Lancaster General Plan 2030

Soaring Into the Future

FINAL

April 2009

General Plan 2030 Master Environmental Assessment

City of Lancaster

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FINAL

MASTER ENVIRONMENTAL ASSESSMENT

Lead Agency:

CITY OF LANCASTER
44933 North Fern Avenue
Lancaster, California 93534
Contact: Mr. David Ledbetter, Senior Planner
661.723.6100

Prepared by:

RBF CONSULTING
14725 Alton Parkway
Irvine, California 92618-2069
Contacts: Mr. Glenn Lajoie, AICP
Ms. Susan J. Harden, AICP
Ms. Starla Barker
949.472.3505

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1.0 Introduction

1.0 INTRODUCTION

1.1 BACKGROUND

The City of Lancaster last updated its General Plan in 1997. Since that time, the City has experienced rapid growth and many other changes in and around the City. As a result, the City of Lancaster is updating their General Plan to account for these changes and to focus on growth and development within Lancaster over the next 25 years. Lancaster General Plan 2030 will establish goals and policies that reflect the City's vision for future growth and the protection of its resources.

The General Plan is a State required legal document that provides guidance to decision makers regarding land use decisions and the allocation of resources. The General Plan is required to address seven mandatory elements: land use, circulation, housing, conservation, open space, noise and safety. A City can also include optional elements as part of its General Plan. Each element has equal weight under the law and statute requires that a General Plan be integrated and internally consistent within and among the elements.

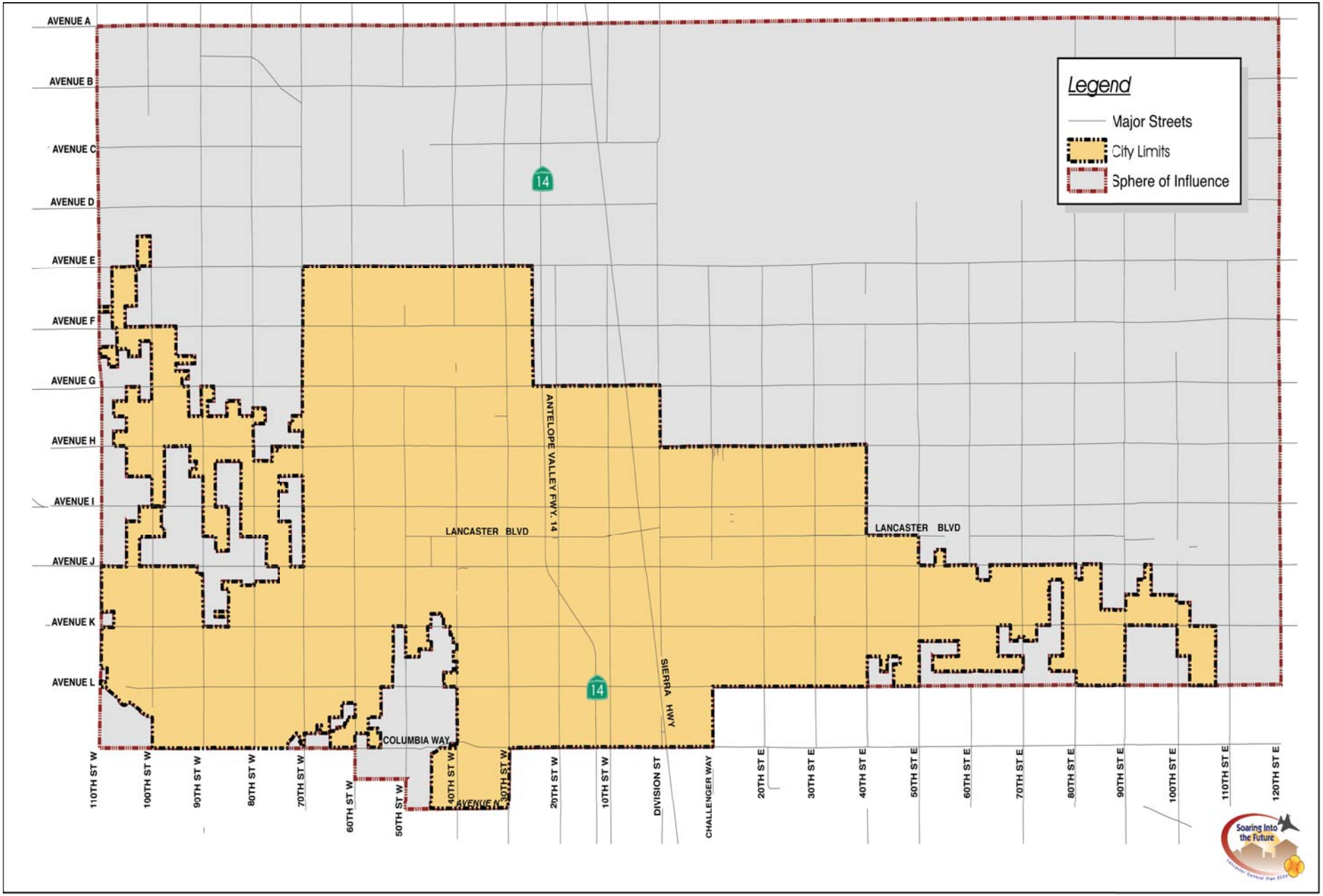
1.2 GENERAL PLAN STUDY AREA

The General Plan must cover the territory within the City boundaries as well as land outside its boundaries, which is influenced by decisions made by the City. Los Angeles County regulates the unincorporated area outside of the City; however, State law permits cities to prepare plans for areas outside of their jurisdiction if the areas have a direct relationship to their planning needs. This area is referred to at the "sphere of influence." In order to ensure that the City's General Plan addresses issues that may affect, or be affected by, areas outside of the existing City limits, a comprehensive General Plan study area (study area) has been established.

The City of Lancaster is located within the Antelope Valley, in North Los Angeles County, approximately 70 miles north of downtown Los Angeles. The City's incorporated boundaries encompass 94 square miles or approximately 60,160 gross acres of land. The study area for the Lancaster General Plan 2030 update includes the City of Lancaster and its sphere of influence (268 square miles); refer to Figure 1-1, Lancaster General Plan 2030 Study Area. The City's sphere of influence extends from Avenue A in the north to Avenue N in the south and from 120th Street East in the east to 110th Street West in the west. The northern boundary of the study area is adjacent to the Kern County line and includes a portion of Edwards Air Force Base and its dry lakebeds. The communities of Quartz Hill and Antelope Acres are also included. Air Force Plant 42 and the City of Palmdale border the study area on the south.

1.3 MASTER ENVIRONMENTAL ASSESSMENT

This Master Environmental Assessment (MEA) has been developed as part of the Lancaster General Plan 2030 update. The purpose of the MEA is to provide existing baseline conditions within the City of Lancaster General Plan study area. Physical, environmental, cultural, social and economic conditions for the study area are identified in the MEA to establish where the City is today and to help formulate goals and policies that will guide the City into the future. Additionally, information developed as part of the MEA will be utilized and summarized for the existing conditions subsection of the Program Environmental Impact Report (PEIR) for the Lancaster General Plan 2030.



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0 4,000 8,000 16,000 Feet

Lancaster General Plan 2030

Lancaster General Plan 2030 Study Area

Figure 1-1

According to the *California Environmental Quality Act (CEQA) Guidelines*, Section 15169, a public agency may prepare a MEA to provide information that may be used or referenced in EIRs or Negative Declarations. The *CEQA Guidelines* suggest the preparation of an MEA as an approach to identify and organize environmental information, but do not prescribe the content, format, or the specific procedures to follow. *CEQA Guidelines* suggest the following uses for the MEA:

- Identify the environmental characteristics and constraints of an area. This information can be used to influence the design and location of individual projects.
- Provide information that agencies can use in initial studies to decide whether certain environmental effects are likely to occur and whether certain effects will be significant.
- Provide a central source of current information for use in preparing individual EIRs and Negative Declarations.
- Reference and summarize relevant portions in EIRs and Negative Declarations.
- Assist in identifying long range, area-wide, and cumulative impacts of individual projects proposed in the area covered by the assessment.
- Assist a city or county in formulating a general plan or any element of such a plan by identifying environmental characteristics and constraints that need to be addressed in the general plan.
- Serve as a reference document to assist public agencies, which review other environmental, documents dealing with activities in the area covered by the assessment. The public agency preparing the assessment should forward a completed copy to each agency, which will review projects in the area.

The MEA provides the City of Lancaster with baseline data for Environmental Impact Reports and all project and policy related CEQA documents. The MEA provides the baseline environmental information for initial studies to help the City determine whether significant impacts will occur with the development of individual projects.

Wherever possible, existing conditions information in the MEA is provided for the entire study area. However, it should be noted that information is collected from a variety of sources, which vary in the way data is collected and presented. Therefore, there may be instances when data is provided on a regional level (i.e., the Antelope Valley), county level (Los Angeles County), local level (i.e., City of Lancaster and adjacent cities), or City level, based on Lancaster's city limits.

1.4 CHARACTERISTICS

The City of Lancaster is characterized by a pattern of low-density land uses, which extend from the east at 40th Street East west to 70th Street West. Areas of rural residential development extend beyond the main urban development to 107th Street in the east and 110th Street in the west. A central core exists along Highway 14 and Sierra Highway, which consists of a mix of land uses including commercial, office and civic uses, and old and new single and multi-family

residential. The Central Business District is located along West Lancaster Boulevard between Sierra Highway and 10th Street West.

The movement for the development of Lancaster came in 1876 when the Southern Pacific Railroad established a loading stop for locally grown agricultural produce near what would later become Lancaster Boulevard. Small manufacturing, warehousing, and industrial uses arose adjacent to the railroad to take advantage of its access. These activities encouraged the development of commercial and residential uses. By the early 1880s, the rudiments of a town had formed, which would eventually become the central core of Lancaster.

Until the 1950s, the town of Lancaster was primarily contained within an area bounded by Avenue I, 10th Street West, Avenue J, and Division Street. The introduction of aerospace to the Valley in the early 1950s shifted the main economic base away from agriculture into a market that still exists today. As the population increased to fill the jobs created by aerospace, an influx of new residences and commercial uses began to expand the community outward from the urban core.

Through the 1960s and 1970s, development continued to expand outward from the original center in a dispersed pattern. The construction of the Antelope Valley Freeway during this time created a new main thoroughfare to the Los Angeles area and shifted focus away from the existing Sierra Highway. In response, residential and commercial development began to appear along both sides of the freeway, with residential development that extended as far out as 40th Street West. By the end of the 1970s, urban growth had extended into the southwest near the Quartz Hill community and to the east of 15th Street East. By the end of the 1970s, urban growth had extended into the southwest near the Quartz Hill community and to the east of 15th Street East.

During the 1980s, the cities of Palmdale and Lancaster underwent a period of tremendous population growth and urban expansion. Two reasons for this growth included, resurgence in the aerospace industry as a result of increased defense spending by the Reagan Administration that stimulated all sectors of the valley economy, and the expansion of the single-family housing market, which responded to the affordable housing crisis of the 1970s. This created new affordable housing opportunities for a vast number of first-time homebuyers, who had been previously priced out of the Los Angeles metropolitan market. Affordable housing induced thousands of young first-time homebuyers to move to the Antelope Valley. The affordable housing migration began in the early 1980s and continued to influence the City's growth during the 1990s.

In the early 1990s the City of Lancaster, and southern California in general, experienced a recession where housing construction and sales slowed for nearly five years. During this time, the cities of Lancaster and Palmdale and portions of the unincorporated Los Angeles County received an Enterprise Zone designation. Currently, the Zone area occupies over 61 square miles of land, nearly all of which is zoned commercial and industrial. The primary purpose of the Enterprise Zone was, and continues to be, to expand business opportunities in the Antelope Valley, to attract new companies and encourage businesses to expand through economic incentives. Business incentives include, State hiring credits, State sales and use tax credits and business expense deductions.

Since 2000, the City has entered a new period of rapid growth largely supported by factors such as the Enterprise Zone and low tax rates. In 2000, occupancy rates in Lancaster reached 86

percent with primary growth in new commercial centers and older street-front business areas on major thoroughfares. The housing market in Lancaster continues to fuel growth through single-family development, which has continued to attract new residents, particularly from southern California, to the Antelope Valley.

Employment has increased at the pace with the national average. Significant new levels of industrial development, particularly within the Fox Field Specific Plan Area and the Lancaster Business Plan Area, have occurred during the last half-decade in Lancaster. In 2005, the City of Lancaster's civilian labor force consisted of approximately 57,655 persons. At the time of the Census, an estimated 9.9 percent of the City's civilian labor force (5,761 persons) was unemployed. The majority of the City's labor force (approximately 26.9 percent) was employed in sales and office occupations and management, professional and related occupations (23.2 percent), compared to the County of Los Angeles whose majority occupation was management, professional and related occupations (33.5 percent) and sales and office occupations (26.2 percent). SCAG projects that the City's employment trends will continue to increase over the next twenty-five years with 71,816 employees by 2030, representing a 24.6 percent increase since 2005.

1.5 MEA FORMAT

The MEA is comprised of the following Sections:

- Section 1.0 Introduction
- Section 2.0 Earth Resources
- Section 3.0 Biological Resources
- Section 4.0 Land Use
- Section 5.0 Population
- Section 6.0 Transportation and Circulation
- Section 7.0 Air Quality
- Section 8.0 Noise
- Section 9.0 Public Services
  - 9.1 Fire Protection and Emergency Services
  - 9.2 Crime and Prevention Services
  - 9.3 Public Schools
  - 9.4 Parks and Recreational Facilities
  - 9.5 Public Facilities
- Section 10.0 Utilities
  - 10.1 Water
  - 10.2 Wastewater
  - 10.3 Storm Drainage
  - 10.4 Solid Waste
  - 10.5 Energy
- Section 11.0 Historical Resources
- Section 12.0 Scenic Resources
- Section 13.0 Fiscal Resources

1.6 REFERENCES

Antelope Valley Enterprise Zone Official Website, "Where is the Zone," www.avez.org/wherezone, accessed July 2006.

United States Census Bureau, American Factfinder, 2005.

2.0 Earth Resources

2.0 EARTH RESOURCES

2.1 INTRODUCTION

This section examines the geologic processes that created the existing geology, physiography and topography of the Antelope Valley and includes a discussion of soil resources, seismic setting, influence of local and regional faults, and hazards related to geologic conditions in the Lancaster General Plan study area (study area).

2.2 GEOLOGY

REGIONAL SETTING

The Antelope Valley is an arid valley in the western corner of the Mojave Desert. The Mojave Desert in California is a wedge-shaped block bounded by the San Andreas Fault Zone on the southwest, the Garlock Fault Zone on the northwest, and the Colorado River on the east. Uplifts of the San Gabriel and Tehachapi Mountains isolated the Mojave Desert from the Pacific Coast and created the interior drainage basins of the western Mojave Desert, such as the Antelope Valley. The Antelope Valley is surrounded by the Tehachapi Mountain range in the north and northwest, and the San Gabriel, Sierra Pelona and Liebre Mountains to the south and southwest. Geologically, the Antelope Valley is part of the Mojave structural block, which is an elevated desert. The topography of the City and study area generally slopes up to the southwest, with elevations ranging from approximately 2,300 feet in the northeast to 3,500 feet in the southwest. The overall topography of the City is somewhat flat. Major topographic features include Quartz Hill located in the southern portion of the study area, and the Fairmont and Antelope Buttes located west of 110th Street West.

The geology of the region consists of three main rock groups: crystalline rocks of Pre-Tertiary age; volcanic and sedimentary rocks of Tertiary age; and alluvial sedimentary rocks of Quaternary age. The first two groups consist of older, hard, consolidated materials from the surrounding mountains and rocky buttes that rise from the valley floor. The Antelope Valley soils profile consists of up to 4,000 feet of alluvial fill underlain by consolidated rocks. The bottom of the rock formations, known as the basement, includes the oldest formation and consists of quartz, monzonite, granite, gneiss, schist and other igneous and metamorphic rocks. The rocks overlying the basement primarily consist of shale, sandstone, conglomerate and siltstone.

The alluvial fills consist of fine to coarse-grained soil layers formed as a result of uplift and erosion of the surrounding mountains. Among the most distinct deposits of the valley fill are the fluvial lake deposits. Because of the fluvial deposits, the fill has extensive interbedding sequences of silt, clay, sand and gravel. The Antelope Valley area consists of fine-grained alluvium except for localized occurrences of very coarse-grained alluvium and metamorphic rock outcrops.

LOCAL GEOLOGY

The City of Lancaster lies within a seismically active area referred to as the Mojave Desert Geomorphic Province of California, and is located at the western edge of a moving plate in the

earth's crust. Defining the boundary of this area is the San Andreas Fault, where the Pacific Plate and the North American Plate meet.

