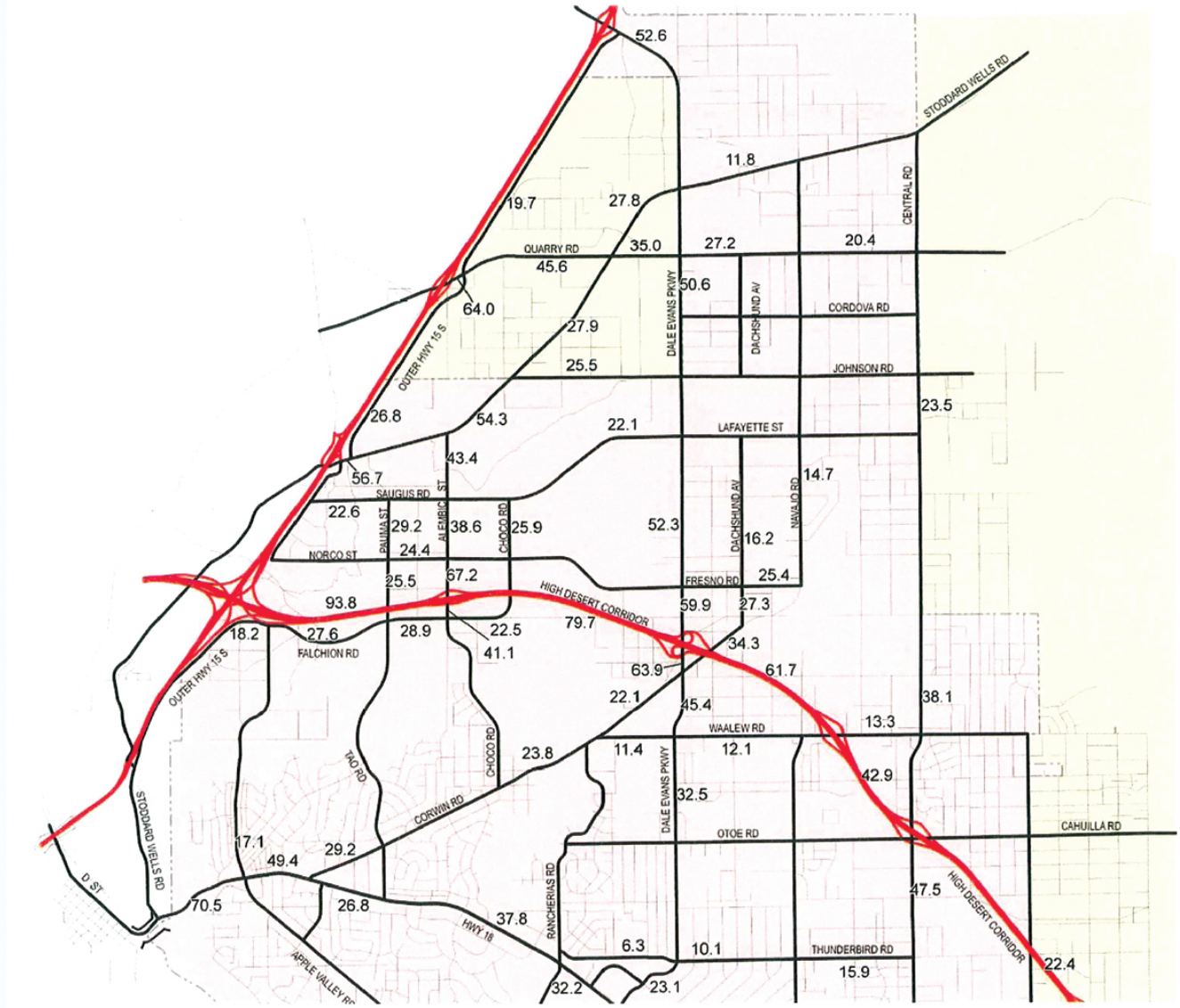
The analysis of average daily traffic (ADT) at buildout of the proposed General Plan is based on projected future daily traffic volumes at the key traffic analysis locations, previously shown in Exhibit III-23. Exhibits III-28 and III-29 show average daily traffic volumes on each of the modeled roadway segments at General Plan build out for the northerly and southerly planning areas, respectively.

As shown on these exhibits, projected ADT volumes on roadways in the planning area range from less than 7,000 vehicles per day (vpd) to more than 60,000 vpd. The following roadways are expected to carry more than 60,000 vpd at General Plan buildout:

- Quarry Road east of I-15;
- Choco/Alembic Street north of the High Desert Corridor;
- Dale Evans Parkway south of the High Desert Corridor;
- State Route 18 west of Apple Valley Road; and
- Bear Valley Road west of Apple Valley Road.

Based on these volumes, the analysis further estimates daily volume-to-capacity (V/C) ratios. V/C ratios are modeled using segment through-travel lanes based on the classifications in the proposed General Plan circulation plan. Daily V/C ratios are shown on Table III-62, which indicates the range of "Acceptable" (79 segments) to "Approaching Capacity" (17 segments). Along this continuum are values in the "Potentially Exceeds Capacity" (8 segments) category. Peak hour operations have been estimated at key intersections as determined in consultation with Town staff. Based on these estimates, the potential for lane modifications to accommodate traffic at General Plan build out has been considered and is discussed further, below.

The General Plan includes goals, policies and programs to ensure continued monitoring of roadway segments that have potential to exceed daily V/C capacity at build out. This is also further addressed in Mitigation Measures, below.



LEGEND:

30.0 = VEHICLES PER DAY (1000'S)

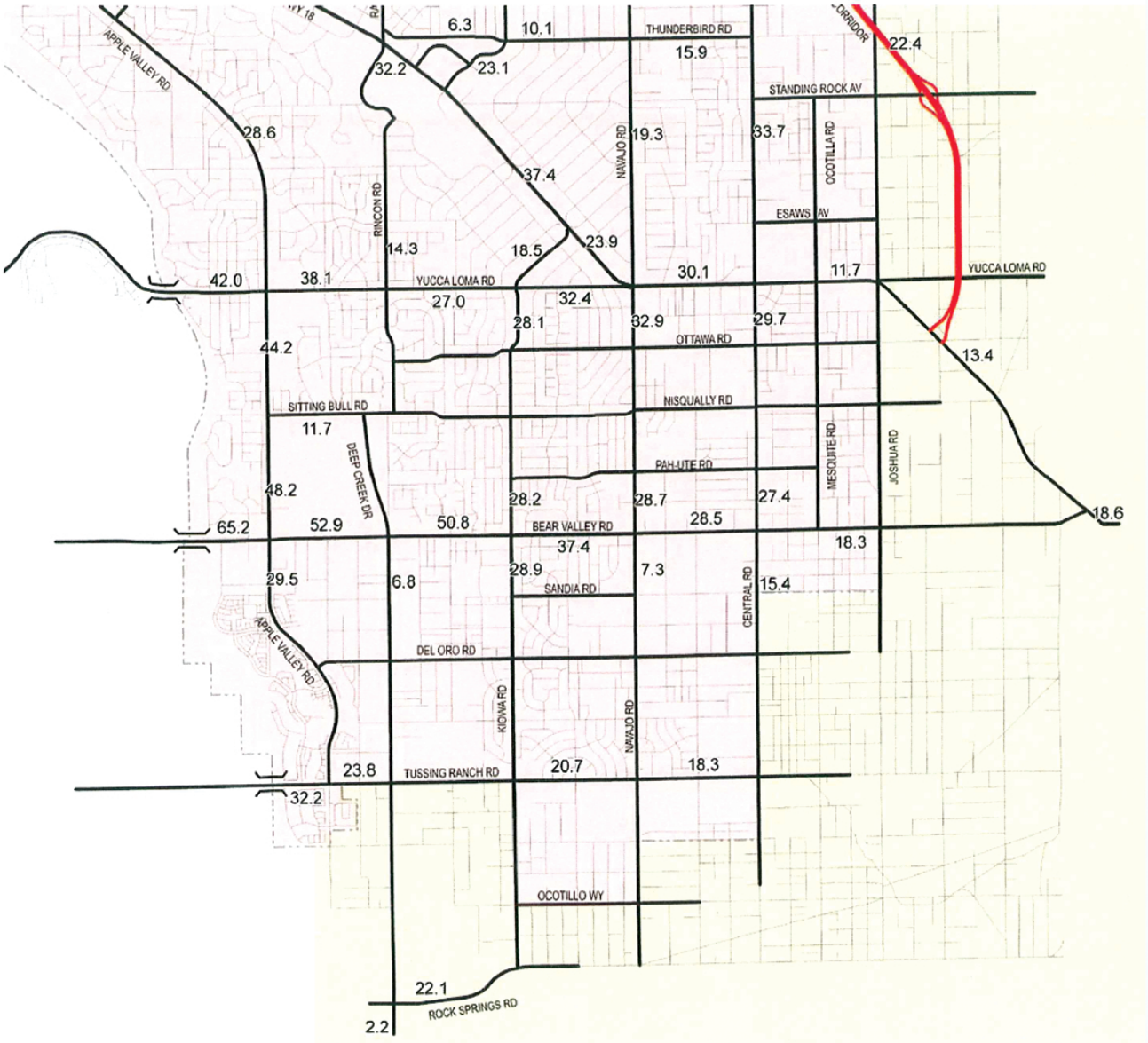
N

Source: Urban Crossroads 11.24.2008

TERRA NOVA®
Planning & Research, Inc.