The Pacific Plate is wedging itself beneath the adjacent North American Plate at a steep angle in a generally northwest to southeast direction. As these two land masses move slowly past each other, the enormous pressure causes buckling, breaking, and fracturing in the earth's crust. As is typically the case where these pressures occur, an earthquake fault was created, namely, the San Andreas Fault. Movement along this fault has caused extensive faulting, folding and uplifting in the local rock formations. The San Andreas Fault is located approximately nine miles south of the City of Lancaster.

As with the region as a whole, the geology of the study area consists of three main rock groups: crystalline rocks of Pre-Tertiary age; volcanic and sedimentary rocks of Tertiary age; and alluvial sedimentary deposits of Tertiary and Quaternary age.

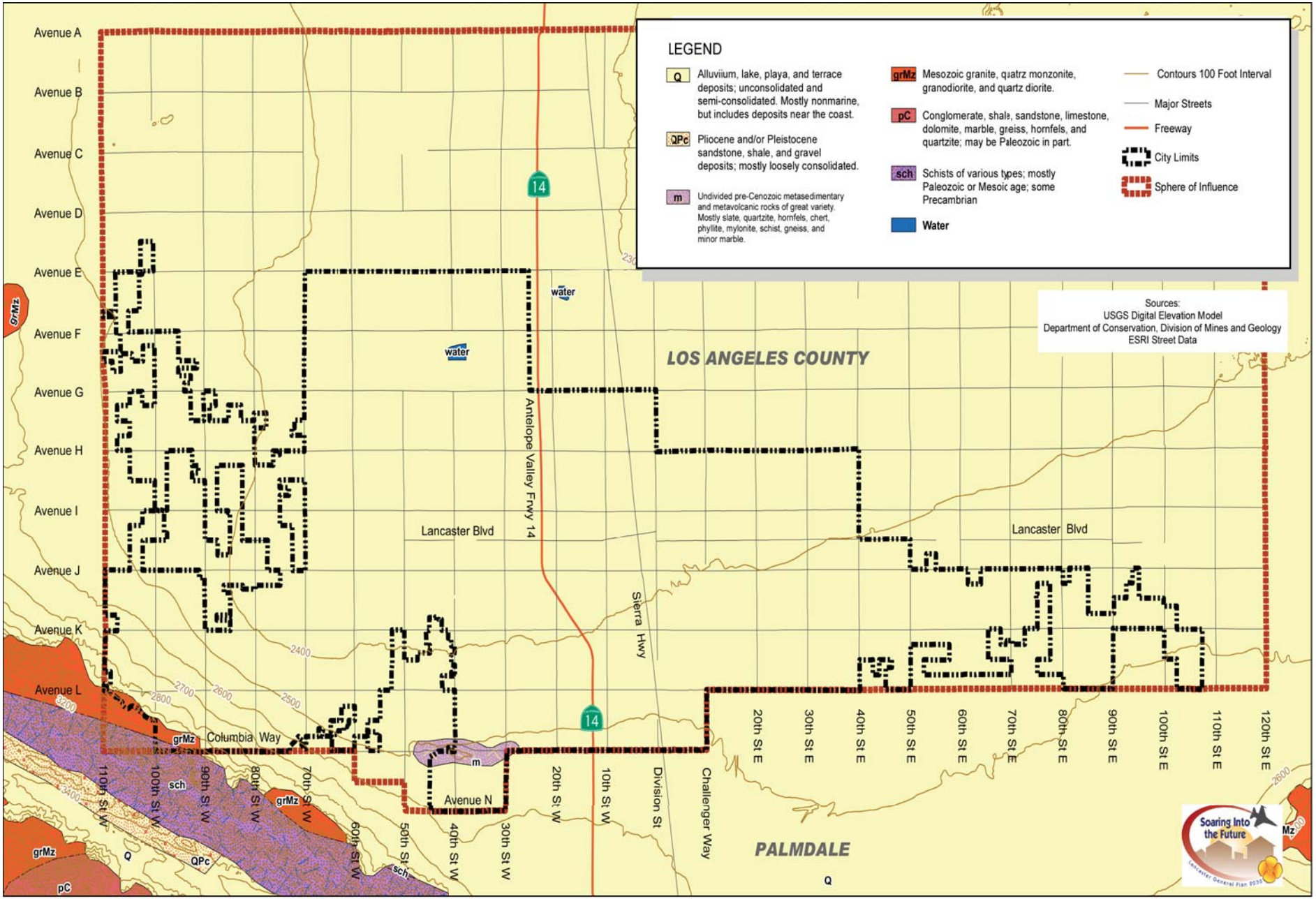
Some of these rock types include schists, quartz monzonite, and local volcanic formations. The third group comprises younger, unconsolidated alluvial (stream-deposited) materials formed in the wash areas of the lower foothills and stream beds that comprise much of the valley flow, in some locations to depths in excess of 2,000 feet. Consolidated rocks equivalent to Tertiary and older materials underlie this alluvium. Figure 2-1, Geologic Map, depicts the local geology, topographic contours, and significant landforms of the study area. These formations have been subject to substantial folding and uplifting as a result of local fault movement.

2.3 SOILS

SOIL ASSOCIATIONS

Most of the Mojave Desert region is a high basin that includes remnants of older earth materials that occur as scattered buttes. The alluvial fans and terrace region in the western and southwestern parts of Antelope Valley is made up of deposited stream materials. The upland region consists of foothills, mountains, ridges, fault scarps, and associated valley floors of the nearby San Gabriel Mountains. Generally, the soils within the Lancaster study area have resulted from the uplift of the San Gabriel Mountains and their subsequent erosion. The alluvial deposits found within the foothill region consist of coarse-grained sediment intermingled with organic matter with depositions of finer-grained silts and clays in areas further from the mountains.

Six soil associations, as defined by the United States Department of Agriculture and Soil Survey, are identified within the study area (refer to Figure 2-2, Soil Associations). In general, a soil association is a landscape that has a distinctive, proportional pattern of soils. It normally consists of one or more major soils and at least one minor soil. In general, upland soils (Vista Amargosa Association) are located southwest of the California Aqueduct, in the southwest corner of the study area. The alluvial fan and terrace soils (Hanford-Ramona-Greenfield Association) are found in the lower foothill and basin lands in the western and southwestern portions of the study area. In addition, there are four separate associations of desert soils, located throughout the study area, as depicted in Figure 2-2. These associations include the Hesperia-Rosamond-Cajon, Pond-Tray-Oban, Sunrise-Merrill, and Adelanto. These soils, stable and well drained, are most conducive for development.



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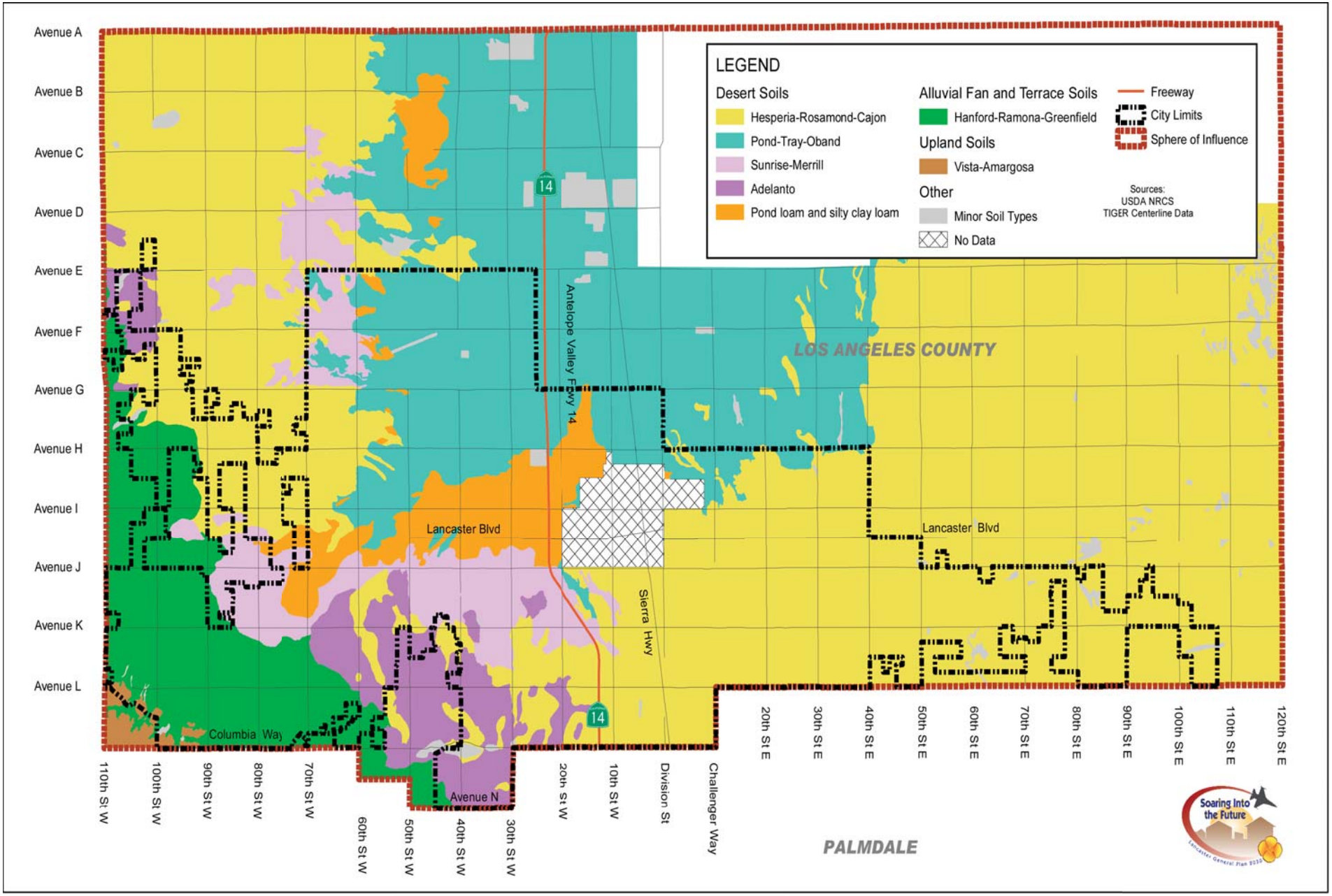
Lancaster General Plan 2030

Geologic Map

Figure 2-1



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Lancaster General Plan 2030

Soil Associations

Figure 2-2

- *Hesperia-Rosamond-Cajon Association*. These soils are very deep and are moderately well drained to excessively drained. They are formed in alluvium derived from granitic rock. Slopes range from 0 to 15 percent. These soils are characterized by good to fair topsoil, low water-holding capacity for irrigation, slow permeability, and low shrink-swell potential. Depth to bedrock is five feet or greater.

- *Pond-Tray-Oban Association*. These soils are found in basins north of Lancaster, and are very deep and moderately well drained. They contain slight to moderate amounts of soluble salts and alkali. These soils are formed in alluvium derived from granitic rock, and have slopes of 0 to 2 percent. Soils of this association are characterized by poor topsoil, slow permeability, high water-holding capacity for irrigation, and low to high shrink-swell potential. Depth to bedrock is five feet or greater.

- *Sunrise-Merrill Association*. These soils are moderately well drained, and are shallow to moderately deep. These soils are also moderately saline-alkali, and are formed in alluvium derived from granitic rock. Slopes range from 0 to 2 percent. The soils are characterized by poor topsoil, moderate water holding capacity for irrigation, moderately slow permeability, and low to moderate shrink-swell potential. Depth to bedrock is five feet or greater.

- *Adelanto Association*. These soils are very deep, well drained, and are formed in alluvium derived from granitic rock. Slopes range from 0 to 5 percent. The soils are characterized by poor topsoil, favorable potential for irrigation, moderate permeability, and low shrink-swell potential. Depth to bedrock is five feet or greater.

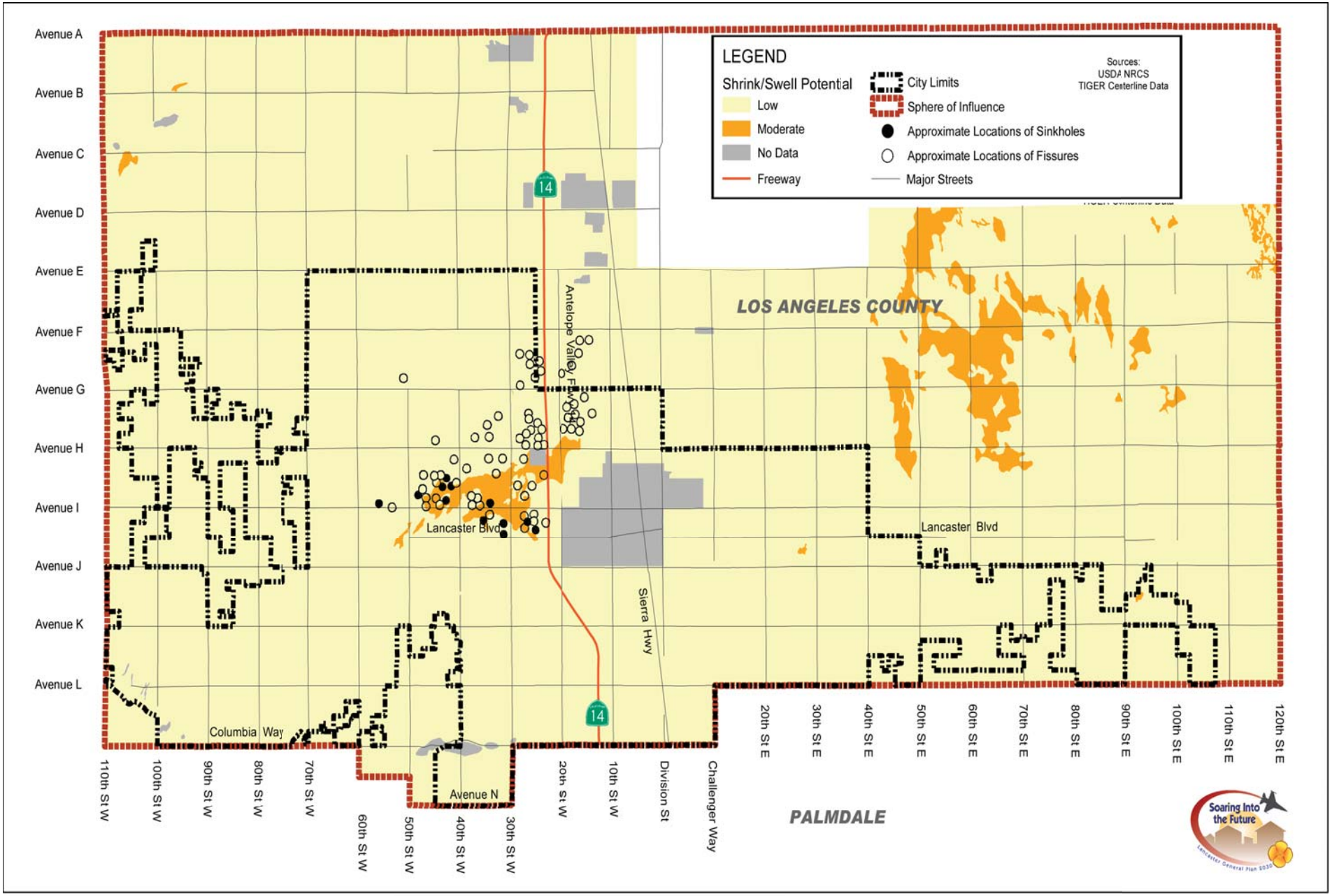
- *Hanford-Ramona-Greenfield Association*. These soils are very deep, well drained, and formed in alluvium from granitic rock. Slopes range from 0 to 30 percent. The soils are characterized by fair topsoil, moderately rapid permeability, moderate water holding capability for irrigation and low shrink-swell potential. Depth to bedrock is five feet or greater.

- *Vista-Amargosa Association*. These soils are moderately deep to shallow over granite, and are well drained to excessively drained. Slopes range from 9 to 55 percent. The soils are characterized by fair topsoil, moderately rapid permeability, low water holding capability for irrigation, and low shrink-swell potential. The depth to bedrock is two to three feet, which is considered shallow, and therefore represents a potential constraint for future development.

SOIL STABILITY

Shrink-Swell Potential

Shrink-swell potential of soils is defined as the relative measure of the propensity of the soil to swell when wet and shrink when dry. The amount of swell is related primarily to the presence and amount of certain types of clay. The Soil Conservation Service has delineated three ranges of shrink-swell potential: low, moderate, and high. The locations of these ranges within the study area are depicted on Figure 2-3, Soil Stability Issues. Highly expansive soils can cause substantial damage to building foundations, highways and other surface structures. However, these effects can be minimized or eliminated (particularly in areas of moderate shrink-swell), provided that structures are engineered in accordance with existing building code requirements. Construction costs, consequently, will be higher in such areas.



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Lancaster General Plan 2030

Soil Stability Issues

Figure 2-3

Most of the City of Lancaster is characterized by soils of low shrink-swell potential, which do not represent a problem for foundation construction. An exception is the area north of Lancaster Boulevard and west of 10th Street West, as illustrated by Figure 2-3, where the soils are classified as moderately expansive and warrant special design considerations.

Shrink-swell conditions in the study area are similar to those within the City. Most areas exhibit low potential. High shrink-swell potential is found in the general area between Avenue I and Avenue J to 75th Street West, and north of the City between 40th Street West and Sierra Highway.

Subsidence and Fissures

Portions of the City and study area are characterized by soil, which exhibit sinking or subsidence. Figure 2-3 illustrates the locations of identified sinkholes and major fissures within the study area, as identified by several studies conducted in the early 1990s. Over the years, several areas in the City, as well as areas throughout the Antelope Valley, have experienced various degrees of soil subsidence. The only soil condition identified in the study area that may present a hazard from subsidence is the potential for fissuring. The known areas of fissure occurrence in Lancaster are shown on Figure 2-3.

Fissures are typically associated with faults or groundwater withdrawal, which results in the cracking of the ground surface. Ground fissures have been reported for years throughout the southwestern United States. However, as new development extends into arid areas, the problems associated with fissuring have increased.

Surface water may enter the fissures and move laterally through the soils, eroding the underlying rock material. Small earth bridges are created, which can easily collapse. The phenomenon has resulted in local surficial subsidence in southern California.

Fissures impacting development in the Antelope Valley were first reported in the early 1980s. Fissures have developed on the dry lakebed used as a runway at Edwards Air Force Base. The ground at Edwards Air Force Base is a hard clay material, while the problem areas in Lancaster have an almost concrete-like material near the surface called caliche, a cemented deposit of calcium carbonate. Caliche most often underlies soils within the Sunrise association. Depth to the caliche ranges from 10 to 39 inches, according to the Department of Agriculture. These types of soils have poor bearing strength, and generally cannot support foundations without special design or construction techniques. Within the Sunrise soils, caliche is a pale-yellow, calcareous material with heavy loam and cemented deposits of calcium carbonate. Sunrise soils are located in the extreme north-central portion of the study area, and in the west-central portion, near the California State Prison (refer to Figure 2-3). It is believed that when water is drawn out of the earth hundreds of feet below ground the soil begins to dry and with the loss of moisture and pore pressure the soils compact. Because dry layers take up less space, gravity causes the soils above to settle, causing the subsidence and fissuring at the surface.

2.4 MINERAL RESOURCES

The western Mojave Desert region has historically been an important source of both metallic and nonmetallic minerals and rocks. Metal ores such as gold, silver, and tungsten were mined for years in the Mojave mining district. Minor deposits of tin, lead-zinc, copper, manganese, and

radioactive materials were also exploited, but eventually became uneconomical after World War II, due largely to depletion of the deposits. Currently, there are no active mines within the study area.

A number of exploratory energy wells were drilled in the study area over the past century, however none of the wells ever indicated the presence of oil or gas. The geologic marine formations that underlie the Mojave Desert and the study area are too metamorphosed to act as a source for oil or gas.

AGGREGATE RESOURCES

To protect and allow for the economical utilization of aggregate resources, the Surface Mining and Recovery Act (SMARA 1975) charges the State Mining and Geology Board to inventory and classify potential aggregate resources throughout the State. The necessary information is developed during a process called classification/designation. This information must be incorporated into General Plans and be considered by local jurisdictions when making decisions concerning land use.

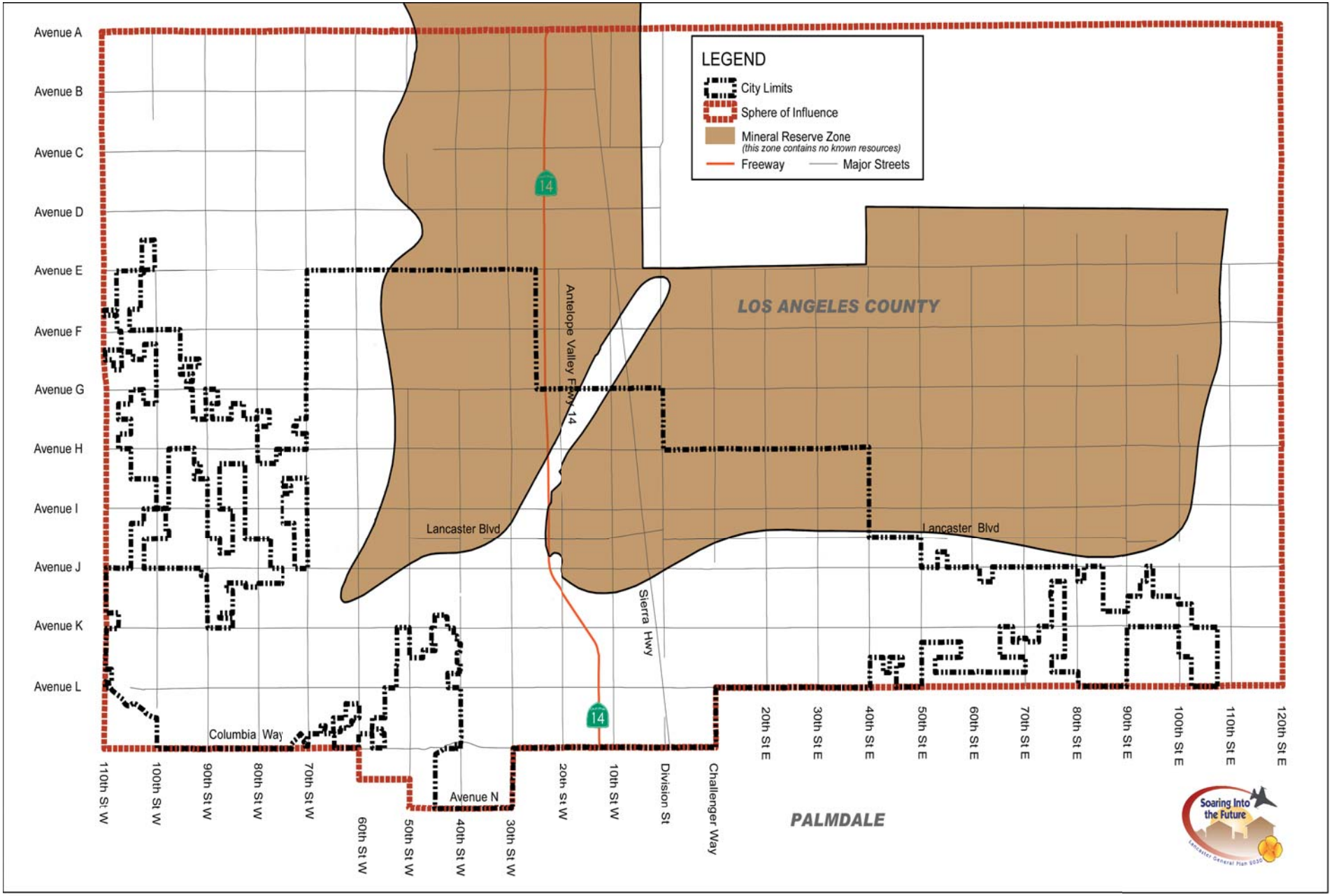
The study area is located in the Palmdale Production-Consumption (P-C) region. A production consumption region is the market area of a mineral commodity, in this case, sand and gravel. The State Geologist classifies Mineral Resource Zones (MRZ) within a P-C region based on the following geological factors:

- MRZ-1 indicates an area that contains no resources;
- MRZ-2 indicates the existence of a deposit that meets certain criteria for value and marketability;
- MRZ-3 indicates an area which contains potential but presently unproven resources; and
- MRZ-4 are areas where it is not possible at present to assign any of the above categories.

According to the most recent data from the California Geological Survey, the study area includes both MRZ-1 and MRZ-3 resource areas, as shown in Figure 2-4, Mineral Resources. The MRZ-3 classification indicates potentially significant mineral deposits that can be reclassified as significant mineral deposits through either a petition or regular periodic review by the State. This reclassification can occur in the event of a change in the mineral resources, or if a threat to the extraction of mineral deposits develops. Once areas within their jurisdiction have been classified as MRZ-3, cities and counties may prepare a report in order to determine the economic viability and extent of mineral and aggregate resources. However it is not considered likely that the Lancaster area has large, valuable mineral and aggregate deposits.[1]

The primary local source of aggregate materials for construction (principally sand and gravel) is outside of the study area and to some degree outside of the Antelope Valley region. Mineral resources used for construction such as sand, gravel, and stone have to be imported from the Little Rock Creek fan, located approximately 13 miles southeast of Lancaster and from the Big Rock Creek fan, approximately eight miles farther east. The Little Rock Creek deposit is a Holocene alluvial fan approximately 12 square miles in area that extends north from the San Gabriel Mountains. The Big Rock Creek deposit is considerably larger, but of a similar

[1] Rush Miller, phone conversation, California Geology Survey, January 29, 2007.



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Mineral Resources

Figure 2-4

composition to the Little Rock Creek fan. Both of these deposits consist of approximately 40 percent gravel to 60 percent fine to coarse sand and silt. The gravel is derived from young granitic rocks (granodiorite, quartz monzonite, and quartz diorite), while the sand is composed of quartz, mica, and feldspar.

2.5 EARTHQUAKE FAULTING AND SEISMICITY

EARTHQUAKE MEASUREMENTS

Scientists use two basic scales to measure earthquakes. The first is the Richter Scale, which measures the magnitude (M) of energy released by an earthquake. The Richter Scale is a logarithmic scale whereby an increase of 1.0 on the scale represents an increase of about 32 times the amount of energy released. Thus, an M 6.0 earthquake releases 32 times as much energy as an M 5.0 event. This is the most common scale used to compare the "size" of earthquakes, as it is an objective measure based on the energy released by a particular earthquake.

The second scale used to measure earthquakes is the Modified Mercalli scale, which subjectively measures the observed and experienced effects of an earthquake at a particular location. Table 2-1, The Mercalli Intensity Scale, describes the Modified Mercalli Scale in detail. This scale ranges from a low of I (not felt except by a few people under especially favorable circumstances), to a high of XII (total damage with actual waves seen on the ground surface, lines of sight distorted, and objects thrown upward into the air). Thus, an earthquake will have one Richter magnitude, but will have many different Mercalli intensities based on the effects and level of damage in different areas. Table 2-2, Comparison of Richter Magnitude and Modified Mercalli Intensity, shows a comparison of Richter magnitudes to Modified Mercalli intensities.

Table 2-1
The Mercalli Intensity Scale

If most of these effects are observed:	Then the intensity is:
Earthquake shaking not felt, but people may observe marginal effects of large distance earthquakes without identifying these effects as earthquake-caused. Among them trees, structures, liquids, bodies of water sway slowly, or doors swing slowly.	I
Effect on people: Shaking felt by those at rest, especially if they are indoors, and by those on upper floors.	II
Effect on people: Felt by most people indoors. Some can estimate duration of shaking, but may not recognize shaking of building as caused by an earthquake. Shaking is similar to that caused by the passing of light trucks.	III
Other effects: Hanging objects swing. Structural effects: Windows or doors rattle. Wooden rails and frames creak.	IV
Effect on people: Felt by everyone indoors. Many estimate duration of shaking but they still may not recognize it as caused by an earthquake. The shaking is similar to that caused by the passing of heavy trucks, though instead, people may feel the sensation of a jolt, as if a heavy ball had struck the walls. Other effects: Hanging objects swing, standing autos rock. Crockery clashes, dishes rattle, or glasses clink. Structural effects: Doors close, open or swing; windows rattle.	V

Table 2-1 [continued]
The Mercalli Intensity Scale

If most of these effects are observed:	Then the intensity is:
Effect on people: Felt by everyone indoors and by most people outdoors. Many now estimate not only the duration of shaking but also its direction and have no doubt as to its cause. Sleepers wakened. Other effects: Hanging objects swing. Shutters or pictures move. Pendulum clocks stop, start or change rate. Standing autos rock. Crockery clashes, dishes rattle, or glasses clink. Liquids disturbed, some spilled. Small unstable objects displaced or upset. Structural effects: Weak plaster and Masonry D crack. Windows break; doors close, open or swing.	VI
Effect on people: Felt by everyone. Many are frightened and run outdoors. People walk unsteadily. Other effects: Small church or school bells ring. Pictures thrown off walls, knickknacks and hooks fall off shelves. Dishes or glasses break. Furniture moved or overturned. Trees, bushes shaken visibly, or heard to rattle. Structural effects: Masonry D damage, some cracks in Masonry C. Weak chimneys break at roofline. Plaster, loose bricks, stones, tiles, cornices, unbraced parapets, and architectural ornaments fall. Concrete irrigation ditches damaged.	VII
Effect on people: Difficult to stand. Shaking noticed by auto drivers. Other effects: Waves on ponds. Water turbid with mud. Small slides and caving in occurs along sand or gravel banks. Large bells ring. Furniture broken. Hanging objects quiver. Structural effects: Masonry D heavily damaged; Masonry C damaged, partially collapses in some cases; some damage to Masonry B; none to Masonry A; stucco and some masonry walls fall. Chimneys, factory stacks, monuments, towers, elevated tanks twist or fall. Frame house moved on foundations if not bolted down; loose panel walls thrown out. Decayed piling broken off.	VIII
Effect on people: General fright. People thrown to ground. Other effects: Changes in flow or temperature of springs and wells. Cracks in wet ground and on steep slopes. Steering of autos affected. Branches broken from trees. Structural effects: Masonry D destroyed. Masonry C heavily damaged, sometimes with complete collapse; Masonry B is seriously damaged. General damage to foundations. Frame structures, if not bolted down, shifted off foundations. Frames cracked, reservoirs seriously damaged. Underground pipes broken.	IX
Effect on people: General panic. Other effects: Conspicuous cracks in ground. In areas of soft ground, sand is ejected through holes and piles up into a small crater, and, in muddy areas, water fountains are formed. Structural effects: Most masonry and frame structures destroyed along with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, and embankments. Railroads bent slightly.	X
Effect on people: General panic. Other effects: Large landslides, water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land. Structural effects: General destruction of buildings. Underground pipelines completely out of service. Railroads bent greatly.	XI
Effect on people: General panic. Other effects: Same as for intensity X. Structural effects: Damage nearly total, the ultimate catastrophe.	XII
Source: *California Geology*, September 1984.	
Masonry A: Good workmanship and mortar, reinforced and designed to resist lateral courses. Masonry B: Good workmanship and mortar, reinforced. Masonry C: Good workmanship and mortar, unreinforced. Masonry D: Good workmanship and mortar, and weak materials like adobe.	

Table 2-2
Comparison of Richter Magnitude and Modified Mercalli Intensity

Richter Magnitude	Expected Modified Mercalli Maximum Intensity (at epicenter)	
2	I-II	Usually detected only by instruments
3	III	Felt indoors
4	IV-V	Felt by most people; slight damage
5	VI-VII	Felt by all; many frightened and run outdoors; damage minor to moderate
6	VII-VIII	Everybody runs outdoors; damage moderate to major
7	IX-X	Major damage
8+	X-XII	Total and major damage

Source: *California Geology*, September 1984.

SEISMIC HAZARDS

Earthquakes are caused by the violent and abrupt release of strain built up along faults, somewhat analogous to the snap of a pencil, caused by a slow flexing until it breaks. When a fault ruptures, energy spreads, sometimes unequally, in the form of seismic waves. Seismic waves are categorized into two groups: body waves and surface waves. Body waves travel through the crust and eventually reach the ground interface creating surface waves. Both body waves and surface waves cause the ground to vibrate up and down and side to side at different frequencies depending on the frequency content of the earthquake rupture mechanism, the distance from the earthquake source to a particular site, and the path and material through which the seismic wave spreads.

The primary hazards associated with earthquake faulting and seismicity are fault ground rupture and seismic groundshaking. Secondary hazards associated with earthquake faulting and seismicity include liquefaction, differential settlement, landsliding/slope stability, and seiching.