Apple Valley General Plan Draft EIR
ADT at General Plan Buildout (North)
Apple Valley, California

Exhibit
III-28



LEGEND:

30.0 = VEHICLES PER DAY (1000'S)

N

Source: Urban Crossroads 11.24.2008

TERRA NOVA®
Planning & Research, Inc.

Apple Valley General Plan Draft EIR
ADT at General Plan Buildout (South)
Apple Valley, California

Exhibit
III-29

Table III-62
Roadway Segment Capacity Evaluation

No.	Roadway Segment	Roadway Capacity	Future Forecast	Volume/ Capacity Ratio	Threshold
1	Apple Valley Road n/o SR-18	69,300	17,100	0.25	Acceptable
2	Apple Valley Road between SR-18 & Yucca Loma Road	40,500	28,600	0.71	Acceptable
3	Apple Valley Rd between Yucca Loma Road & Sitting Bull Rd	69,300	44,200	0.64	Acceptable
4	Apple Valley Rd between Sitting Bull Road & Bear Valley Road	69,300	48,200	0.70	Acceptable
5	Apple Valley Rd between Bear Valley Rd & Tussing Ranch Rd	69,300	29,500	0.43	Acceptable
6	Deep Creek Road between Bear Valley Rd & Tussing Ranch Rd	25,500	6,800	0.27	Acceptable
7	Deep Creek Road s/o of Rock Springs Road	12,700	2,200	0.17	Acceptable
8	Kiowa Road between SR-18 & Yucca Loma Road	17,300	18,500	1.07	Potentially Exceeds Capacity
9	Kiowa Road between Yucca Loma Road & Sitting Bull Road	40,500	28,100	0.69	Acceptable
10	Kiowa Road between Sitting Bull Road & Bear Valley Road	40,500	28,200	0.70	Acceptable
11	Kiowa Road between Bear Valley Road & Tussing Ranch Road	40,500	28,900	0.71	Acceptable
12	Dale Evans Parkway s/o I-15 Freeway	69,300	52,600	0.76	Acceptable
13	Dale Evans Parkway n/o Fresno Road	69,300	52,300	0.75	Acceptable
14	Dale Evans Parkway between Corwin Road & Waalew Road	69,300	45,400	0.66	Acceptable
15	Dale Evans Parkway between Waalew Rd & Thunderbird Road	69,300	32,500	0.47	Acceptable
16	Dale Evans Parkway between Thunderbird Road & SR-18	40,500	23,100	0.57	Acceptable
17	Navajo Road between Thunderbird Road & SR-18	40,500	19,300	0.48	Acceptable
18	Navajo Road between SR-18 & Nisqually Road	40,500	32,900	0.81	Approaching Capacity
19	Navajo Road between Nisqually Road & Bear Valley Road	40,500	28,700	0.71	Acceptable
20	Navajo Road between Bear Valley Rd & Tussing Ranch Road	25,500	7,300	0.29	Acceptable
21	Central Road n/o Waalew Road	69,300	38,100	0.55	Acceptable
22	Central Road between Waalew Road & Thunderbird Road	69,300	47,500	0.69	Acceptable
23	Central Road between Thunderbird Road & SR-18	69,300	33,700	0.49	Acceptable
24	Central Road between SR-18 & Nisqually Road	69,300	29,700	0.43	Acceptable
25	Central Road between Nisqually Road & Bear Valley Road	69,300	27,400	0.40	Acceptable

Table III-62
Roadway Segment Capacity Evaluation

No.	Roadway Segment	Roadway Capacity	Future Forecast	Volume/ Capacity Ratio	Threshold
26	Central Road between Bear Valley Rd & Tussing Ranch Road	69,300	15,400	0.22	Acceptable
27	Stoddard Wells Road e/o I-15 Freeway	69,300	56,700	0.82	Approaching Capacity
28	Corwin Road between SR-18 & Tao Road	40,500	29,200	0.72	Acceptable
29	Corwin Road between Tao Road & Waalew Road	40,500	23,800	0.59	Acceptable
30	Corwin Road between Waalew Road & Dale Evans Parkway	40,500	22,100	0.55	Acceptable
31	Waalew Road Between Corwin Road & Dale Evans Parkway	40,500	11,400	0.28	Acceptable
32	Waalew Road e/o Dale Evans Parkway	40,500	12,100	0.30	Acceptable
33	Waalew Road w/o Central Road	40,500	13,300	0.33	Acceptable
34	SR-18 w/o Apple Valley Road	69,300	70,500	1.02	Potentially Exceeds Capacity
35	SR-18 between Apple Valley Road & Corwin Road	69,300	49,400	0.71	Acceptable
36	SR-18 between Corwin Road & Tao Road	69,300	26,800	0.39	Acceptable
37	SR-18 between Tao Road & Rancherias Road	69,300	37,800	0.55	Acceptable
38	SR-18 between Rancherias Road & Dale Evans Parkway	69,300	32,200	0.46	Acceptable
39	SR-18 between Dale Evans Parkway & Kiowa Road	69,300	37,400	0.54	Acceptable
40	SR-18 between Kiowa Road & Navajo Road	69,300	23,900	0.34	Acceptable
41	SR-18 between Navajo Road & Central Road	69,300	30,100	0.43	Acceptable
42	SR-18 between Central Road & Joshua Road	69,300	11,700	0.17	Acceptable
43	SR-18 between Joshua Road & Bear Valley Road	25,500	13,400	0.53	Acceptable
44	SR-18 e/o Bear Valley Road	25,500	18,600	0.73	Acceptable
45	Thunderbird Rd between Rancherias Rd & Dale Evans Pkwy	40,500	6,300	0.16	Acceptable
46	Thunderbird Rd between Dale Evans Parkway & Navajo Road	40,500	10,100	0.25	Acceptable
47	Thunderbird Road between Navajo Road & Central Road	40,500	15,900	0.39	Acceptable
48	Yucca Loma Road w/o Apple Valley Road	69,300	42,000	0.61	Acceptable
49	Yucca Loma Road between Apple Valley Road & Rincon Road	40,500	38,100	0.94	Approaching Capacity
50	Yucca Loma Road between Rincon Road & Kiowa Road	40,500	27,000	0.67	Acceptable
51	Yucca Loma Road between Kiowa Road & SR-18	40,500	32,400	0.80	Acceptable
52	Sitting Bull Road between Apple Valley Road & Kiowa Road	25,500	11,700	0.46	Acceptable

Table III-62
Roadway Segment Capacity Evaluation

No.	Roadway Segment	Roadway Capacity	Future Forecast	Volume/ Capacity Ratio	Threshold
53	Bear Valley Road w/o Apple Valley Road	69,300	65,200	0.94	Approaching Capacity
54	Bear Valley Rd between Apple Valley Rd & Deep Creek Road	69,300	52,900	0.76	Acceptable
55	Bear Valley Road between Deep Creek Road & Kiowa Road	69,300	50,800	0.73	Acceptable
56	Bear Valley Road between Kiowa Road & Navajo Road	69,300	37,400	0.54	Acceptable
57	Bear Valley Road between Navajo Road & Central Road	69,300	28,500	0.41	Acceptable
58	Bear Valley Road between Central Road & SR-18	69,300	18,300	0.26	Acceptable
59	Rincon Road between SR-18 & Yucca Loma Road	12,700	14,300	1.13	Potentially Exceeds Capacity
60	Rock Springs Road between Deep Creek Road & Kiowa Road	25,500	22,100	0.87	Approaching Capacity
61	High Desert Corridor between Standing Rock Ave & Central Rd	107,300	22,400	0.21	Acceptable
62	High Desert Corridor between Central Road & Waalew Road	107,300	42,900	0.40	Acceptable
63	High Desert Corridor between Waalew Rd & Dale Evans Pkwy	107,300	61,700	0.58	Acceptable
64	High Desert Corridor between Dale Evans Pkwy & Alembic St	107,300	79,700	0.74	Acceptable
65	High Desert Corridor between Alembic Street & I-15 freeway	107,300	93,800	0.87	Approaching Capacity
66	Tussing Ranch Road w/o Apple Valley Road	69,300	32,200	0.46	Acceptable
67	Tussing Ranch Road between Apple Valley Rd & Kiowa Road	69,300	23,800	0.34	Acceptable
68	Tussing Ranch Road between Kiowa Road & Navajo Road	69,300	20,700	0.30	Acceptable
69	Tussing Ranch Road between Navajo Road & Central Road	69,300	18,300	0.26	Acceptable
70	Falchion Road w/o Apple Valley Road	25,500	18,200	0.71	Acceptable
71	Falchion Road between Apple Valley Road & Pauma Street	40,500	27,600	0.68	Acceptable
72	Falchion Road between Pauma Street & Alembic Street	40,500	28,900	0.71	Acceptable
73	Falchion Road e/o Alembic Street	40,500	22,500	0.56	Acceptable
74	Pauma Street n/o Falchion Road	25,500	25,500	1.00	Approaching Capacity
75	Pauma Street s/o Saugus Road	25,500	29,200	1.15	Potentially Exceeds Capacity
76	Choco/Alembic Street s/o High Desert Corridor	69,300	41,100	0.59	Acceptable