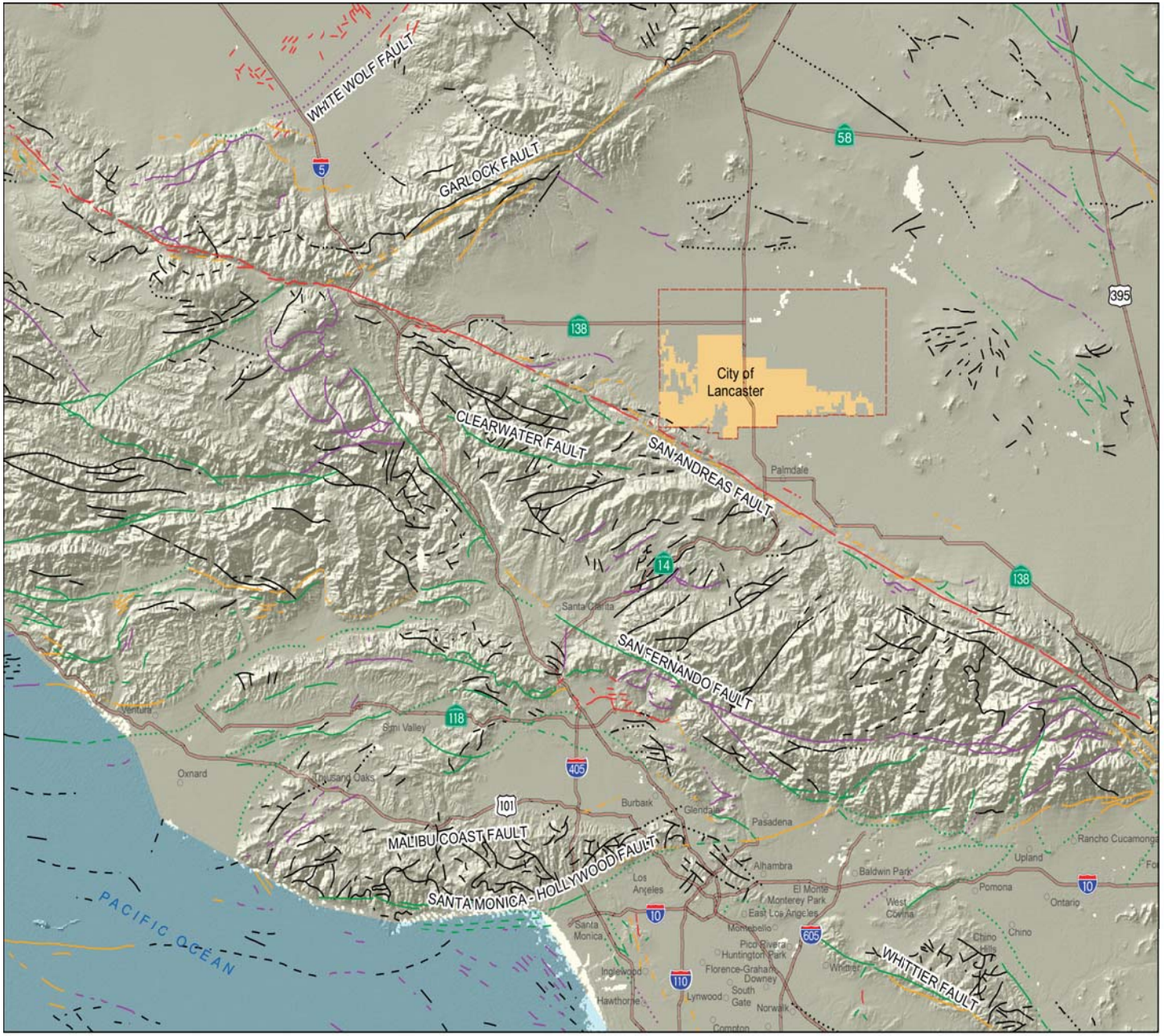
PRIMARY SEISMIC HAZARDS

Earthquake Faults

The Southern California region is seismically active and commonly experiences strong ground shaking resulting from earthquakes along active faults. Figure 2-5, Faults in the Antelope Valley Region, presents the location of those active and potentially active faults in the Antelope Valley region that could generate significant earthquakes affecting the study area.

As defined by the Alquist-Priolo Earthquake Fault Zoning Act, active faults are categorized in two major categories:

- *Active Fault*. The State Mining and Geology Board define an active fault as one, which has "had surface displacement within Holocene time (within the last 11,000 years)." This definition does not, of course, mean that faults lacking evidence for surface displacement within Holocene time are necessarily inactive. A fault may be presumed to be inactive based on satisfactory geologic evidence; however, the evidence necessary to prove inactivity is sometimes difficult to obtain and locally may not exist.



Geologic Time Scale			Years Before Present (Approx.)	Fault Symbol	Recency of Movement	DESCRIPTION	
						ON LAND	OFFSHORE
Quaternary	Late Quaternary	Holocene/Historic	200			Displacement during historic time (e.g. San Andreas fault 1906). Includes areas of known fault creep.	
						Displacement during Holocene time.	Fault offsets seafloor sediments or strata of Holocene age.
			10,000			Faults showing evidence of displacement during late Quaternary time.	Fault cuts strata of Pleistocene age.
	Early Quaternary	Pleistocene	700,000			Undivided Quaternary faults – most faults in this category show evidence of displacement during the last 1,600,000 years; possible exceptions are faults which displace rocks of undifferentiated Plio-Pleistocene age.	Fault cuts strata of Quaternary age.
			1,600,000			Late Cenozoic faults within the Sierra Nevada, including parts of, but not restricted to, the Foothills fault system. These faults may have been active in Quaternary time.	
Pre-Quaternary						Faults without recognized Quaternary displacement or showing evidence of no displacement during Quaternary time. Not necessarily inactive.	Fault cuts strata of Pliocene or older age.
			4.5 billion (Age of earth)			Pre-Quaternary faults not shown in Nevada and Oregon.	

Users of this map should be aware that active faults and earthquakes are the subject of continuing research and that refinements to fault zones will occur through time.

Fault traces on land are indicated by solid lines where well located, by dashed lines where approximately located or inferred, and by dotted lines where concealed by younger rocks or by lakes or bays.

Source: Digital Database of Faults from the Fault Activity Map of California and Adjacent Areas, California Geological Survey, Division of Mines and Geology (2000)

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Faults in the Antelope Valley Region

Figure 2-5

- *Potentially Active Fault*. Initially, faults were defined as potentially active, and were zoned if they showed evidence of surface displacement during Quaternary time (last 1.6 million years). Exceptions were made for certain Quaternary (i.e., Pleistocene) faults that were presumed to be inactive based on direct geologic evidence of inactivity during all of Holocene time or longer.

The nearest active fault to the study area is the San Andreas Fault. In addition to the San Andreas Fault, principal faults that could produce damaging earthquakes in the study area are the Sierra Madre-San Fernando, Garlock, Sierra Nevada (Owens Valley) and White Wolf Faults. Descriptions of these fault zones are provided below:

- *San Andreas Fault*. The geologic and seismic activity of the Lancaster study area results from its proximity to the "active" San Andreas Fault, south of the California Aqueduct in the vicinity of the Portal Ridge.

  The San Andreas Fault is considered the most significant earthquake threat in California, and has been the source of numerous significant earthquakes in the past. In 1857, an 8+-magnitude earthquake occurred at Fort Tejon near Los Angeles, and an 8+-magnitude earthquake almost destroyed San Francisco in 1906. Movement along the San Andreas Fault caused both of these events. Events with an 8+ magnitude on this fault are estimated to have a recurrence interval of 50-300 years with an average of 160 years between occurrences. In addition, the Garlock Fault (also considered active) branches off the San Andreas Fault north of the study area, and defines the northern boundary of the Antelope Valley.

- *Sierra Madre-San Fernando Fault Zones*. The Sierra Madre Fault Zone is a series of north-tipping, reverse faults (thrust faults) located approximately 35 miles south of the study area. The San Fernando Fault Zone is located approximately 40 miles southwest of the study area.

- *Garlock Fault Zone*. This fault zone extends 200 miles northeast from Castaic Lake through the Tehachapi Mountains. The nearest point to the study area is approximately 20 miles northwest of Avenue A. It is a northeast trending fault system with a left lateral displacement.

- *Sierra Nevada (Owens Valley) Fault Zone*. This fault zone extends 200 miles northeast from Castaic Lake through the Tehachapi Mountains. The nearest point to the study area is approximately 30 miles northwest of Quartz Hill. The fault zone is a northeast trending fault system with a left lateral displacement.

- *White Wolf Fault Zone*. Originating west of the I-5 and I-99 junction, this fault zone continues for approximately 50 miles and lies approximately 50 miles northwest of the Antelope Valley area.

- *Llano Fault*. This northwest trending subsurface reverse fault runs roughly parallel to the San Andreas Fault for approximately five miles. The southwest end of the fault is approximately 23 miles southwest of the northeast corner of the boundary of Los Angeles County.

- *Subsidiary Faults*. Due to the complex nature of the San Andreas Fault, the southern California region contains many parallel faults of various sizes and lengths. The major subsidiary faults surrounding the Antelope Valley are the Punchbowl Fault, the Nadeau Fault, the Cemetery Fault, and the Littlerock Fault. All four faults are active branches of the San Andreas Fault. Movement on the San Andreas Fault may activate one or all of the subsidiary faults.

Seismic Study Zones

To minimize human injury and structural damage from active and potentially active faults, the State of California has adopted the Alquist-Priolo Special Studies Zone Act. Signed into law on December 22, 1972 and effective March 7, 1973, this act required the State Geologist to map "Special Studies Zones" along the State's active and potentially active faults. Prior to approval of structures for occupancy within these zones, a geologic study must be undertaken to determine the precise location of, and necessary setbacks from, identified faults. In addition, individual cities and counties can establish special or hazard management zones for faults that may not qualify as significant at the State level, but may still represent a local seismic concern. No special study zones exist within the study area.

The principal fault most likely to produce a damaging earthquake in or near the City is the San Andreas Fault. The San Andreas Fault is among those active faults identified in the legislation where special land use planning considerations are required within one-eighth of a mile of an active fault to minimize the loss of life, injury, and property damage in the event of a major earthquake. Policies and criteria for dealing with seismic hazards were established to assist cities and counties, although the Act does not preclude local governments from adopting more stringent requirements.

The maximum probable magnitudes of the faults within the study area are shown in Table 2-3, Fault Magnitudes.

Table 2-3
Fault Magnitudes

Fault	Maximum Probable Magnitude (Moment)[1]	Condition[3]	Recurrence Interval (years)
San Andreas	8.0+	Active	50-200
Llano	Not Available[2]	Active	Not Available[2]
Sierra Madre-San Fernando	6.6	Active	50-200
Garlock	7.5	Active	500-700
Owens Valley	7.4	Active	850-900
White Wolf	7.2	Active	300

Sources: Antelope Valley Enterprise Zone EIR; California Geologic Survey, 1990; USGS, 1985.

1 The Moment magnitude is preferred to the Richter magnitude for earthquakes larger than magnitude 6. As the magnitude surpasses 6.5 M (Richter), all events begin to take on the same magnitude value. The Moment magnitude keeps its integrity and delineates the different values greater than magnitude 6.5.

2 The California Department of Mines and Geology has not determined this information for the Llano Fault. However, the fault lies within the San Andreas Fault Zone and would most likely experience similar activity.

3 Active faults are faults that have moved within the last 11,000 years. Inactive faults are faults that have not moved in the last 1.6 million years and potentially active faults are those that have moved within the last 10,000 to 1.6 million years.

Ground Rupture

Ground rupture, such as seismic fissures, refers to displacement of the ground along a fault, which can occur during strong earthquakes. The extent of the rupture depends on the specific soil conditions and the severity of a particular seismic event. Such displacement may be vertical, horizontal, or both, and can be as much as 20 feet or more in a major earthquake. Utilities, roads, and other linear features are particularly vulnerable to damage as a result of ground rupture where they cross faults.

Ground Shaking

In the study area, the primary seismic threat from earthquakes is groundshaking, which can also induce the secondary (indirect) threat of fire by damaging or destroying natural gas or electrical utility lines. The intensity of ground shaking depends on several factors, including the magnitude of the earthquake, distance from the earthquake epicenter (point of the earth directly above the focus of the earthquake), and underlying soil conditions. In general, the larger the magnitude of an earthquake and the closer a site is to the epicenter of the event, the greater the effects. However, soil conditions can also amplify earthquake shock waves. Generally, the shock waves remain unchanged in bedrock, are amplified to a degree in thick alluvium, and are greatly amplified in thin alluvium. The thicker alluvial materials within the study area are located in the central and northern basin areas.

According to the Seismic Hazard Evaluation of the Lancaster East and West Quadrangles, portions of the study area could be subjected to intense seismic shaking associated with a large earthquake along the San Andreas Fault. The expected peak horizontal ground accelerations are dependent on several factors: distance from an active fault (in this case, San Andreas); the maximum earthquake that can be expected on that fault; and the underlying soil conditions. Within these evaluations, firm rock, soft rock, and alluvium conditions were analyzed to determine the potential ground movement associated with a seismic event. The study area could be subjected to ground accelerations between 0.87g and 0.30g in soft rock conditions.[2] These accelerations are based on a 7.8 magnitude event occurring along the San Andreas Fault zone in close proximity to the study area.[3]

If a major earthquake were to occur, extensive damage could result, including the destruction of most unreinforced masonry and frame structures along with their foundations, as well as the destruction of some well-built wooden structures and bridges. Conspicuous ground cracking, bent rails, considerable landsliding from steep slopes, the shifting of mud and sand, and water splash could also be expected as the result of a major earthquake.

[2] Department of Conservation, California Geological Survey, *Seismic Hazard Zone Report for the Lancaster East 7.5-Minute Quadrangle, Los Angeles County, California*, 2005 and Department of Conservation, California Geological Survey, *Seismic Hazard Zone Report for the Lancaster West 7.5-Minute Quadrangle, Los Angeles County, California*, 2005.

[3] *Ibid.*

SECONDARY SEISMIC HAZARDS

Liquefaction

Liquefaction is a phenomenon in which the strength and stiffness of a soil is reduced by earthquake shaking or other events. This phenomenon typically occurs in saturated soils that undergo intense seismic shaking typically associated with an earthquake. There are three specific conditions that need to be in place for liquefaction to occur: loose granular soils, shallow groundwater, and intense seismic shaking.

Loose granular soils typically consist of sand and silts that have very low cohesion (easily fall apart). These soils are typically associated with alluvial and fluvial deposits where there is little or no clay or fine silt.

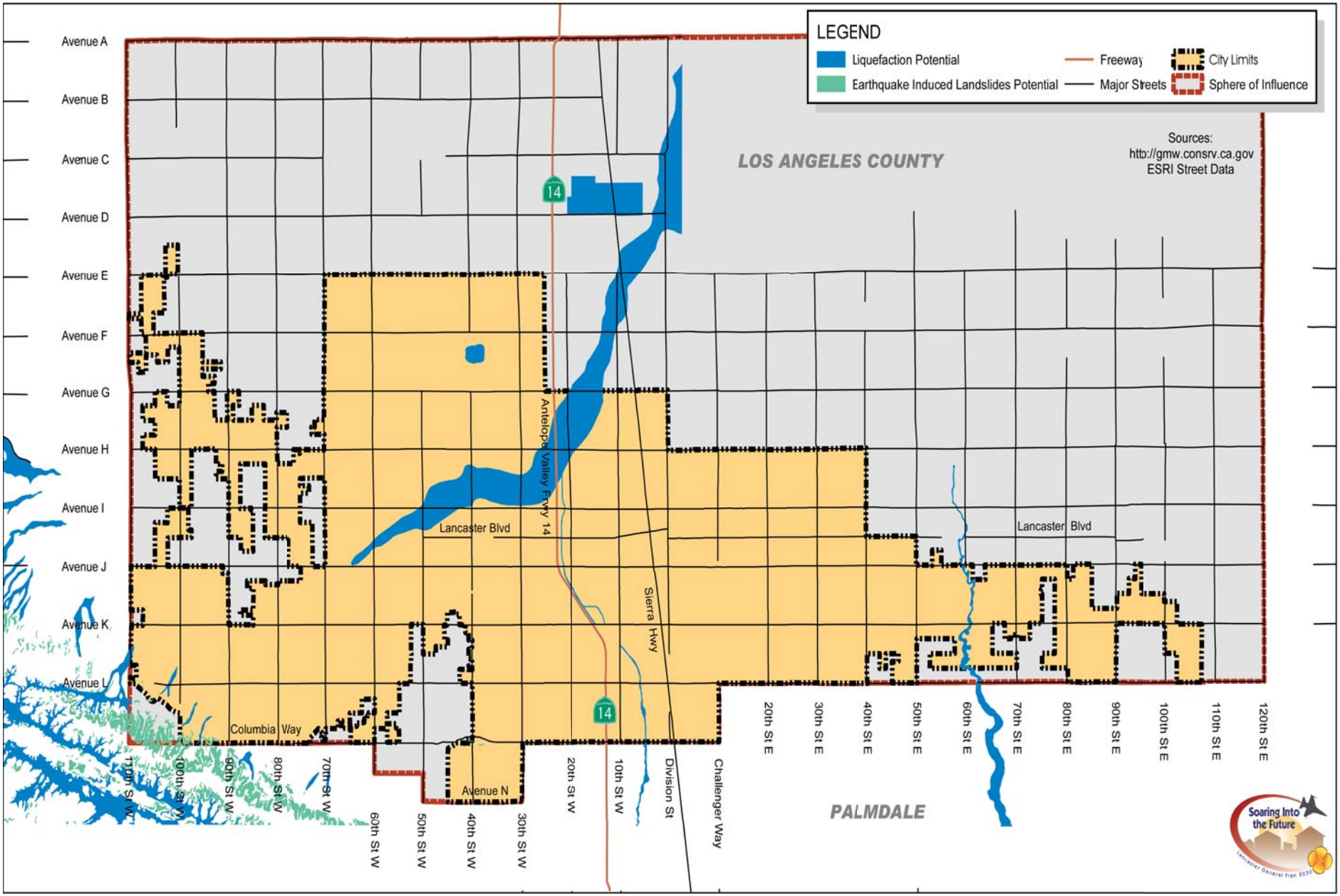
Shallow groundwater within loose alluvial soils creates a saturated condition. This condition when put under stress can exert pressure on the soil particles. Prior to an earthquake, the water pressure is considered relatively low, however during an earthquake the water pressure can increase to the point where the soil particles can readily move with respect to each other. Typically liquefaction is associated with shallow groundwater, which is less than 50 feet beneath the earth's surface. Typically these conditions are found in low-lying areas.