Table III-62
Roadway Segment Capacity Evaluation

No.	Roadway Segment	Roadway Capacity	Future Forecast	Volume/ Capacity Ratio	Threshold
77	Choco/Alembic Street n/o High Desert Corridor	69,300	67,200	0.97	Approaching Capacity
78	Choco/Alembic Street between Norco Street & Saugus Road	40,500	38,600	0.95	Approaching Capacity
79	Choco/Alembic Street between Saugus Road & Stoddard Wells Road	40,500	43,400	1.07	Potentially Exceeds Capacity
80	Choco Road between Norco Street & Saugus Road	25,500	25,900	1.02	Potentially Exceeds Capacity
81	Dale Evans Pkwy between High Desert Corridor & Corwin Rd	69,300	63,900	0.92	Approaching Capacity
82	Dale Evans Pkwy between High Desert Corridor & Norco Street	69,300	59,900	0.86	Approaching Capacity
83	Corwin Road between Dale Evans Parkway & Dakota Road	40,500	34,300	0.85	Approaching Capacity
84	Dakota Road s/o Fresno Road	40,500	27,300	0.67	Acceptable
85	Dachshund Avenue n/o Fresno Road	25,500	16,200	0.64	Acceptable
86	Fresno Road between Dale Evans Parkway & Navajo Road	25,500	25,400	1.00	Approaching Capacity
87	Norco Street w/o Alembic Street	40,500	24,400	0.60	Acceptable
88	Saugus Road w/o Pauma Street	25,500	22,600	0.89	Approaching Capacity
89	Lafayette Street w/o Dale Evans Parkway	25,500	22,100	0.87	Approaching Capacity
90	Johnson Road e/o Stoddard Wells Road	40,500	25,500	0.63	Acceptable
91	Stoddard Wells Road e/o Alembic Street	69,300	54,300	0.78	Acceptable
92	Stoddard Wells Road n/o Johnson Road	40,500	27,900	0.69	Acceptable
93	Stoddard Wells Rd between Quarry Rd & Dale Evans Parkway	40,500	27,800	0.69	Acceptable
94	Stoddard Wells Road w/o Navajo Road	40,500	11,800	0.29	Acceptable
95	Dale Evans Parkway s/o Quarry Road	69,300	50,600	0.73	Acceptable
96	Navajo Road s/o Lafayette Street	25,500	14,700	0.58	Acceptable
97	Central Road n/o Lafayette Street	69,300	23,500	0.34	Acceptable
98	Quarry Road e/o I-15 freeway	69,300	64,000	0.92	Approaching Capacity
99	Quarry Road between I-15 Frontage Rd & Stoddard Wells Rd	69,300	45,600	0.66	Acceptable
100	Quarry Road w/o Dale Evans Parkway	40,500	35,000	0.86	Approaching Capacity
101	Quarry Road between Dale Evans Parkway & Navajo Road	25,500	27,200	1.07	Potentially Exceeds Capacity

Table III-62
Roadway Segment Capacity Evaluation

No.	Roadway Segment	Roadway Capacity	Future Forecast	Volume/ Capacity Ratio	Threshold
102	Quarry Road e/o Navajo Road	25,500	20,400	0.80	Acceptable
103	Outer Highway I-15 South between Quarry Road & Dale Evans Parkway	25,500	19,700	0.77	Acceptable
104	Outer Highway I-15 South between Stoddard Wells Road & Quarry Road	25,500	26,800	1.05	Potentially Exceeds Capacity

Peak Hour Traffic Operations Analysis

The traffic analysis evaluates peak hour traffic operations based on turning movement estimates shown in the AVTM, and recommends intersection lane configurations based on proposed General Plan roadway cross-sections and projected future travel patterns in the planning area. The Town's standard for acceptable LOS has in the past been LOS C. As shown in Table III-63, below, approximately 19 intersections in the planning area are expected to operate below this standard (D, E, or F) at General Plan buildout during AM and/or PM peak hours.

Table III-63
Intersection Operations Analysis Summary

Intersection		Traffic Control [1]	Northbound			Southbound			Eastbound			Westbound			Delay[2] (sec.)		Level of Service	
No.	Name		L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	I-15 SB Ramps (NS) at:																	
	• Dale Evans Pkwy. (EW)	**TS**	0	0	0	**2**	0	**1**	0	**3**	**1**	**3**	**3**	0	16.8	20.0	B	B
2	I-15 NB Ramps (NS) at:																	
	• Dale Evans Pkwy. (EW)	**TS**	**1**	0	**1>>**	0	0	0	**1**	**3**	0	0	**3**	**1**	10.7	14.4	B	B
3	Dale Evans Pkwy. (NS) at:																	
	• Quarry Rd. (EW)	**TS**	**2**	**4**	**1**	**2**	**4**	**1**	**2**	**2**	**1**	**2**	**2**	**1>**	51.6	49.5	D	D
4	Outer Hwy. 15 (NS) at:																	
	• Stoddard Wells Rd. (EW)	**TS**	0	0	0	**2**	0	**1>>**	**2**	**3**	0	0	**3**	**1**	24.7	26.0	C	C
5	Dale Evans Pkwy. (NS) at:																	
	• Corwin Rd. (EW)	**TS**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**1.5**	**0.5**	**2**	**2**	**1>**	68.6	52.8	E	D
6	Corwin Rd. (NS) at:																	
	• Waalew Rd. (EW)	**TS**	0	**2**	**1**	**1**	**2**	0	0	0	0	1	0	1	24.3	30.1	C	C
8	Dale Evans Pkwy. (NS) at:																	
	• Waalew Rd. (EW)	**TS**	**1**	**2.5**	**0.5**	**1**	**3**	**1**	**1**	**2.5**	**0.5**	**1**	**2.5**	**0.5**	47.5	32.7	D	C
9	Central Rd. (NS) at:																	
	• Waalew Rd. (EW)	**TS**	**1**	**2.5**	**0.5**	**1**	**3**	**1>**	**2.5**	1	**0.5**	**1**	**2**	**1**	53.2	39.5	D	D
10	Apple Valley Rd. (NS) at:																	
	• State Route 18 (EW)	TS	**2**	**1.5**	**0.5**	1	**2**	1	2	**3**	1>>	**2**	**3**	1	54.5	48.0	D	D
11	Corwin Rd. (NS) at:																	
	• State Route 18 (EW)	TS	0	0	0	**2**	0	**1>>**	**2**	**3**	0	0	**3**	**1>**	43.6	34.3	D	C
12	Ranccherias Rd. (NS) at:																	
	• State Route 18 (EW)	TS	1	**1.5**	**0.5**	1	**1.5**	**0.5**	**2**	**2.5**	**0.5**	1	**3**	1	43.4	45.1	D	D
13	Dale Evans Rd. (NS) at:																	
	• Thunderbird Rd. (EW)	**TS**	1	**1.5**	**0.5**	**2**	**2.5**	**0.5**	1	**1.5**	**0.5**	1	**1.5**	**0.5**	42.2	31.7	D	C

Table III-63
Intersection Operations Analysis Summary

Intersection		Traffic Control [1]	Northbound			Southbound			Eastbound			Westbound			Delay[2] (sec.)		Level of Service	
No.	Name		L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
14	Navajo Rd. at:																	
	• Thunderbird Rd. (EW)	**TS**	**1**	**1.5**	**0.5**	**1**	**0.5**	**0.5**	**1**	**2**	**2**	**2**	**1.5**	**0.5**	29.0	33.8	C	C
15	Central Rd. (NS) at:																	
	• Thunderbird Rd. (EW)	**TS**	**1**	**4**	**1**	**1**	**3**	**2**	**3**	**0.5**	0.5	**1**	**0.5**	**0.5**	52.5	44.5	D	C
16	Dale Evans Pkwy. (NS) at:																	
	• State Route 18 (EW)	TS	**1**	**0.5**	**0.5**	**2**	**1.5**	**0.5**	1	**3**	1	1	**3**	**1>**	43.1	54.4	D	D
17	Kiowa Rd. (NS) at:																	
	• State Route 18 (EW)	TS	**2**	**0.5**	**0.5**	1	**0.5**	**0.5**	1	**3**	**1>**	1	**2.5**	**0.5**	29.5	26.6	C	C
18	Apple Valley Rd. (NS) at:																	
	• Yucca Loma Rd. (EW)	TS	**2**	**2.5**	**0.5**	**2**	**2**	1	1	**3**	**1>**	**2**	**2**	1	43.9	54.9	D	D
19	Kiowa Rd. (NS) at:																	
	• Yucca Loma Rd. (EW)	**TS**	**1**	**1.5**	**0.5**	**1**	**0.5**	**0.5**	1	**2**	**1**	**2**	**1.5**	**0.5**	39.4	50.6	D	D
20	Navajo Rd. (NS) at:																	
	• State Route 18 (EW)	TS	**2**	**2**	**2>**	1	**2**	1	1	**3**	1	**2**	**3**	1	52.9	54.7	D	D
21	Central Rd. (NS) at:																	
	• State Route 18 (EW)	TS	**2**	**2.5**	**0.5**	**1**	**2.5**	**0.5**	**2**	**3**	**1>**	1	**2.5**	**0.5**	51.8	39.6	D	D
22	Joshua Rd. (NS) at:																	
	• State Route 18 (EW)	**TS**	**1**	**1.5**	**0.5**	**1**	**1.5**	**0.5**	1	**2.5**	**0.5**	1	**2.5**	**0.5**	12.9	13.0	B	B
23	Apple Valley Rd. (NS) at:																	
	• Bear Valley Rd. (EW)	TS	2	**3**	**1>**	2	**3**	2>	2	**3**	1	**2**	**3**	**1**	49.1	53.3	D	D
24	Deep Creek Rd. (NS) at:																	
	• Bear Valley Rd. (EW)	**TS**	**1**	**1.5**	**0.5**	**1**	**1.5**	**0.5**	**1**	**2.5**	**0.5**	1	**2.5**	**0.5**	27.9	34.3	C	C
25	Kiowa Rd. (NS) at:																	
	• Bear Valley Rd. (EW)	TS	**2**	**1.5**	**0.5**	1	2	1	**2**	**3**	**1>**	1	**3**	1	43.2	41.9	D	D

Table III-63
Intersection Operations Analysis Summary

Intersection		Traffic Control [1]	Northbound			Southbound			Eastbound			Westbound			Delay[2] (sec.)		Level of Service	
No.	Name		L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
26	Navajo Rd. (NS) at:																	
	• Bear Valley Rd. (EW)	TS	1	**1.5**	**0.5**	**2**	2	1	**2**	**2.5**	**0.5**	1	**2.5**	**0.5**	42.4	54.6	D	D
27	Central Rd. (NS) at:																	
	• Bear Valley Rd. (EW)	TS	1	**2.5**	**0.5**	1	**3**	**1>**	**2**	**2.5**	**0.5**	1	**2.5**	**0.5**	43.6	44.0	D	D
28	State Route 18 (NS) at:																	
	• Bear Valley Rd. (EW)	**TS**	**2**	**3**	0	0	**2.5**	**0.5**	1	0	**1**	0	0	0	17.7	24.8	B	C
29	Central Rd. (NS) at:																	
	• Tussing Ranch Rd. (EW)	**TS**	**1**	**1.5**	**0.5**	**1**	**3**	**1>**	**2**	**2.5**	**0.5**	**1**	**1.5**	**0.5**	27.2	23.8	C	C
30	Deep Creek Rd. (NS) at:																	
	• Rock Springs Rd. (EW)	TS	**1**	**0.5**	**0.5**	**1**	**0.5**	**0.5**	1	**1.5**	**0.5**	1	**1.5**	**0.5**	25.9	24.3	C	C
31	I-15 SB Ramps (NS) at:																	
	• Stoddard Wells Rd. (EW)	TS	**1**	**1**	**2>**	**2**	**0.5**	**0.5**	**1**	**2**	**1**	**3**	**2**	**2**	37.7	48.8	D	D
32	I-15 NB Ramps (NS) at:																	
	• Stoddard Wells Rd. (EW)	TS	**2**	1	**1>>**	**3**	**2**	**2**	**2**	**3**	**1>**	**2**	**4**	**1**	51.6	48.8	D	D
33	Outer Highway 15 (NS) at:																	
	• Stodddard Wells Rd. (EW)	TS	**2**	**2**	0	0	**2**	**1>>**	**2**	**0**	**1>>**	0	**0**	0	52.3	29.5	D	C
34	Outer Highway 15 (NS) at:																	
	• Saugus Rd. (EW)	TS	0	**1.5**	**0.5**	**2**	**2**	0	0	0	0	**1**	0	**1>>**	21.1	30.5	C	C
35	Choco Rd. (NS) at:																	
	• H. D. C. WB Ramps (EW)	TS	**2**	**3**	0	0	**3**	**1>>**	0	0	0	**2**	0	**1**	16.4	14.4	B	B
36	Choco Rd. (NS) at:																	
	• H. D. C. EB Ramps (EW)	TS	0	**3**	**1**	**2**	**3**	0	**2**	0	**2**	0	0	0	51.2	28.3	D	C
37	Dale Evans Pkwy. (NS) at:																	
	• H. D. C. WB Ramps (EW)	TS	0	**3**	**1>>**	0	**3**	**1>>**	0	0	0	**1**	0	**2>**	22.3	8.8	C	A

Table III-63
Intersection Operations Analysis Summary

Intersection		Traffic Control [1]	Northbound			Southbound			Eastbound			Westbound			Delay[2] (sec.)		Level of Service	
No.	Name		L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
38	Dale Evans Pkwy. (NS) at:																	
	• H. D. C. EB Ramps (EW)	TS	0	**3**	**2**	0	**3**	**1>>**	**2**	0	**1**	0	0	0	14.4	8.1	B	A
39	H.D.C. EB Ramps (NS) at:																	
	• Waalew Rd. (EW)	TS	0	0	0	**2**	0	**2**	0	**1.5**	**0.5**	**1**	**2**	0	20.5	15.5	C	B
40	H.D.C. WB Ramps (NS) at:																	
	• Waalew Rd. (EW)	TS	**1**	0	**1**	0	0	0	**1**	**2**	0	0	**2**	**2**	12.7	12.6	B	B
41	Central Rd. (NS) at:																	
	• H.D.C. WB Ramps (EW)	TS	**2**	**3**	0	0	**2.5**	**0.5**	0	0	0	**1**	0	**1**	12.8	22.1	B	C
42	Central Rd. (NS) at:																	
	• H.D.C. EB Ramps (EW)	TS	0	**2.5**	**0.5**	**1**	**3**	0	**2**	0	**2**	0	0	0	21.1	24.2	C	C
43	Tao Rd. (NS) at:																	
	• State Route 18 (EW)	TS	1	**0.5**	**0.5**	1	**1.5**	**0.5**	1	**2.5**	**0.5**	1	**2.5**	**0.5**	21.0	33.3	C	C
44	Apple Valley Rd. (NS) at:																	
	• Sitting Bull Rd. (EW)	TS	1	**2.5**	**0.5**	1	**2.5**	**0.5**	1	**0.5**	**0.5**	**1**	0.5	**0.5**	30.1	29.2	C	C
45	Kiowa Rd. (NS) at:																	
	• Sitting Bull Rd. (EW)	**TS**	1	**1.5**	**0.5**	1	**1.5**	**0.5**	1	**1.5**	**0.5**	1	**1.5**	**0.5**	22.5	23.2	C	C
46	Navajo Rd. (NS) at:																	
	• Nisqually Rd. (EW)	TS	1	**1.5**	**0.5**	1	**1.5**	**0.5**	**1**	**1.5**	**0.5**	**1**	**1.5**	**0.5**	24.4	38.6	C	D

[1]When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right; > = Right-turn Overlap Phasing; >> = Free Right Turn Lane; **1** = Improvement

[2]Delay and level of service calculated using the following analysis software: Traffix, Version 7.9 R3 (2008). Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic, traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown.