The greatest danger from liquefaction occurs in areas where the groundwater table is within 30 feet of ground level, and the soil is poorly consolidated or relatively uncompacted. This condition is characterized by the sudden loss of shearing resistance due to ground shaking combined with an increase in pore water pressure. Subsequently, this will often result in the collapse or displacement of building foundations. The water table, which is lower than historic levels, is approximately 60 feet from the surface. Therefore, in most areas of Lancaster, the water table rarely comes within 30 feet of the surface.

Identification of liquefaction zones is based primarily on the occurrence of groundwater in major alluvial deposits. In February 2005, the California Geologic Survey completed the update of the Seismic Hazards Zones Maps for the Lancaster Area. These maps indicate potential liquefaction zones along the length of Little Rock Wash, in the eastern portion of the study area, and in the vicinity of Amargosa Creek, extending from the area north of Quartz Hill to the northeast across the study area to the Los Angeles-Kern County line. Figure 2-6, Study Area Seismic Hazards Map, identifies the locations of potential liquefaction hazards within the study area.

Differential Settlement

Differential settlement is the phenomenon whereby soils within a particular area settle at different rates in concert with seismic shaking events. Typically this phenomenon occurs in alluvial deposits, which currently underlie the study area. This type of seismic hazard results primarily in damage to property when an area settles to different degrees over a relatively short distance. The actual potential for settlement is, however, difficult to predict without site-specific studies.



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Study Area Seismic Hazards Map

Figure 2-6

Landsliding/Slope Stability

Landslides and slope instability are a relatively minor hazard within the study area, since it is generally underlain by granitic rock and is relatively flat topographically. The down slope movement of loose rock or boulders during strong groundshaking events is the most likely slope hazard expected. In February 2005, the California Geologic Survey completed an update of the Seismic Hazards Zones Maps for the Lancaster Area. These maps indicate that the potential extent of this hazard would be limited to areas directly below the north slopes of Quartz Hill and along the slopes of Portal Ridge, in the area where the California Aqueduct crosses through the study area, as indicated in Figure 2-6. Modifications of these landforms and other steep landforms could result in some hazardous slope instabilities. Areas with slopes less than 15 percent are generally considered suitable for all types of development. Those with a 15 to 25 percent slope are typically required to use hillside construction techniques to achieve substantial foundation support and stable soil conditions. Areas with slopes greater than 25 percent are subject to instability and erosion and are generally not recommended for development.

Seiching

This phenomenon occurs when seismic groundshaking induces standing waves (seiches) inside of water retention facilities, such as reservoirs and water tanks. Such waves can cause the retention structures to fail and flood downstream properties. Seiching may be a potential hazard for the Little Rock Reservoir, Fairmont Reservoir, Palmdale Reservoir, or steel reservoirs or tanks located within the study area. Given the relatively small cross section of the California Aqueduct, seiche-related hazards in the vicinity of the aqueduct are considered to be small.

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3.0 Biological Resources

3.0 BIOLOGICAL RESOURCES

3.1 INTRODUCTION

This purpose of this section is to identify existing biological resources within the Lancaster General Plan study area (study area). The study area includes all areas that currently exist within the incorporated area of the City, as well as an additional area outside of the City limits that is influenced by the City's management plans, referred to as the sphere of influence; refer to Figure 1-1, Lancaster General Plan 2030 Study Area. Existing Characteristics and conditions as they pertain to biological resources are described.

Certain regulatory agencies have jurisdiction over the biological resources within the study area. These include California Department of Fish and Game (CDFG), Regional Water Quality Control Board (RWQCB), U.S. Fish and Wildlife Service (USFWS), and the U.S. Army Corps of Engineers (USACE). The City has the authority to implement biological impact fees on new developments within the City that result in incremental effects on biological resources, including the loss of habitat and the reduction in total numbers of flora and fauna on a regional basis. In addition, the Lancaster study area incorporates all or portions of five separate County of Los Angeles current and proposed Sensitive Ecological Areas (SEAs).

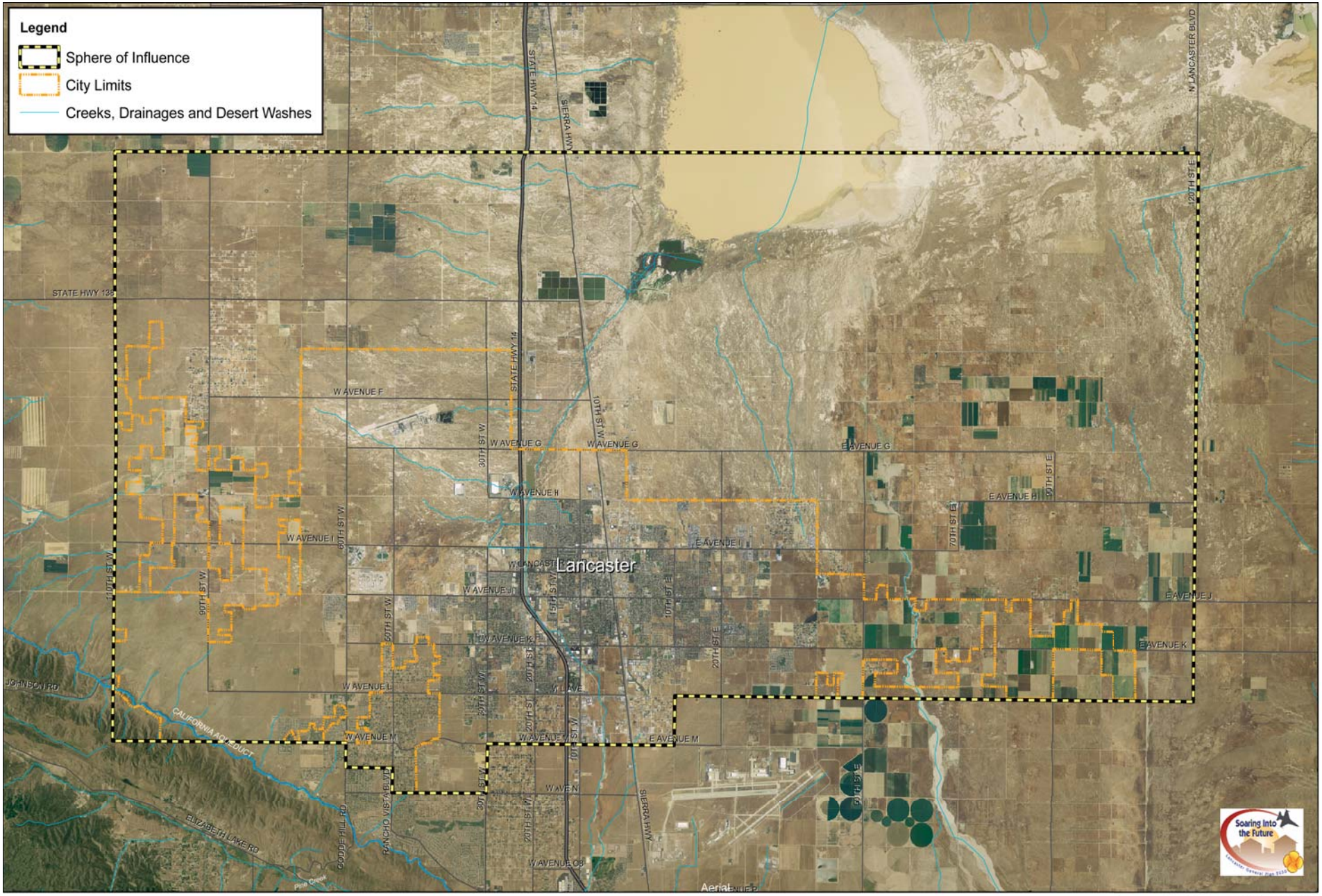
GENERAL SITE DESCRIPTION

The Lancaster study area is located in the Antelope Valley, which lies within the Mojave Desert and is bordered by the Tehachapi Mountains to the northwest and the foothills of the San Gabriel Mountains to the southwest. The dominant natural vegetation is desert scrub.

The City of Lancaster is situated within the Antelope Valley region of the western Mojave Desert, approximately 70 miles north of downtown Los Angeles. The Antelope Valley is an internally drained basin. The proximity and aspect of the study area to the San Gabriel and Tehachapi mountains combine to create a desert climate. The dry basins, or playas, of Rosamond and Rogers lakes form dominant natural landscape features within the Antelope Valley. Historically, much of the area was cultivated with alfalfa and small grain crops before groundwater withdrawals were restricted in the 1950s due to a reduction in aquifer levels. However, extensive areas of undisturbed saltbush scrub (*Atriplex confertifolia* and *A. polycarpa*) and Joshua tree (*Yucca brevifolia*) woodland habitats occur in areas where high soil salinity/alkalinity renders the land unsuitable for agriculture. Surface flows from the mountainous watersheds to the west and south move overland towards Rosamond Lake (one of three terminal water bodies within Antelope Valley) as sheet flow, or within natural or artificial channels (*i.e*., desert wash areas); refer to Figure 3-1, Site Detail.

The study area is included in the following United States Geologic Survey (USGS) 7.5 minute quadrangles: Little Buttes, Rosamond, Rosamond Lake, Redman, Del Sur, Lancaster West, Lancaster East, and Alpine Butte.

The region receives an average of four to nine inches of rainfall annually, and annual temperatures average 62 degrees Fahrenheit (°F)/17 degrees Celsius (°C). H.T. Harvey and Associates documented the occurrence of 58 soil phases within the study area. Soils underlying the study area are well drained, and predominantly sandy loam, although there are a



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0 1.75 3.5 Miles

Lancaster General Plan 2030

Site Detail

Figure 3-1

few, small areas of silty clay within this area. The following soil series and other features are represented in the study area: Adelanto, Amargosa, Cajon, Dune sand, Gravel pits, Greenfield, Hanford, Hesperia, Merrill, Mojave, Pond, Pond-Oban complex, Ramona, riverwash, rock land, Rosamond, Sunrise, Terrace, Tray, Vista, and water. Saline-alkaline soils are present within the survey boundaries, particularly the following five phases: Rosamond loam saline-alkaline, Rosamond silty clay loam saline-alkaline, Sunrise loam saline-alkaline, Tray sandy loam saline-alkaline, and Tray loam saline-alkaline; refer to Figure 3-2, Soil Characteristics.

The National Wetland Inventory (NWI) of the USFWS produces information on the characteristics, extent, and status of wetlands across the nation. Congressional mandates in the Emergency Wetlands Resources Act require the USFWS to map wetlands, and to digitize, archive, and distribute maps. In the review of the NWI maps for the project area, numerous, small wetland areas (0.3 to 1.0 acres in size) primarily described as "Palustrine, unconsolidated shore, temporarily flooded" are depicted. Several large wetland areas are depicted between zero and three miles to the southwest of Rosamond Lake (including the Piute Ponds), and several others occur an additional three miles southwest of Rosamond Lake. One linear feature occurs along Highway 14 between Avenue I and Avenue H and is described as "riverine, intermittent, unconsolidated shore, temporarily flooded, excavated."

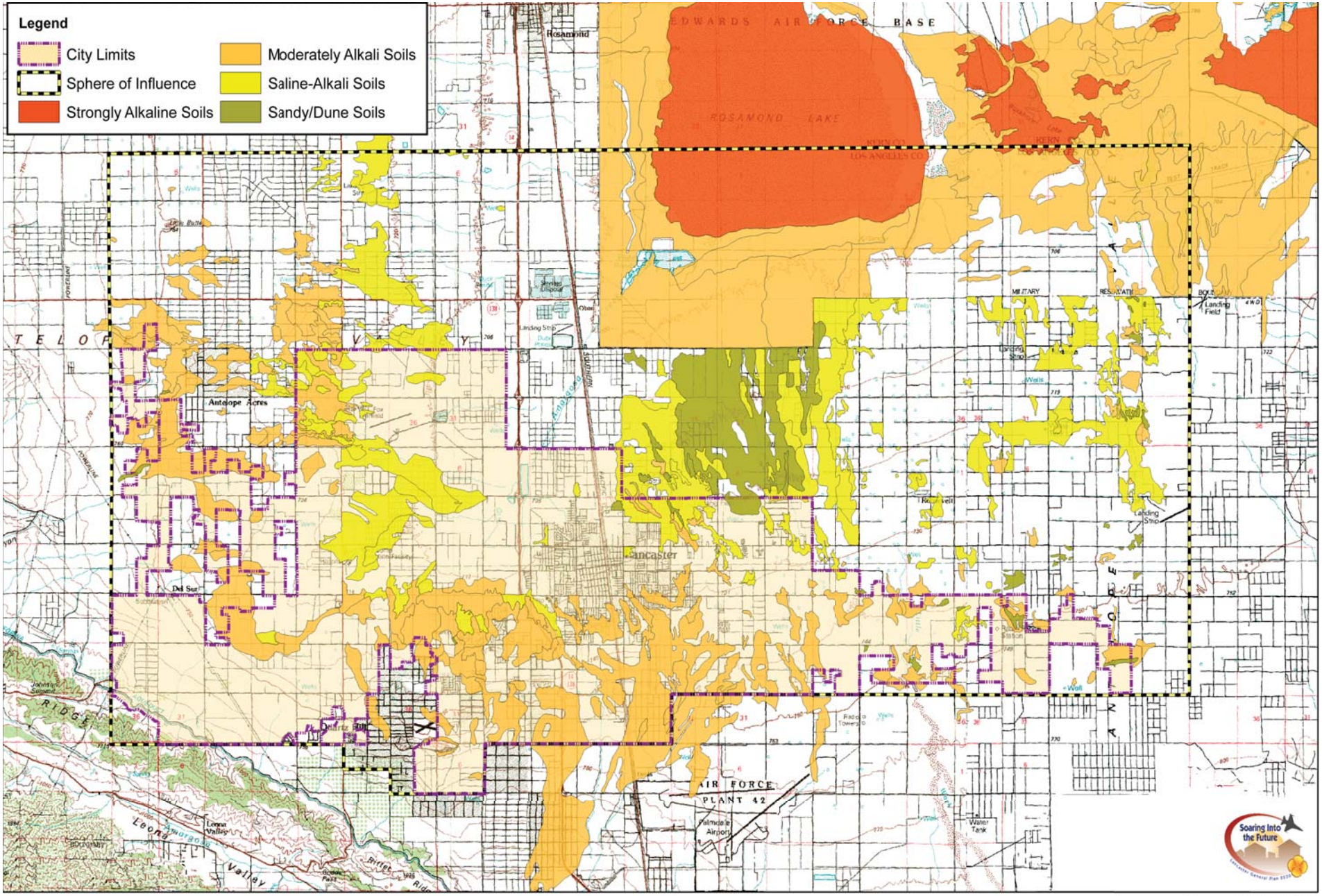
3.2 BOTANICAL RESOURCES

The study area's relatively low percentage of vegetation cover is the result of the extreme temporal variation in temperature, large spatial and temporal variation in precipitation, and limited variation in site topography, along with the lack of resistance to or resilience from human disturbance that desert ecosystems exhibit. In addition, many areas were historically farmed, but abandoned, leading to large areas of non-native or ruderal habitat, namely large areas of non-native annual grassland or rabbitbrush (*Chrysothamnus naseosus*) scrub, mixed with ruderal species such as black mustard (*Brassica nigra*) and Russian thistle (*Salsola tragus*).

The study area contains several plant communities typical of the Antelope Valley. Primary vegetation communities include five associations of desert scrub, desert wash, desert woodland, upland scrub, riparian, and ruderal (weedy). Figure 3-3, Biotic Habitats, illustrates the location of these vegetation communities in the Lancaster study area, which are described below.