[3]TS = Traffic Signal

Projected Trip Generation in Annexations 2008-001 and 2008-002

As the annexation areas develop, traffic generated by new development will need to be integrated into the area-wide circulation network. Table III-64 sets forth projected trip generation in the annexation area, based on the proposed General Plan land use patterns. These trips have been accounted for within estimates for the planning area as a whole, as set forth above.

Table III-64
Projected Trip Generation in Annexation Areas

	Proposed General Plan			
	Productions	**Attractions**	**Total**	**% of Planning Area**
No. 2008-001	77,607	103,174	180,781	11%
No. 2008-002	16,193	28,363	44,556	3%
Annexation Areas Total	**93,800**	**131,537**	**225,337**	14%

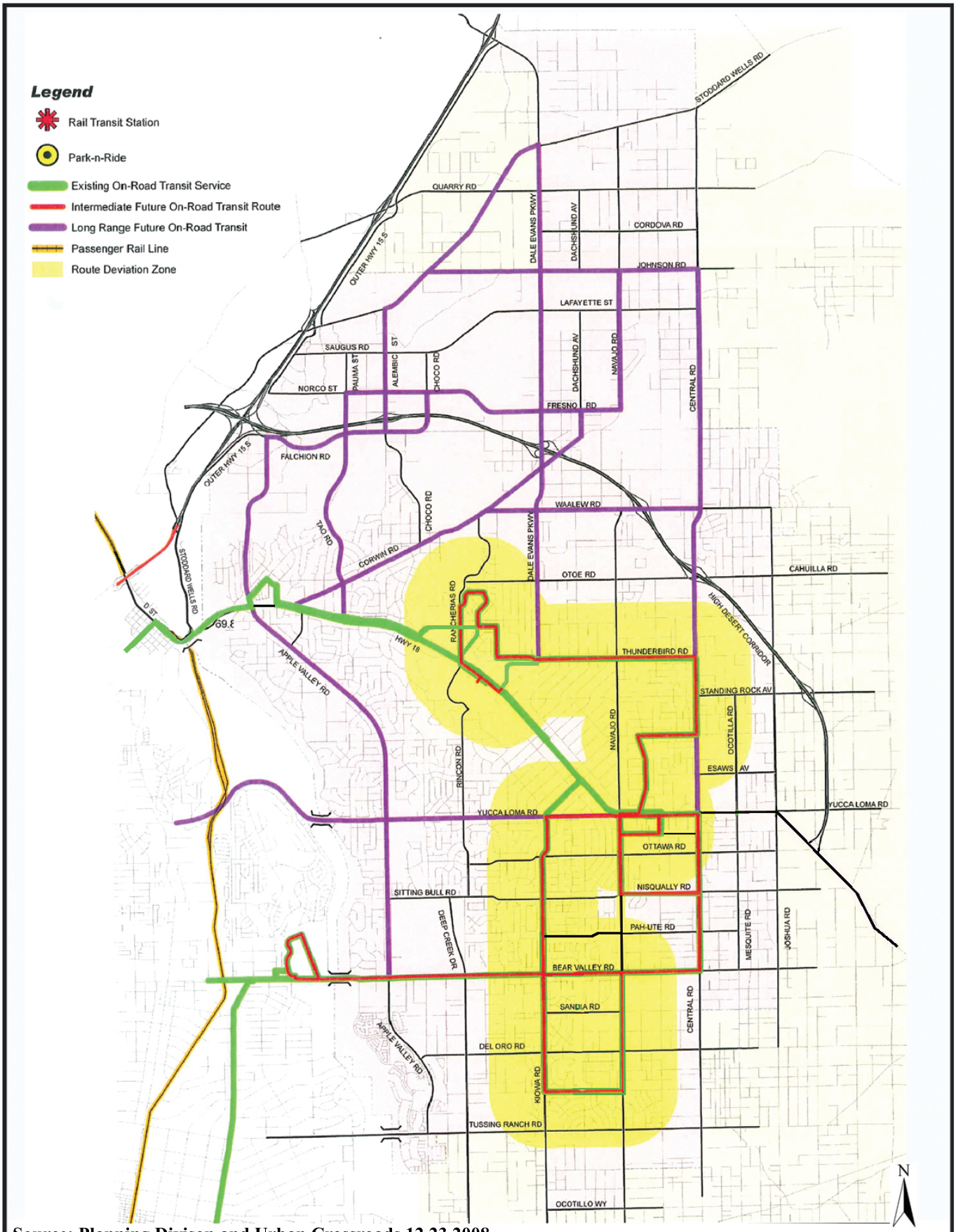
Emergency Access

Emergency access to development throughout the planning area has been designed in a manner consistent with the requirements of emergency service providers and the Apple Valley Municipal Code. Future site-specific development will be subject to design review by the Apple Valley Fire Protection District and Police Department. Buildout of the Proposed General Plan is not expected to result in any adverse impacts.

Public Transportation

Proposed public transportation features in Apple Valley are shown on Exhibit III-30. Future on-road transit routes are anticipated to provide additional connectivity throughout the northern parts of the Town, in particular. Transit routes are shown for each crossing of the High Desert Corridor, along with providing additional north/south access along Apple Valley road and east/west access on Yucca Loma Road. Potential transit corridors are identified which could be used to extend existing fixed route service, possibly using a route deviation or point deviation system that allows for pick up or drop off transit riders within ¾ miles of a fixed bus route. Such a system has the potential to be especially effective in less densely developed areas where service needs may be limited or warrant the expansion of an existing route.

The Town of Apple Valley relies on regional public transit providers to operate transit services. Because of this dependence on outside agencies, regional cooperation is crucial to ensure that the transit network operates effectively.



Source: Planning Divison and Urban Crossroads 12.23.2008

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Apple Valley General Plan Draft EIR
Existing and Proposed Public Transportation Routes
Apple Valley, California

Exhibit
III-30

Truck Routes

Major through truck routes will be located along major roads including the Outer Highway 15, Bear Valley Road, State Route 18, Central Road, Deep Creek Road south of Bear Valley Road, and the future High Desert Corridor, with several new truck routes serving the Apple Valley North Specific Plan area. Exhibit III-31 shows designated truck routes through the planning area. Changes from previously designated truck routes are as follows:

Apple Valley Road
- between Ohna Road and Outer Highway I-18 – Local Truck Route removed
- south of Tussing Ranch Road – Local Truck Route removed

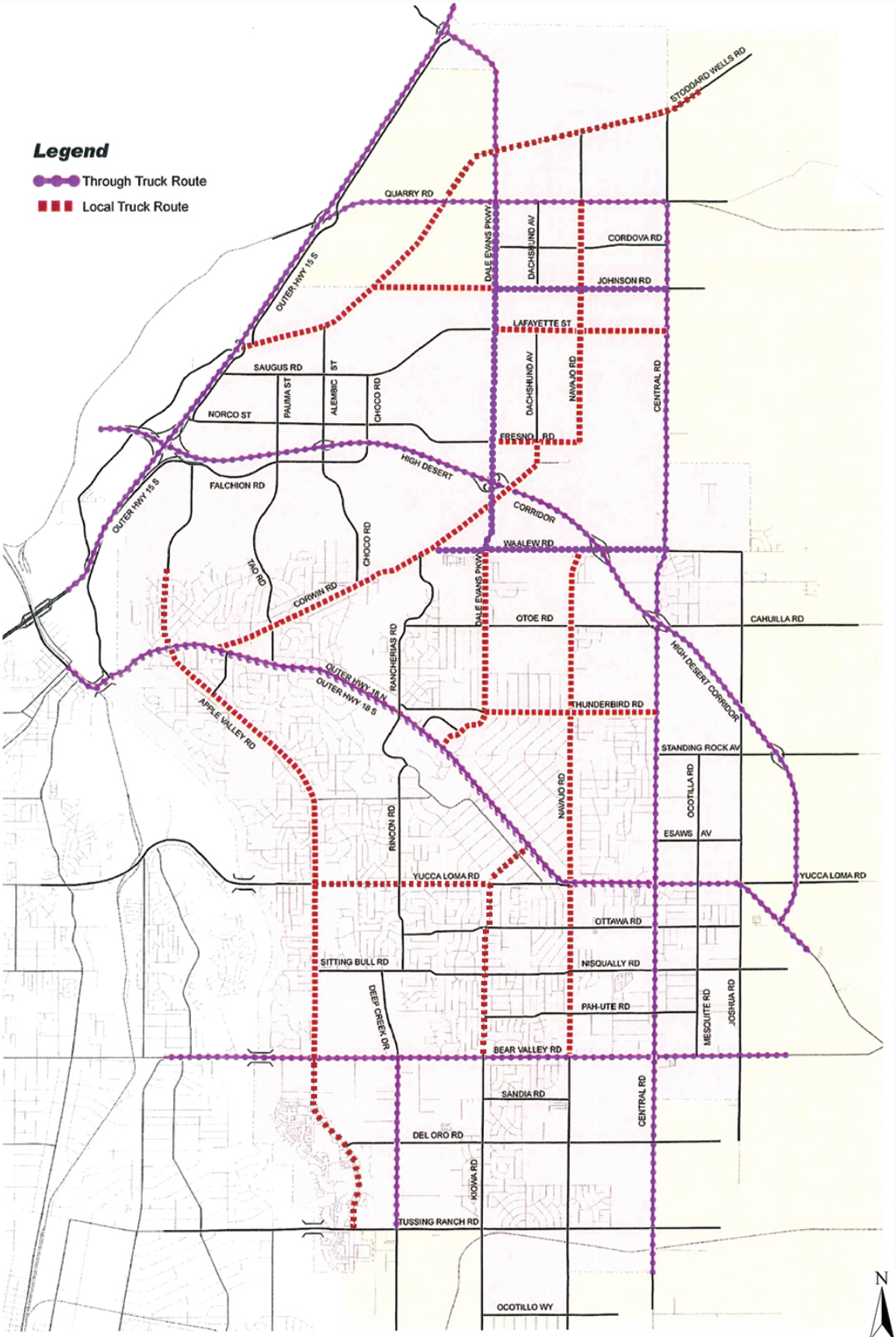
Kiowa Road
- between SR-18 and Yucca Loma Road – Local Truck Route removed
- between Yucca Loma Road and Ottawa Road – Local Truck Route removed
- between Ottawa Road and Nisqually Road – Local Truck Route removed
- between Nisqually Road and Pah-Ute Road – Local Truck Route removed
- between Pah-Ute Road and Bear Valley Road – Local Truck Route removed

Navajo Road
- between Quarry Road and Cordova Road – new Local Truck Route
- between Cordova Road and Johnson Road – new Local Truck Route
- between Johnson Road and LaFayette Street – new Local Truck Route
- between LaFayette Street and Fresno Road – new Local Truck Route
- between Bear Valley Road and Sandia Road – Local Truck Route removed
- between Sandia Road and Del Oro Road – Local Truck Route removed
- between Del Oro Road and Tussing Ranch Road – Local Truck Route removed

Stoddard Wells Road
- west of I-15 Freeway – Local Truck Route removed
- between Johnson Road and Quarry Road – new Local Truck Route

Quarry Road
- between I-15 Freeway and Stoddard Wells Road – new Through Truck Route
- between Stoddard Wells Road and Dale Evans Road – new Through Truck Route
- between Dale Evans Road and Dachshund Avenue – new Through Truck Route
- between Dachshund Avenue and Navajo Road – new Through Truck Route
- between Navajo Road and Central Road – new Through Truck Route

Johnson Road
- between Stoddard Wells Road and Dale Evans Parkway – new Local Truck Route
- between Navajo Road and Central Road – new Through Truck Route



Source: Planning Divison and Urban Crossroads 01.05.2009

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Apple Valley General Plan Draft EIR
Proposed Truck Routes
Apple Valley, California

Exhibit
III-31

Proposed Multi-Use Trails

Bike Paths

The Town of Apple Valley proposes expanded and updated bike facilities as shown on Exhibit III-32. The proposed bikeway system includes more connectivity, allowing bicycle users better access throughout the Town and planning area.

Apple Valley's bicycle network is part of a larger regional bikeway system that provides bicycle corridors and transit connections to regional facilities. Cooperation with neighboring cities and the County ensures that the bicycle network is an effective tool in providing greater access to the region's transit network, as well as providing a backbone of commuter bikeways to facilitate greater commuter bicycle travel.

The following describes proposed changes to the Town's bikeway system:

Outer Highway I-15 S

- between Stoddard Wells Road and Saugus Road -- new Class II bike lanes
- between Saugus Road and Norco Street -- new Class II bike lanes

Apple Valley Road

- between State Route 18 and Yucca Loma Road -- new Class II bike lanes
- between Bear Valley Road and Del Oro Road -- new Class II bike lanes
- between Del Oro Road and Tussing Ranch Road -- new Class II bike lanes

Pauma Street

- between Saugus Road and Norco Street -- new Class II bike lanes
- between Norco Street and Falchion Road -- new Class II bike lanes

Tao Road

- between Corwin Road and Outer Highway I-18 -- new Class II bike lanes

Alembic Street

- between Norco Street and High Desert Corridor – change from Class I to Class II bike lanes
- between High Desert Corridor and Falchion Road – change from Class I to Class II bike lanes

Choco Road (North)

- between Waalew Road and Corwin Road – new Class II bike lanes

Deep Creek Road

- between Sitting Bull Road and Bear Valley Road – new Class II bike lanes
- between Bear Valley Road and Del Oro Road– new Class II bike lanes
- between Del Oro Road and Tussing Ranch Road– new Class II bike lanes

Choco Road
- between Saugus Road and Norco Street– new Class II bike lanes

Dale Evans Parkway
- between Fresno Road and High Desert Corridor – change from Class I to Class II bike lanes
- between High Desert Corridor and Corwin Road – change from Class I to Class II bike lanes
- between Waalew Road and Otoe Road – new Class II bike lanes
- between Otoe Road and Thunderbird Road – change from Class III to Class II bike lanes
- between Wakita Boulevard and State Route 18 – change from Class I to Class II bike lanes

Kiowa Road
- between Yucca Loma Road and Ottawa Road – new Class II bike lanes
- between Ottawa Road and Nisqually Road – new Class II bike lanes
- between Nisqually Road and Pah-Ute Road – new Class II bike lanes
- between Pah-Ute Road and Bear Valley Road – new Class II bike lanes
- between Bear Valley Road and Sandia Road – change from Class III to Class II bike lanes
- between Sandia Road and Del Oro Road – change from Class III to Class II bike lanes
- between Del Oro Road and Tussing Ranch Road – change from Class III to Class II bike lanes
- between Tussing Ranch Road and Ocotillo Way - new Class II bike lanes

Dakota Road
- between Fresno Road and Corwin Road – new Class I bike path

Navajo Road
- between LaFayette Street and Fresno Road – new Class II bike lanes
- between Thunderbird Road and Yucca Loma Road – change from Class I to Class II bike lanes
- between Tussing Ranch Road and Ocotillo Way – new Class II bike lanes

Central Road
- between Stoddard Wells Road and Quarry Road– new Class II bike lanes
- between Quarry Road and Cordova Road– new Class II bike lanes
- between Cordova Road and Johnson Road– new Class II bike lanes
- between Johnson Road and LaFayette Street– new Class II bike lanes
- between LaFayette Street and Waalew Road– new Class II bike lanes
- between Bear Valley Road and Del Oro Road– new Class II bike lanes
- between Del Oro Road and Tussing Ranch Road– new Class II bike lanes
- between Tussing Ranch Road and Mojave Street– new Class II bike lanes

Mesquite Road
- between Yucca Loma Rd and Ottawa Rd – change from Class III to Class II bike lanes
- between Ottawa Road and Nisqually Road– change from Class III to Class II bike lanes
- between Nisqually Road and Pah-Ute Road– change from Class III to Class II bike lanes
- between Pah-Ute Road and Bear Valley Road – new Class II bike lanes

Stoddard Wells Road
- between I-15 Freeway and Alembic Street – new Class II bike lanes

LaFayette Street
- between Dale Evans Parkway and Dachshund Avenue – new Class II bike lanes
- between Dachshund Avenue and Navajo Road – new Class II bike lanes
- between Navajo Road and Central Road -- new Class II bike lanes

Fresno Road
- between Dale Evans Parkway and Dachshund Avenue – new Class I bike path
- between Dachshund Avenue and Navajo Road – new Class II bike lanes

Falchion Road / Choco Road (North)
- between Choco Road and Norco Street – new Class I bike path

Corwin Road
- between Dakota Road and Dale Evans Parkway – new Class I bike path
- between Outer Highway I-18 and Tao Road – change from Class I to Class II bike lanes
- between Tao Road and Choco Road– change from Class I to Class II bike lanes

Otoe Road
- between Dale Evans Parkway and Navajo Road – new Class III bike lanes

Thunderbird Road
- between Rancherias Road and Dale Evans Parkway – change from Class III to Class II bike lanes
- between Dale Evans Parkway and Navajo Road – change from Class I to Class II bike lanes

Yucca Loma Road
- between Kiowa Road and Navajo Road – new Class I bike path
- between Navajo Road and Central Road – new Class II bike lanes
- between Central Road and Mesquite Road – new Class II bike lanes
- between Mesquite Road and Joshua Road – new Class II bike lanes
- east of Joshua Road – new Class II bike lanes