While a number of factors contribute to the overall composition and distribution of these vegetation communities in the area, water availability is the most limiting factor to plant establishment and growth. For this reason, desert scrub, desert wash, and desert woodland communities contain many of the same drought-tolerant species. However, desert washes receive periodic flood-flows from mountains to the south and southwest, which enable more ephemeral, or less xeric (drought tolerant), species to establish in these areas.

Generally, precipitation increases from east to west, with more xeric species found in the undisturbed eastern portions of the study area and upland scrub plants predominating in southwestern areas that approach the foothills. Other edaphic (the effect of soil on living organisms) characteristics that determine plant species distribution include soil type, soil pH, slope, aspect, and elevation. These factors act synergistically to create isolated populations of unique flora, such as on the upper slopes of local buttes, or in canyons along the San Gabriel foothills.



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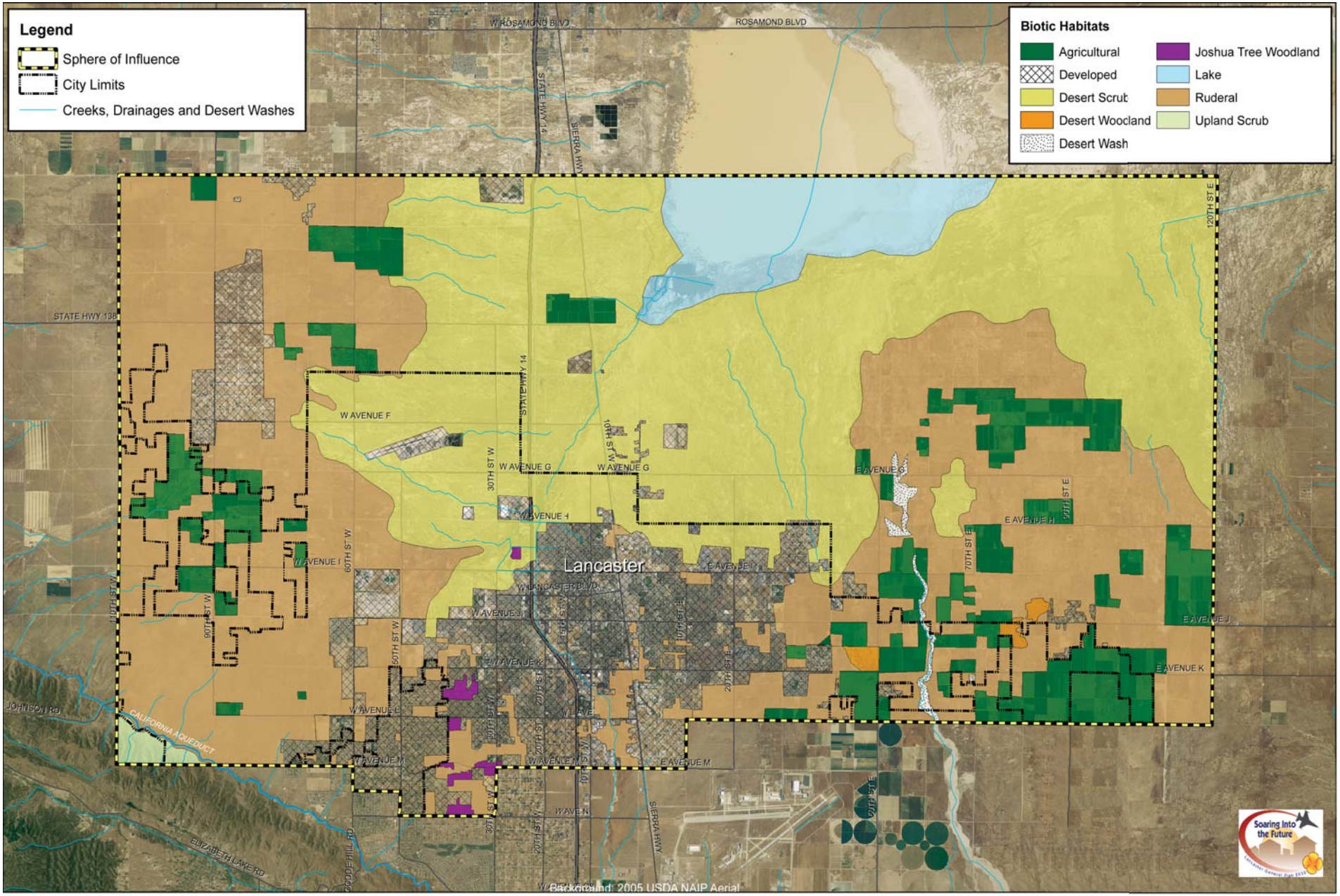
0 1.75 3.5 Miles

Lancaster General Plan 2030

Soil Characteristics

Figure 3-2



RBF CONSULTING

0 1.75 3.5 Miles

Lancaster General Plan 2030

Biotic Habitats

Figure 3-3

Appendix A provides a list of plant species known or expected to occur within the study area. This list was compiled from biological studies prepared for local environmental impact reports, consultation with local experts, and relevant literature. Nomenclature is based primarily on Hickman (1993). Figure 3-4, California Natural Diversity Data Base (CNDDB) Map, shows the location of general plant community types within the study area. Each of the vegetation communities within the study area are discussed below.

VEGETATION COMMUNITIES

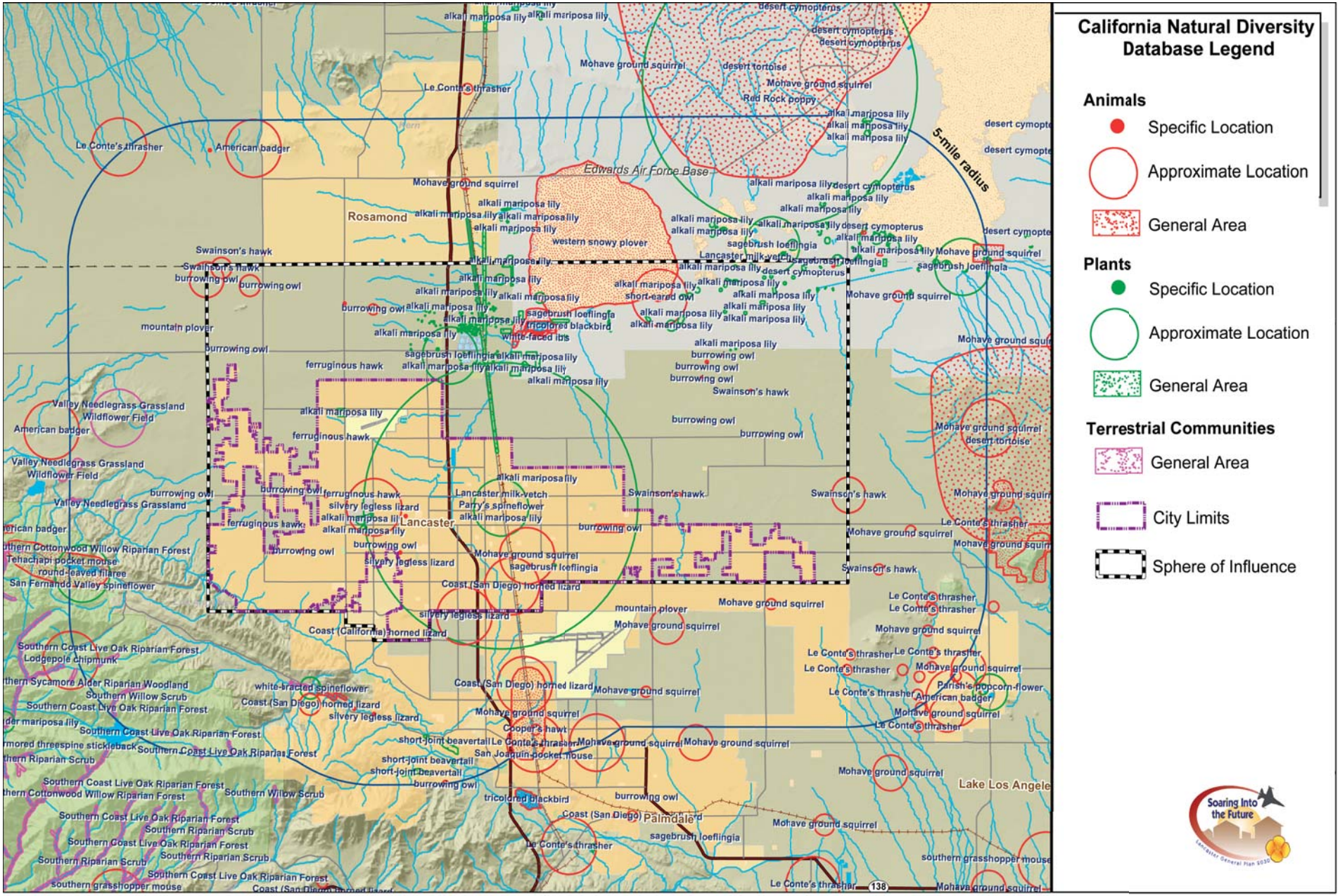
Desert Scrub

Desert scrub is a generic habitat term that describes several plant associations, but is generally characterized as a shrub dominated community on sandy soils with a minimal understory of herbaceous plants that occurs in areas of markedly low precipitation. The component species of these habitat types are highly adapted to survival under harsh conditions, and, if perennial, are usually shrub species. Many annual species also occur in these habitats, but are ephemeral in nature, occurring only in good years and only while moisture is present. Many herbaceous perennials will often flower only once every several years when conditions allow. The five plant communities described below fall into the general category of desert scrub and follow descriptions provided by Holland (1986).

Mojave Creosote Bush Scrub. Creosote bush (*Larrea tridentata*) scrub occurs extensively throughout the Mojave Desert area and in large patches in the Lancaster study area. The West Mojave Habitat Conservation Plan (2003) estimates that approximately 5,683,646 acres of creosote bush scrub occur in the West Mojave area. It intermixes with small areas of other desert scrub habitat as well as with non-native, annual grassland habitat. There are occasional Joshua trees (*Yucca brevifolia*). Burro-weed (*Ambrosia dumosa*) co-occurs in this habitat, along with spiny senna (*Senna armata*), ephedra (*Ephedra nevadensis*), burrobrush (*Hymenoclea salsola*), and box thorn (*Lycium* sp.). Shrubs 1.5 to 10 feet tall are widely spaced throughout, usually with bare ground, remnant herbs, and debris comprising interspaces. This habitat usually occurs on slopes and alluvial fans in the valley portions of the study area. Soils are well drained, with very low water-holding capacity.

Saltbrush Scrub. This scrub community is characterized by low, grayish, microphyllous shrubs ranging from one to three feet tall. Some succulent species are present. The West Mojave Habitat Conservation Plan estimates that 802,701 acres of saltbush scrub habitat occur within the area. Plant cover is often low, with much bare ground between the widely spaced shrubs. Stands of desert saltbush scrub are typically dominated by a single *Atriplex* species. Common species associated with this community include silverscale *(Atriplex argentea),* shadscale *(Atriplex canescens),* saltbush *(A. confertifolia),* wheelscale *(A. elegans),* big saltbush *(A. lentiformis),* hop-sage *(Grayia spinosa),* burrobrush, kochia *(Kochia californica),* box thorn, mesquite *(Prosopis glandulosa),* and seepweed *(Suaeda occidentalis).* Soils in this plant community are generally fine-textured, poorly drained, and with high alkalinity and/or salinity.

Rabbitbrush Scrub. As implied by its name, this community is dominated by rubber rabbitbrush *(Chrysothamnus nauseosus)* and is characterized by fairly evenly spaced shrubs, usually to three feet tall. The West Mojave Habitat Conservation Plan estimates that approximately 7,842 acres of rabbitbrush scrub habitat occur in the West Mojave area. This is a disturbance-associated community, most commonly occurring along roadsides, heavily grazed areas, and along the borders of agricultural fields. It is typically one of the first communities to establish after fires. Vertisols (self-churning soils) may be the only pristine, natural rabbitbrush sites.



RBF CONSULTING

0 3 6 Miles

Lancaster General Plan 2030

California Natural Diversity Data Base (CNDDB) Map

Figure 3-4

Shadscale Scrub. Shadscale (*Atriplex confertifolia*) scrub is characterized by well spaced, low, intricately branched, often spiny shrubs ranging from one to two feet tall. The West Mojave Habitat Conservation Plan estimates that approximately 42,258 acres of shadscale scrub habitat occur in the West Mojave area. The two dominant species that typify this community are saltbush and budsage *(Artemisia spinescens).* Other common associates include sand verbena *(Abronia villosa),* blackbush *(Coleogyne ramosissima),* ephedra, winterfat *(Krascheninnikovia. Janota),* hop-sage, matchweed *(Gutierrezia* spp.), goldenbush *(Isocoma acradenius),* and kochia. This community most often occurs on poorly drained flats with heavy, somewhat alkaline soil. Conversely, it also occurs on well-drained slopes at higher elevations, frequently intergrading (merges in a series of stages) with other communities, such as Joshua Tree Woodland.

Desert Sink Scrub. Desert sink scrub is very similar to Desert Saltbush Scrub, but it supports more succulent plants that are often more widely spaced and that are adapted to seasonally moist conditions. In many cases, these areas also have high salinity and/or alkalinity, leading to a unique assemblage of plant species and many bare areas containing only plant litter debris. The West Mojave Habitat Conservation Plan estimates that approximately 26,915 acres of alkali sink scrub habitat occur within the West Mojave area. Characteristic species include iodine bush *(Allenrolfea occidentalis),* shadscale, bee plant *(Cleome sparsiflora),* alkali weed *(Cressa truxillensis minima),* western wallflower *(Erysimum capitatum),* kochia, poverty weed *(Monolepis nuttalliana),* greasewood *(Sarcobatus vermiculatus),* ditchgrass *(Ruppia cirrhosa),* and jackass clover *(Wislezenia refracta)*.

Desert sink scrub contains poorly drained soils with extremely high alkalinity and/or salt content. The water table is frequently high in these areas that generally have a salt crust at the surface. Large areas of bare ground occur throughout this habitat, and expansive soils are evident by the cracking of the soil crust where water temporarily ponded.

Desert Wash

Desert Wash Scrub. Natural runoff from nearby mountains has created various washes and channels, primarily in the southwestern and southeastern portions of the study area. These washes range from depressions that are so broad they are difficult to identify (such as the northern portions of Amargosa Creek), to actual channels with steep sides (such as Little Rock Wash). The West Mojave Habitat Conservation Plan estimates that approximately 81,677 acres of desert wash scrub occur throughout the West Mojave area. Most of these washes support a variety of desert scrub plants, such as burro-weed, Parry's saltbush *(Atriplex parryi*), arrowscale *(Atriplex phyllostegia),* rabbitbrush, and burrobrush. Some of the better-defined channels support species such as jimson weed *(Datura wrightii)* and desert buckwheat *(Eriogonum fasciculatum* ssp. *polifolium).* The type and extent of plants a channel supports depends on its topography as well as the amount and frequency of runoff. Steep-sided channels indicate that the infrequent runoff is fast moving, which can scour channel bottoms and slopes of vegetation, while level channels have gentler flows, permitting establishment of vegetation. Because desert washes generally do not have year-round flows, few riparian plants are found in this habitat, although taller desert woodland plants may thrive along some of the washes. The most significant natural desert wash within the study area in terms of plant diversity and biological value is Little Rock Wash, located south of 60th Street East and Avenue I. At present, this area is largely undisturbed.

While the desert washes contain some opportunistic flowering annuals (ephemerals) that sprout, grow, reproduce, then die immediately after spring rains, these are not considered truly drought-adapted plants (xerophytes), as they only grow when water is more abundant, and do not tolerate annual desert conditions.

Artificial drainages and washes are also present within the vicinity of developed areas as a result of runoff. As in developed areas, these artificial drainages support a variety of weedy or introduced species such as cheatgrass (*Bromus tectorum*), black mustard, and doveweed. Little native or other natural vegetation grows in these areas due to the highly disturbed nature of these sites, including regular weed abatement, foot traffic, and continual invasion of non-native plant species that favor disturbed sites.

Desert Woodland

Joshua Tree Woodland. Joshua tree woodland is defined by Holland as open woodland with Joshua tree *(Yucca brevifolia)* typically as the only arborescent species (to 40 ft high) and numerous shrub species between 3.5 and 13 feet tall. In many areas of the Antelope Valley, Joshua tree woodland habitat intergrades (merges in a series of stages) with creosote scrub habitat. This community supports little or no herbaceous understory during most of the year. The West Mojave Habitat Conservation Plan estimates that approximately 28,826 acres of Joshua tree woodland habitat exist in the West Mojave area.