Sitting Bull Road
- between Skyline Ranch Drive and Kiowa Road – change from Class III to Class II bike lanes
- between Kiowa Road and Navajo Road – change from Class III to Class II bike lanes

Nisqually Road
- between Navajo Road and Maumee Road– change from Class III to Class II bike lanes

Pah-Ute Road
- between Kiowa Road and Navajo Road – new Class II bike lanes
- between Central Road and Mesquite Road – new Class II bike lanes

Bear Valley Road
- between Central Road and Mesquite Road -- new Class II bike lanes
- between Mesquite Road and Joshua Road -- new Class II bike lanes
- east of Joshua Road -- new Class II bike lanes

Sandia Road
- between Kiowa Road and Mohawk Road – change from Class I to Class II bike lanes

Del Oro Road
- between Apple Valley Road and Deep Creek Road – new Class II bike lanes
- between Deep Creek Road and Kiowa Road – new Class II bike lanes
- between Kiowa Road and Navajo Road – new Class II bike lanes
- between Navajo Road and Central Road – new Class II bike lanes
- between Central Road and Denison Road – new Class II bike lanes

Wren Street
- between Kiowa Road and Mohawk Road – new Class III bike route
- between Mohawk Road and Central Road – new Class I bike path

Tussing Ranch Road
- west of Apple Valley Road – new Class II bike lanes
- between Apple Valley Road and Deep Creek Road – new Class II bike lanes
- between Deep Creek Road and Kiowa Road – new Class II bike lanes
- between Kiowa Road and Navajo Road – new Class II bike lanes
- between Navajo Road and Cochita Road – new Class I bike path
- between Cochita Road and Central Road – new Class II bike lanes
- east of Cochita Road – new Class II bike lanes

Frontage Road South
- between Stoddard Wells Road and Saugus Road – new Class II bike lanes
- between Saugus Road and Norco Street – new Class II bike lanes

D Street
- west of 7th Street – new Class II bike lanes
- between 7th Street to Stoddard Wells Road – new Class II bike lanes
- between Stoddard Wells Road to Apple Valley Road – new Class II bike lanes

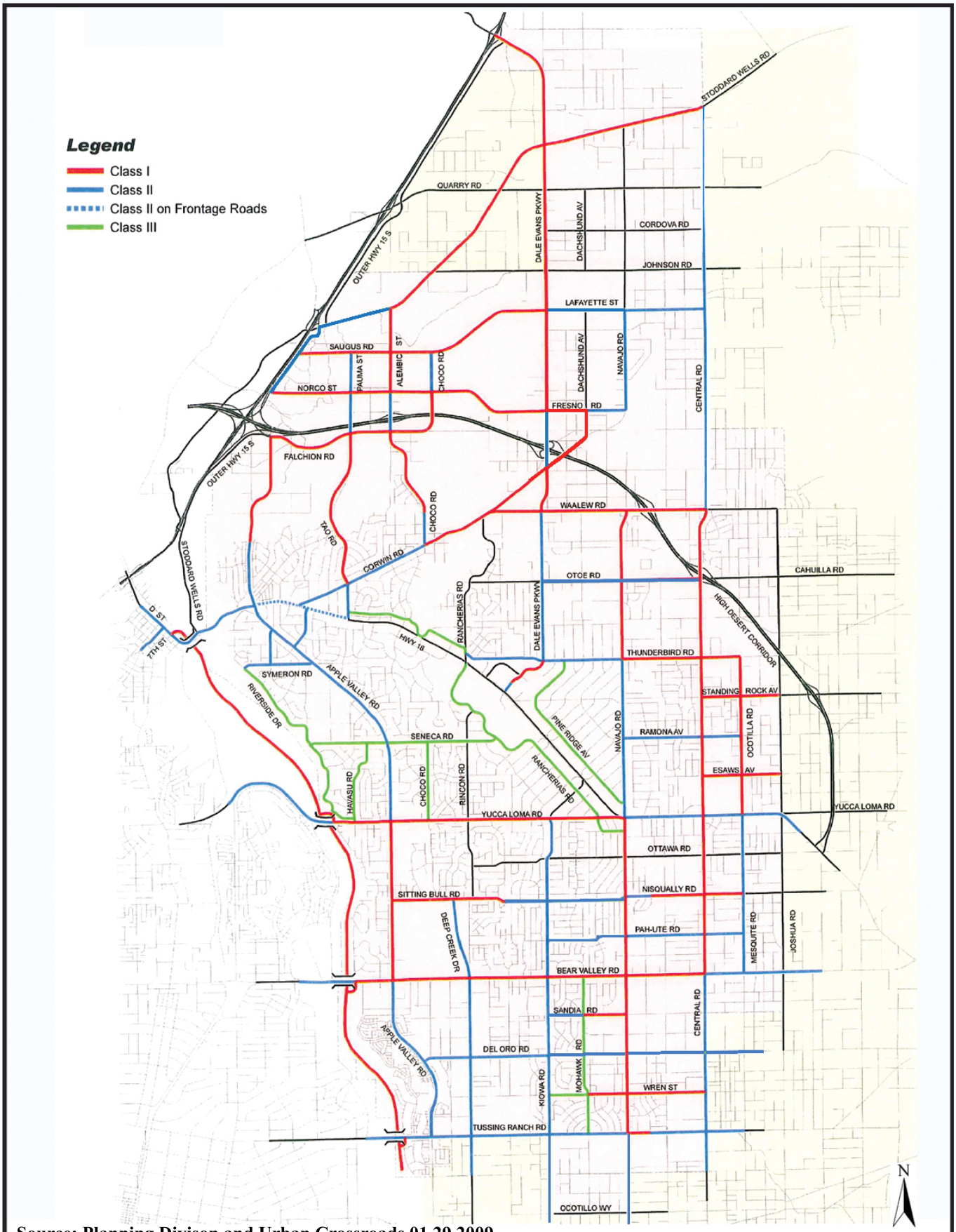
Outer State Route 18 North Frontage Road
- between Apple Valley Road and Tao Road – change from Class III to Class II bike lanes

Modamon Road
- between State Route 18 and Apple Valley Road – new Class II bike lanes

As described above, some bicycle routes have been changed from Class I to Class II in this Circulation Element. The change generally applies to roadways with high volumes, near freeway access points, in order to limit the potential for conflicts at freeway on and off ramps.

Multi-Use Trails

The proposed Recreation Trails Plan for Apple Valley addresses the demands for recreation, protects and enhances the existing rural environment, and provides a framework for future planning and development of trails throughout the Apple Valley Planning Area. The Trails Plan, as shown in Exhibit III-33, defines and illustrates a proposed system of recreation trails, including bridle trails and multi-use trails. The Exhibit incorporates changes to the trails which are currently being undertaken by the Town through an amendment to the current Trails Map. The amendment will be completed prior to the adoption of the General Plan, and has therefore been incorporated into the proposed system. The proposed Recreational Trails Plan includes Lifeline Trails for equestrian use and multi-use as well as Recorded Bridle Trails. Multi-use trails are used for walking, bicycle riding, or horseback riding. Except for authorized maintenance, utility, law enforcement and emergency vehicles, motorized vehicles are prohibited.