At lower elevations Joshua tree woodland intergrades with Mojave creosote bush scrub. Common associate species include California buckwheat *(Eriogonum fasciculatum),* cholla (*Opuntia echinocarpa*), box thorn, beavertail cactus *(Opuntia basiliaris*), cotton-thorn *(Tetradymia axillaris),* Mojave yucca *(Yucca schidigera),* Great Basin sagebrush *(Artemisia tridentata),* burrobrush, desert needlegrass *(Achnatherum speciosum),* and bladder sage *(Salazaria mexicana).* California juniper (*Juniperus californica*) is occasionally found in this habitat. The primary growing season is spring, with many species of ephemeral herbs germinating after rainfall. Joshua tree woodland typically occurs on sandy, loamy, or gravelly, well-drained alluvial slopes.

The CDFG considers the Joshua tree woodland as a threatened habitat within California. It is also recognized as a sensitive habitat by the City of Lancaster. It is endemic to the Mojave and northwest Sonoran deserts and is adapted to harsh desert conditions, requiring high light, well-drained soils, and limited precipitation. Joshua trees exhibit slow growth rates; new seedlings may grow an average of three inches annually for the first 10 years, then growth slows to 1.5 inches per year thereafter. The trunk of a Joshua tree consists of thousands of small fibers and lacks annual growth rings, making it difficult to determine the tree's age, though it is estimated to grow for up to 200 years. This species is considered very susceptible to disturbance by human activity; it does not tolerate soil compaction, nor is it easily relocated. This may be partially due to its shallow root area and top-heavy branch system.

Joshua tree woodland habitat can be best preserved in large, well-populated stands, with its associated understory plants, that are isolated from human disturbances. Historically, some areas of Joshua tree woodland were cleared for agricultural use, but recently, there has been a progressive loss of Joshua trees to new development in the Antelope Valley, particularly around the Lancaster area.

While many individual trees can be found in the Antelope Valley, especially in the eastern portions of the General Plan study area, most trees are isolated, and actual Joshua tree woodlands are limited. The most significant existing Joshua tree stands in the study area are located southwest of downtown Lancaster, as well as northeast and south of Quartz Hill, and in the City of Lancaster in the Prime Desert Woodland Preserve adjacent to Rawley Duntley Park.

Pinyon-Juniper Woodlands were previously identified in the Lancaster area, but are not presently found within the General Plan study area. This open woodland association is dominated by the singleleaf pinyon pine *(Pinus monophylla),* and was once reportedly found on a few of the steeper, north-facing desert slopes south of Lancaster. The CDFG considers this association extremely sensitive to disturbance by human activity and damage by air pollution. These unique forests have become rare in Los Angeles County.

Upland Scrub

Mixed Upland Scrub. This inland, montane (highland areas located below the tree-line) association supports elements of several plant communities including chaparral, coastal sage scrub, and Great Basin sage scrub, and is a transition community that occurs in the highest regions of the foothills. It is found on dry, rocky, gravelly slopes in the southwest portion of the study area. In some areas, it covers the lower foothill slopes and adjacent basins. It is dominated by sagebrush *(Artemisia tridentata),* white sage *(Salvia apiana),* buckwheat, and rabbitbrush. In some areas, chamise *(Adenostoma jasciculatum)* is also found. As elevations rise out of the study area (to the south), heartier species such as ceanothus *(Ceanothus* spp.), manzanita *(Arctostaphylos* spp.), and scrub oak *(Quercus dumosa)* can be found in isolated locations.

Riparian

Riparian Woodland/Wetlands. There are several locations within the Lancaster study area that support riparian (stream-side) or wetland vegetation. The southwestern margin of the study area contains a few isolated springs or seeps. In addition, several open reservoirs or man-made lakes (such as in Apollo Park) contain water most of the year. The Avenue C marsh, otherwise known as Piute Ponds, is located within Edwards AFB (Air Force Base), and supports a variety of riparian and wetland plants. There are no perennial creeks or channels within the study area. Although there is significant runoff during wet periods, flows along the desert washes tend to be heavy which precludes the establishment of extensive riparian growth. Most of these drainages are designated as “blue-line” streams at the U.S. Geological Survey (USGS) 7.5-minute quadrangle maps. These drainages generally fall under jurisdiction of one or more regulatory agencies. Riparian vegetation, associated with Piute Ponds and various washes within the study area, includes willow *(Salix* spp.), cottonwood *(Populus* spp.), white alder *(Alnus rhombifolia),* western sycamore *(Platanus racemosa),* and cattail *(Typha* spp.), among others.

Ruderal

Agriculture. Active farms within the study area are generally disced and kept free of weeds. However, fallow or vacant agricultural land can be quickly overrun with local and introduced weedy ruderal species. Many abandoned farms and vacant, open lands support extensive grasslands in the eastern and western portions of the study area. Non-native grasses have supplanted the original native grasses so that only introduced grasses, such as cheatgrass,

barley *(Hordeum* spp.), and fescue *(Vulpia* spp.) remain today. Other common weedy species on fallow agricultural lands include Russian thistle, or tumbleweed *(Salsola tragus),* curly dock *(Rumex crispus),* and varieties of mustard *(Brassica* spp.), including black mustard (*B. nigra*).

Developed Areas. Areas within Lancaster that support a variety of weedy or introduced species included many areas of paved or compacted gravel roads; homes with associated infrastructure and planted, ornamental plant species; vacant lots; and undeveloped parcels. Little native or other natural vegetation grows in these areas due to regular weed abatement. There are also roadside and public areas that have been planted with non-native tree species, such as tamarisk (*Tamarix tetandra*). Typical ruderal species include tumbleweed, mustard (*Hirschfeldia spp.*), red-stemmed filaree (*Erodium cicutarium*), dove weed (*Eremocarpus setigerus*), and occasional common sunflower (*Helianthus spp.*).

3.3 SPECIAL-STATUS PLANT SPECIES

Information concerning the known distribution of threatened, endangered, or other special-status plant species with potential to occur in the area was collected from several sources and reviewed. The review included both the California Natural Diversity Data Base (CNDDB 2006) and the California Native Plant Society (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2001). Additional information regarding the distribution and habitats of vascular plants in the vicinity was compiled from *The Jepson Manual* (Hickman 1993) and from USFWS and CDFG technical publications.

A preliminary list of special-status plants was compiled by searching the CNDDB for species records within the eight USGS 7.5 minute quadrangles that contain the study area, and by searching the CNPS inventory for species occurring in Los Angeles County within the range of elevations and habitats found within the study area. The habitats considered to be present, based on the presence of their dominant or characteristic species within the study area, include chenopod scrub, Mojave Desert scrub, valley and foothill grasslands, riparian scrub, and Joshua tree woodland.

Each species listed in CNDDB or CNPS records was analyzed for rarity. Plants judged as being unlikely to occur within the study area were not further assessed. Of the species that CNPS has listed as occurring within the associated habitats and range of elevations occurring within the study area, 21 are included on CNPS List 4, which are species of limited distribution or species occurring infrequently throughout a broader range (a watch list). A majority of these CNPS List 4 species were rejected from further analysis due to their lack of a restricted distribution. Furthermore, since the publication of the CNPS lists, many of these species have been de-listed. In total, 34 species were considered, but rejected for a finding of significance. Appendix A lists the rationale behind the rejection of each of these species.

Of all species originally considered, the following nine were identified as potentially occurring in the vicinity of the study area:

- alkali mariposa lily
- desert cymopterus (*Cymopterus deserticola*)
- Lancaster Milk-Vetch (*Astragalus preussii* var. *laxiflorus*)
- Mojave spineflower (*Chorizanthe spinosa*)
- Parish's alkali grass (*Puccinellia parishii*)

- Peirson's morning-glory (*Calystegia peirsonii*)
- pygmy poppy (*Canbya candida*)
- sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarumi*)
- white-bracted spineflower

The potential of these species to occur within the study area is summarized in Table 3-1, Special-Status Plants in the Lancaster General Plan Study Area, and expanded descriptions for these nine species are provided below.

Lancaster milk-vetch (*Astragalus preussii var. laxiflorus*). Lancaster milk-vetch occurs in Los Angeles County (and in Arizona and Nevada) in chenopod scrub habitat at elevations of approximately 2,300 feet. It is a perennial herb that blooms from March to May. This variety of milk-vetch is considered by CNPS to be rare, threatened, or endangered in California and elsewhere. It is known only from desert washes in the Lancaster area and has only been recorded once in recent years. The most recent observation according to CNDDB records occurred in 1902, and there are three other undated records. Both CNDDB and CNPS state that extensive fieldwork is required to determine presence or absence of this species in the survey area.

Alkali Mariposa Lily (*Calochortus striatus*). Alkali mariposa lily is a rare, bulbiferous perennial associated with moist, alkaline soils of the southern San Joaquin Valley, far western Mojave Desert, and inland parts of southern California. It is also found in Nevada (Ash Meadows and formerly Las Vegas). Like all members of the genus *Calochortus,* alkali mariposa lilies appear in the late winter as long, narrow, grass-like leaves from a small, scaly, deep-seated corm. An umbel-like inflorescence, 3.94 to 19.69 inches in height, arises in spring, and distinctive, purple-veined flowers are produced from April through June. It is limited to saline or alkaline soils, found near alkali sinks and playas, in floodplains, and springs in desert lowlands, often where saltgrass (*Distichlis spicata*) meadows are characteristic. The occurrence of the alkali mariposa lily has been recorded in the vicinity of Lancaster (e.g., Amargosa Creek floodplain area) and Rosamond on the Los Angeles-Kern County line. These populations north of Edwards AFB are contiguous with, and part of, the huge populations found at the base.

Lily populations in the Lancaster area are associated with areas where surface water runoff to Rosamond Lake collects and persists over clay soils that retain moisture longer than sandy soils. Alkali mariposa lilies typically occur on moist shallow-sand drifts or low-stabilized dunes around the perimeter of barren-clay pans. This "dune and pan" microtopography is associated with Sunrise, Pond, Oban, Tray, and Rosamond loam soils within and around Edwards AFB. All known occurrences of alkali mariposa lily are found on these soils within the Lancaster area.

There are numerous accounts of the alkali mariposa lily within the study area, including recent locations at 30th Street West and Avenue G, 40th Street West and Avenue J, 37th Street West and Avenue J-4, 37th Street West and Avenue J-6, and 20th Street West and Avenue H. Large areas within the survey area contain saline/alkaline soils. Because mariposa lily populations can go without flowering in years with unfavorable climate and growing conditions, this species has a moderate probability of occurrence in areas where suitable habitat conditions, as described above, exist.

Table 3-1
Special-Status Plants in the Lancaster General Plan Study Area[1]

Common Name	Scientific Name	Habitat	Occurrence	CNPS List	R-E-D BookCode	State/ Federal Status
Alkali mariposa lily	*Calochortus striatus*	Chaparral, Chenopod Scrub, Alkali Meadows	O	1B	2-2-2	---/FSC
Desert cymopterus	*Cymopterus deserficola*	Joshua Tree Woodland, Mojavean Desert Scrub	P	1B	3-2-3	---/FSC
Lancaster milk-vetch	*Astragalus preussii* var. *laxiflorus*	Alkali playas, Desert Washes	EO	1B	3-3-2	---/---
Mojave spineflower	*Chorizanthe spinosa*	Chenopod Scrub, Mojavean Desert Scrub	E	4	1-2-3	---/---
Parish's alkali grass	*Puccinellia parishii*	Alkali Meadows, Joshua Tree Woodland, Mojavean Desert Scrub	E	1B	3-3-2	---/PE
Peirson's morning-glory	*Calystegia peirsonii*	Chaparral, Chenopod Scrub, Coastal Scrub	E	4	1-2-3	---/FSC
Pygmy poppy	*Canybya candida*	Joshua Tree Woodland, Mojavean Desert Scrub	P	1B	2-2-3	---/---
Sage Brush loeflingia	*Loeflingia squarrosa* var. *artemisiarum*	Great Basin Scrub, Sonoran Desert Scrub	O	1B2	2-2-2	----/---
White-bracted spineflower	*Chorizanthe xanti var. leucotheca*	Mojavean desert scrub and Pinyon and juniper woodland	P	1B	2-2-3	---/---

Source: California Native Plant Society, "Inventory of Rare and Endangered Vascular Plants in California," 1994.

[1] CNPS list only; does not reflect local sensitivity concerns of Joshua tree and California juniper woodlands.

Occurrence:
O = Observed; Recorded occurrence in CDFG Natural Diversity Data Base or information obtained from other source(s).
E = Expected to occur based on habitat requirements and documented distribution.
P = Potential to occur based on habitat requirements and documented distribution.

CNPS List:
1A - Plants presumed extinct in California.
1B - Plants rare, threatened, or endangered in California and elsewhere.
2 - Plants rare, threatened, or endangered in California, but more common elsewhere.
3 - Plant about which more information is needed - A Review List.
4 - Plants of limited distribution - A Watch List.

R-E-D Code:
R (rarity)
1 Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction or extirpation is low at this time.
2 Occurrence confined to several populations or to one extended population.
3 Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported.
E (endangerment)
1 Not endangered
2 Endangered in a portion of its range
3 Endangered throughout its range
D (distribution)
1 More or less widespread outside California
2 Rare outside California
3 Endemic to California

Pierson's Morning-glory (*Calystegia peirsonii*). Pierson's morning-glory is on the CNPS watch list, but its distribution is limited to Los Angeles County in chaparral, chenopod scrub, cismontane woodland, coastal scrub, lower montane coniferous forest, and valley and foothill grassland habitats at elevations of approximately 100 to 4,900 feet. It is a perennial, rhizomatous herb that blooms from May to June. CNPS records state that it is primarily threatened by grazing. This species could occur within the scrub and chaparral habitat in the southwest portion of the study area or in valley and foothill grassland habitat.

Mojave spineflower (*Chorizanthe spinosa*). Mojave spineflower occurs in Kern, Los Angeles, and San Bernardino counties in chenopod scrub, Joshua tree woodland, and Mojavean desert scrub habitats at elevations of 20 to 4,200 feet. It is an annual herb that blooms from April to July. It generally occurs in dry, sandy, and gravelly substrates. CNDDB does not indicate any recorded occurrences of Mojave spineflower within the study area. However, recent environmental documents indicate this species occurs in limited numbers in desert scrub habitats within the Lancaster Study Area (County of Los Angeles 1995). The City of Lancaster's Avenue G widening DEIR (2002) states that Mojave spineflower is known from Joshua tree woodland habitat east of 10th Street West between Avenues I and H.

White-bracted Spineflower (*Chorizanthe xanti var. leucotheca*). Threatened throughout its range, white-bracted spineflower occurs in Los Angeles, Riverside, and San Bernardino counties in Mojavean desert scrub, and pinyon and juniper woodland habitats at elevations of 980 to 3,900 feet. This annual herb that blooms from April to June could occur within the southern mountainous region in the juniper woodland and desert scrub habitats. No individuals or populations of the species are documented within the survey area. There is one CNDDB occurrence recorded within the 7.5-minute USGS quadrangle Sleepy Valley.

Desert Cymopterus (*Cymopterus deserticola*). Desert cymopterus occurs in Kern, Los Angeles, and San Bernardino counties in Joshua tree woodland and Mojavean desert scrub habitat in sandy soils at elevations of 2,000 to 4,900 feet. It grows to about six inches high and has long, slender, tap roots with one or more leaves. Typically, reports have included small, widely scattered, highly dispersed, populations of the species. It is a perennial herb that blooms in early spring from March to May, and is known from fewer than twenty occurrences, which, to date, have all occurred within Edwards AFB. Some of these records occur within the Lancaster study area.

Sagebrush loeflingia (*Loeflingia squarrosa val. artemisiarumi*). Sagebrush loeflingia occurs in Inyo, Kern, Lassen, and Los Angeles counties in California, as well as in Nevada, Oregon, and Wyoming. It occurs in Desert dunes, Great Basin Scrub, and Sonoran desert scrub habitat in sandy soils at elevations of 2,300 to 5,300 feet. The species occurs over a wide area, but appears to be seldom reported, so populations may, in fact, be small and widely scattered. It is an annual herb that blooms from April to May. In the Lancaster study area, this species is only known from one CNDDB listed occurrence, although at least four other specimens have been found within Edwards AFB, and five specimens have been found at 37th Street West and Avenue K-4 (Impact Sciences Inc., VTM 060291/060664 Draft EIR, May 2006). Focused field studies would be required to determine the presence or absence of this species.

Parish's Alkali Grass *(Puccinellia parishii)*. Parish's alkali grass is known from San Bernardino County in California, and also Arizona and New Mexico in meadows and seeps (alkaline springs and seeps) at elevations of 2,300 to 3,200 feet. It is an annual herb that blooms from April to May. The CNDDB lists an occurrence from 1992 at Edwards AFB within the Lancaster study

area. However, CNPS indicates that the identity of this population is questionable. Maps within the West Mojave Plan Draft Evaluation Report (WMER) show only one occurrence near Apple Valley, California, southeast of the study area.