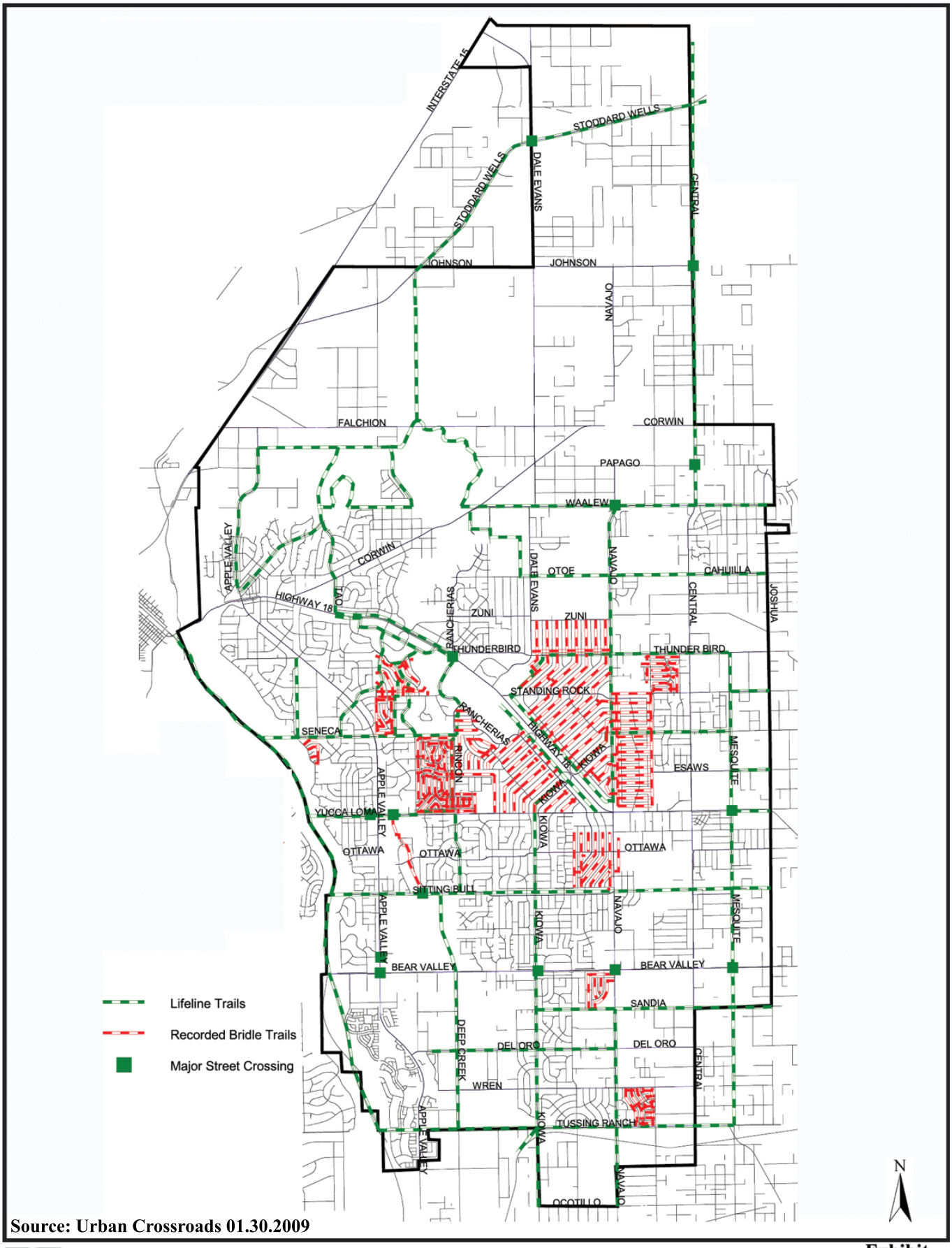


Source: Planning Divison and Urban Crossroads 01.29.2009

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Apple Valley General Plan Draft EIR
Proposed Bicycle Pathways
Apple Valley, California

Exhibit
III-32



Source: Urban Crossroads 01.30.2009

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Apple Valley General Plan Draft EIR
Proposed Recreation Trail System
Apple Valley, California

Exhibit
III-33

3. Mitigation Measures

The Town Engineer has reviewed the Town of Apple Valley Traffic Study prepared for the General Plan, and has determined that it has been prepared in accordance with Town standards. With the incorporation of mitigation measures listed below, the overall traffic and circulation impacts resulting from buildout of the Proposed General Plan and annexations will be reduced to less than significant levels and the required levels of service will be maintained at all intersections except Dale Evans Parkway and Corwin Road, which will operate at LOS E. This intersection's impacts cannot be mitigated to less than significant levels, and impacts will remain significant and unavoidable.

1. The Town shall establish and maintain a master plan of roadways that sets forth detailed improvement plans and priority schedules for implementation. The plan shall ensure that roadway segments and intersections generally operate at level of Service C or better, wherever feasible, and that all intersections maintain a Level of Service D or better during both morning and evening peak hours.

2. Street rights-of-way shall be provided as follows:
   - 142 feet for a Major Divided Parkway
   - 128 feet for Major Divided Arterials
   - 104 feet for Major Roadways
   - 88 feet for Secondary Roadways
   - 60 to 66 feet for Collector Streets
   - 66 feet for Industrial and Commercial Local Streets
   - 60 feet for Local Streets
   - 50 feet for Rural Streets and Cul-de-Sacs

3. All Town streets shall be designed to have a minimum lane width of 12 feet.

4. To minimize the number and length of vehicle trips travelled within the planning area, the General Plan Land Use Plan shall provide for a balance and mix of employment and housing opportunities.

5. The Town shall encourage the use of mass/public transit, and collaborate with the Victor Valley Transit Authority (VVTA) to ensure the ongoing operation and expansion of fixed route bus and demand responsive systems.

6. The Town shall require that new development projects on arterial roadways incorporate bus pullouts, to allow buses to leave the flow of traffic and reduce congestion.

7. The Town shall encourage the use of multi-occupant modes of transportation, and shall encourage employers to utilize telecommuting opportunities, home-based employment, and part-time or non-peak hour work schedules.

8. The Town shall develop a program to retrofit bus pullouts on built-out streets, wherever possible, and shall implement them through the Capital Improvement Program.

9. The Town shall enhance and expand its comprehensive Master Plan of continuous, convenient multi-use trails and bicycle routes that connect residential, commercial, schools, parks and other community activity centres.

10. The Town shall consult and coordinate with the County of San Bernardino and the California Department of Transportation to ensure the provision of adequate all-weather crossings along critical roadways.

11. The Town shall ensure that sidewalks are provided on all roadways that are 88 feet wide or wider. In Rural Residential land use areas, the Town shall ensure that designated pathways are provided

12. The Town shall confer and coordinate with the Apple Valley Unified School District to develop and implement safe routes to school.

13. The Town shall proactively consult and coordinate with the County of San Bernardino to ensure that the local airport continues to meet the Town's existing and future transportation, commercial and emergency response needs.

14. The Town shall require, as necessary, project-specific and/or phase-specific traffic impact analyses for subdivision and other project approvals. Such analyses may be required to identify build out and opening year traffic impacts and service levels, and may need to exact mitigation measures required on a cumulative and individual project or phase basis.

15. Concurrent with construction, all new development proposals located adjacent to public roadways shall be required to install all improvements to their ultimate General Plan half-width.

16. The Town shall continue to monitor roadway segments where the daily Volume to Capacity ratio analysis indicates that build out traffic volume will "potentially exceed capacity."

17. The Town shall review traffic volumes resulting from General Plan build out to coordinate, program and if necessary, revise road improvements. This review shall take place every five years.

18. All new development shall be required to pay a "fair share" of improvements to surrounding roadways, bridges and signals that are impacted by and are located within and surrounding the development project.

19. The Town shall ensure that pedestrian access is preserved and enhanced by means of the following: improved sidewalks, pedestrian walkways, lighting and landscaping designs and connections to existing sidewalks and trails.

20. New development proposals shall be required to construct bicycle lanes in conjunction with off-site improvements.

21. New development proposals shall be required to construct recreational trails in conjunction with off-site improvements.

Mitigation Monitoring/Reporting Program

A. The Town shall review and update the master roadway plans to identify facilities where capacity is at or near full utilization. The schedule for securing right-of-way and constructing improvements shall be consistent with projected needs and standards as established in the Circulation Element and this EIR. Necessary improvements will be incorporated into the Town's Capital Improvement Plan.
Responsible Parties: Public Works Division, Town Engineer

B. The Town shall periodically confer and coordinate with the County of San Bernardino, California Department of Transportation, SCAG, SANBAG and adjoining jurisdictions regarding transportation planning activities, to assure the coordination of planning and construction efforts of major roadway improvements along identified critical roadways, and that Town programs, policies and strategies are provided full consideration in resolving regional transportation issues affect the community.
Responsible Parties: Public Works Division, Planning Division, Town Engineer, County of San Bernardino, California Department of Transportation, SCAG, SANBAG

C. Project proponents shall submit detailed development and preliminary roadway improvement plans to the Town prior to the approval of subdivision maps or other Town development permits. Town staff shall review plans to assure compliance with circulation improvement plans and originally approved development plans.
Responsible Parties: Planning Division, Town Engineer

D. The Town shall monitor the planning and development of all-weather crossings as part of the implementation of the Community's Master Drainage Plans.
Responsible Parties: Planning Division, Public Works Division, Town Engineer.

E. The Town shall continue to monitor the effectiveness of its multi-use trails and bikeways, and shall continue to secure bicycle storage facilities and other support facilities that increase non-motorized transportation.
Responsible Parties: Public Services Department.

F. The Town shall continue to promote and encourage expanded public transportation by means of on-going consultation and coordination with the Victor Valley Transit Authority.
Responsible Parties: Economic and Community Development Department, Town Engineer, Victor Valley Transit Authority

G. Prior to project approval, the Town shall verify that the developer has consulted with Victor Valley Transit Authority and that public transit has been incorporated into project design to the greatest extent feasible.
Responsible Parties: Planning Division, Town Engineer, Victor Valley Transit Authority, Project Proponent