Pygmy Poppy (*Canbya candida*). The pygmy poppy is found in Inyo, Kern, Los Angeles, and San Bernardino counties in Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland habitats in sandy soil at elevations of 1,900 to 4,000 feet. It is an annual herb that blooms from March to June. The most recent record of this annual wildflower in the CNDDB is from desert scrub habitat on Edwards AFB in 1965. The West Mojave Plan Draft Evaluation Report maps show one occurrence within City limits, but no date is given for this information.

3.4 SENSITIVE HABITATS

Desert Wash. Periodic natural run-off from the Tehachapi and Sierra Pelona mountains has created various natural washes and channels in the Antelope Valley, as these waterways make their way down to the valley floor. As these natural desert washes are converted from earthen channels to concrete-lined facilities or reaches placed within culverts or surface flows diverted by paved road construction, their natural absorption capabilities are reduced, floodwaters are redirected, and important desert wash resources may be impacted. Desert wash habitats can support unique assemblages of plants and wildlife species and it is well documented that they play an important contribution in conveying surface flows during the rainfall season to other habitats located down-slope supporting special-status plants such as the alkali mariposa lily.

Desert wash habitats are prevalent throughout the study area and were too numerous to map, although their tentative distribution is shown on Figure 3-3, as blue line features. Generally, these features traverse the study area from north to south and contain sparse perennial vegetation due to scouring that occurs after rainstorm events. Sparse buckwheat, sagebrush, and rabbitbrush occur within these drainage channels. Generally, the desert washes are narrow and incised, with eroded banks and gravel and may vary in size from one foot deep and three feet across to several feet deep and more than 20 feet across.

Although this unique hydrogeomorphic landform is relatively common in parts of the Antelope Valley, much of this habitat, particularly in the central part of the study area has been lost over the last several decades due to development and agricultural practices. One of the largest negative effects of road construction and diversion of flows into culverts is the surface interruption of these flows into sink scrub habitats that support numerous special-status plants. These activities effectively dewater those downstream habitats, thus indirectly degrading or destroying habitat for special-status plants and wildlife. Furthermore, future growth and development in Lancaster may accelerate these impacts. The Lancaster General Plan (City of Lancaster 1997) projected that population levels within the City limits will increase by 205 percent between 1990 and 2020. While recent estimates are more conservative, population levels and the number of households in Lancaster are expected to increase by 117.5 percent and 112.9 percent respectively between 2000 and 2030 (SCAG 2004). Residential and non-residential development has been necessary to accommodate the increase in population. Many of these developments have occurred directly within or adjacent to Amargosa Creek and its tributaries thereby changing the natural hydrology of the creek. Planned improvements in the Amargosa Creek area associated with new development include the construction of a detention

basin at the mouth of the creek and the construction of 12.5 miles of earthen channels, 1.5 miles of concrete channels, and 10 miles of storm drains.

Joshua Tree Woodland. Joshua tree woodland habitat represents a significant local resource. Furthermore, CDFG considers Joshua tree woodland habitat a threatened habitat and is actively tracking its loss in the Antelope Valley. This community is found only in the southwestern portions of the City. The City has acquired 125 acres of Prime Desert Woodlands for preservation of this plant community.

Valley Needlegrass Grassland. Grasslands are generally defined as open habitats with little or no woody vegetation. In California, most grasses germinate and grow in winter and spring, during winter rains, and set seed prior to the dry, summer season. With the introduction of non-native annual grasslands, increased grazing, changes in fire regime, and other disturbances, most of California's native grasslands are gone and have been replaced with non-native ripgut brome (*Bromus diandrus*), cheatgrass, and wild oats (*Avena fatua*). Historically, most of Central Valley grassland was dominated by native purple needlegrass (*Nassella pulchra*). Open areas between the tussocks of this perennial bunchgrass supported many native wildflowers, rather than the plethora of non-native ruderal species that non-native annual grasslands support. Almost all of the native valley needlegrass grassland has been almost replaced by this non-native annual grassland and, as such, the CDFG has designated valley needlegrass grassland as a sensitive natural habitat.

Wildflower Field. Wildflower field is an amorphous mix of plants that are known for their conspicuous, annual wildflower displays that dominate an area. Species include California poppy (*Eschscholzia californica*), tidy tips (*Layia sp.*), and lupine (*Lupinus sp.*). This habitat has been designated a sensitive natural habitat by the CDFG, and occurs in flats at the base of buttes on slopes of 0 to 5 percent on sandy or gravelly soils.

3.5 ZOOLOGICAL RESOURCES

The combination of desert and mountain habitat occurring in the Lancaster area creates a wide range of ecological niches for a diverse assemblage of wildlife species typical of the western Mojave Desert. Although the relative lack of water is a limiting factor to the abundance and diversity of wildlife occurring in the study area, a variety of amphibians, reptiles, birds, and mammals utilize the on-site habitats for food, shelter, and breeding.

AMPHIBIANS AND REPTILES

Amphibians are expected to be seasonally abundant in isolated cottonwood/willow woodland and freshwater marsh habitats depicted on the National Wetland Inventory maps. Common resident species expected to occur include the western toad (*Bufo boreas*) and Pacific chorus frog (*Pseudacris regilla*).

Common reptile species expected to occur in the study area include the western fence lizard (*Sceloporus occidentalis*), side-blotched lizard (*Uta stansburiana*), western zebra-tailed lizard (*Callisaurus draconoides*), southern desert horned lizard (*Phrynosoma platyrhinos calidiarum*), Great Basin whiptail (*Cnemiodophorus tigris tigris*), glossy snake (*Arizona elegans*), California whipsnake (*Masticophis lateralis*), night snake (*Hypsiglena torquata*), long-nosed snake (*Rhinocheilus lecontei*), common kingsnake (*Lampropeltis getula*), western blind snake

(*Leptotyphlops humilis*), red racer (*Masticophis flagellum piceus*), Great Basin gopher snake (*Pituophis catenifer deserticola*), and Mojave rattlesnake (*Crotalus scutulatus*).

BIRDS

A number of common bird species are expected to reside or forage throughout the habitats within this study area, including House Finch (*Carpodacus mexicanus*), Mourning Dove (*Zenaida macroura*), Greater Roadrunner (*Geococcyx califonrnianus*), Northern Flicker (*Colaptes auratus*), and the Common Raven (*Corvus corax*). Also expected in the desert scrub area are the Western Meadowlark (*Sturnella neglecta*); Black-throated Sparrow (*Amphispiza bilineata*); California Quail (*Callipepla californica*); Lesser Nighthawk (*Chordeiles acutipennis*); Sage Sparrow (*Amphispiza belli canescens*); and migrant or wintering Brewer's (*Spizella breweri*), Chipping (*Spizella passerina*), White-crowned (*Zonotrichia leucophrys*), and Savannah (*Passerculus sandwichensis*) sparrows. Common raptors (birds of prey) include the Red-tailed Hawk (*Buteo jamaicensis*) and American Kestrel (*Falco sparverius*).

MAMMALS

Common small mammals expected to occur in study area habitats include western harvest mouse (*Reithrodontomys megolotis*), several species of mice (*Peromyscus* spp.), desert woodrat (*Neotoma lepida*), desert cottontail (*Sylvilagus audubonii*), Merriam's chipmunk (*Neotamias merriami*), little pocket mouse (*Perognathus longimembris*), white-tailed antelope ground squirrel (*Ammospermophilus leucurus*), and California ground squirrel (*Spermophylus beecheyi*). Nocturnal species such as desert pocket mouse (*Chaetodipus penicillatus*), chisel-toothed kangaroo rat (*Dipodomys microps*), and Merriam's kangaroo rat (*Dipodomys merriami*) are also expected to occur in study area habitats. The California myotis (*Myotis californicus*), big brown bat (*Eptesicus fuscus*), and western pipistrelle (*Pipistrellus hesperus*) may forage in desert scrub abutting riparian forests. Larger mammals expected to occur include the black-tailed jackrabbit (*Lepus californicus*), desert kit fox (*Vulpes macrotis macrotis*), gray fox (*Urocyon cineroargenteus*), and coyote (*Canis latrans*).

3.6 SPECIAL-STATUS WILDLIFE SPECIES

Special-status wildlife species include those that are state- or federally-listed as threatened or endangered, have been proposed for listing as threatened or endangered, have been designated as state or federal candidates for listing, are considered state Species of Special Concern, or state-designated as Fully Protected. Information concerning the known distribution of threatened, endangered, or other special-status wildlife species with potential to occur in the area was collected from several sources and reviewed. The sources included the CDFG's California Natural Diversity Data Base and information available through the USFWS, CDFG, and technical publications.

The CNDDB and other sources indicate that nine special-status wildlife species have been recorded from the study area. At least 27 other special-status species are expected to occur or have the potential to occur in the study area, based on habitat requirements and/or the geographical location of the study area in relation to the known range of the animal. Each of these species is summarized in Table 3-2, Special-Status Animals in the Lancaster General Plan Study Area, and are discussed below.

Table 3-2
Special-Status Animals in the Lancaster General Plan Study Area

Common Name[1]	Scientific Name[1]	Occurrence	Status[2] State/Federal
Desert tortoise	*Gopherus agassizii*	P	ST/FT
Swainson's Hawk	*Buteo swainsoni*	O	ST/---
Least Bell's Vireo	*Vireo bellii pusillus*	O	SE/FE
Mohave ground squirrel	*Spermophilus mohavensis*	O	ST/---
Southwestern pond turtle	*Emys (Clemmys) marmorata pallida*	P	CSC/---
Silvery legless lizard	*Anniella pulchra pulchra*	O	CSC/---
Coast horned lizard	*Phrynosoma coronatum*	O	CSC/---
Mojave fringe-toed lizard	*Uma scoparia*	P	CSC/---
Double-crested Cormorant	*Phalacrocorax auritus*	P	CSC/----
White-tailed Kite	*Elanus leucurus*	E	CSC /---
Northern Harrier	*Circus cyaneus*	E	CSC/---
Sharp-shinned Hawk	*Accipiter striatus*	E	CSC/---
Cooper's Hawk	*Accipiter cooperii*	O	CSC/---
Ferruginous Hawk	*Buteo regalis*	E	CSC/---
Golden Eagle	*Aquila chrysaetos*	E	CSC/---
Merlin	*Falco columbarius*	O	CSC/---
Prairie Falcon	*Falco mexicanus*	E	CSC/---
Western Snowy Plover	*Charadrius alexandrinus nivosus*	O	CSC/---
Mountain Plover	*Charadrius montanus*	E	CSC/---
Burrowing Owl	*Athene cunicularia*	O	CSC/---
Long-eared Owl	*Asio otus*	O	CSC/---
Short-eared Owl	*Asio flammeus*	O	CSC/---
Loggerhead Shrike	*Lanius ludovicianus*	O	CSC/---
Bendire's Thrasher	*Toxostoma bendirei*	E	CSC/----
Le Conte's Thrasher	*Toxostoma lecontei*	E	CSC/---
Yellow Warbler	*Dendroica petechia brewsteri*	O	CSC/---
Tricolored Blackbird	*Agelaius tricolor*	O	CSC/---
Townsend's big-eared bat	*Corynorhinus townsendii*	P	CSC/---
Pallid bat	*Antrozous pallidus*	E	CSC/---
Western mastiff bat	*Eumops perotis*	P	CSC/---
Southern grasshopper mouse	*Onychomys torridus ramona*	E	CSC/---
Ringtail	*Bassariscus astutus*	P	CFP/---
American badger	*Taxidea taxus*	E	CSC /---

Source: California Natural Diversity Data Base (2006), H.T. Harvey & Associates (2006).

[1] Scientific and Common Names as follows: Reptiles from Stebbins (2003), Birds and mammals from CDFG (2006).

[2] Species Status:

State

ST = Listed as Threatened by the State of California / CSC = CDFG Species of Special Concern / CFP = Fully Protected Species by the State of California

Federal

FT = Listed as Threatened by the USFWS

Taxa listed with an asterisk (*) have been designated by the Western Bat Working Group as "High Priority" species.

Occurrence:
O = Observed; Recorded occurrence in CDFG Natural Diversity Data Base or information obtained from other source(s).
E = Expected to occur based on habitat requirements and documented distribution.
P = Potential to occur based on habitat requirements and documented distribution.

3.7 STATE AND FEDERALLY LISTED SPECIES

Desert Tortoise (*Gopherus agassizii*). The desert tortoise is an herbivore that may attain nine to 15 inches in carapace length. The tortoise is able to live where ground temperature may exceed 140° F (60° C) because of its ability to dig burrows and escape the heat. At least 95 percent of its life is spent in burrows. Within these burrows, it is also protected from freezing while dormant during November through February or March.

The presence of soil suitable for digging burrows is a limiting factor to desert tortoise distribution. Some of their burrows extend just beyond the shell of the tortoise, while others extend several feet. A single tortoise may have a dozen or more burrows distributed over its home range. Different tortoises may use these burrows at different times. Desert tortoises inhabit semi-arid grasslands, gravelly desert washes, canyon bottoms, and rocky hillsides.

Diet composition varies throughout the tortoise's range. If winter rainfall has been sufficient to result in germination of annuals, these are used heavily when the tortoises emerge from winter torpor. Other herbs, grasses, some shrubs, and the new growth of cacti and their flowers comprise a major portion of the diet. If there is summer rain, tortoises will utilize dry forage. Natural predators of the desert tortoise include Common Ravens, Gila monsters (*Heloderma suspectum*), kit foxes (*Vulpes macrotis*), badgers (*Taxidea taxus*), roadrunners, and coyotes (*Canis latrans*); they prey on juveniles, which are two to three inches long, with a thin, delicate shell.

Plant species play a major role in defining desert tortoise habitat. Creosote bush (*Larrea tridentata*), burrobrush, Mojave yucca (*Yucca schidigera*) and blackbrush (*Coleogyne ramosissima*) generally distinguish desert tortoise habitat. At higher altitudes, Joshua tree and galleta grass (*Pleuraphis rigida*) are common plant indicators.

Although the City of Lancaster study area lies within the historical range of the desert tortoise, the CNDDB lists no records for desert tortoise within either Lancaster City limits or the Lancaster General Plan study area. The current known range boundary of the species lies approximately three miles east and approximately three miles north of the study area. Some suitable habitat for desert tortoise exists within relatively intact Joshua tree woodland, creosote bush scrub, and desert scrub habitats within the study area. The eastern portion of the study area contains the largest expanses of potential desert tortoise habitat, and in this area, it is possible that one or more relict populations of desert tortoise may still persist. The central and western portions of the study area, including the City of Lancaster, contain less suitable habitat and the potential for desert tortoise to occur in one of these areas is quite low.

Swainson's Hawk (*Buteo swainsoni*). The Swainson's Hawk is a large soaring bird of open habitats. Swainson's Hawks are most easily distinguished from other members of its genus, such as the familiar Red-tailed Hawk, by their more slender body and narrow, pointed, and slightly upturned wings.

Swainson's Hawks were once one of the most common birds of prey in the grasslands of California. Their populations have declined at least 90 percent since 1900 and are still believed to be declining. They once nested in the majority of the lowland areas in the state. Currently, the nesting range is primarily restricted to portions of the Sacramento and San Joaquin valleys,

northeast California, and the Western Mojave Desert, including Antelope Valley. It was listed as threatened by the State of California in 1983.

Swainson's Hawks require large amounts of foraging habitat, preferably grassland or pasture habitats. Their preferred prey items are voles (*Microtus* spp.), gophers, birds, and insects such as grasshoppers. They have adapted to the use of some croplands, particularly alfalfa, but also hay, grain, tomatoes, beets and other row crops. Crops such as cotton, corn, rice, orchards, and vineyards are not suitable because they either lack suitable prey or the prey is unavailable to the Swainson's Hawks due to crop structure.

The CNDDB lists six occurrences of Swainson's Hawk within the quadrangles that overlay the study area. Two additional Swainson's Hawk nests were discovered just north of the Study area during surveys conducted by H.T. Harvey & Associates in the Antelope Valley in June 2006. Three occurrences are from within the study area, though no occurrence of Swainson's Hawk is known from within the City of Lancaster. CNDDB occurrence number 801 (1999) is from near the intersection of Avenue I and 120th Street East, at the eastern boundary of the study area. CNDDB occurrence number 803 (1999), which reportedly appeared to be a nesting individual, is from along 105th Street West, near the northern boundary of the study area. CNDDB occurrence number 1467 (2005) is from the north side of Avenue E-8, 0.5 miles west of 90th Street East. The remaining five occurrences (including the two H.T. Harvey & Associates recorded) are nesting records from outside the study area proper. Three of these five records (including the two H.T. Harvey & Associates recorded) are located near the northwestern corner of the study area. The remaining two records are from near the southeastern corner of the study area.

Land conversion for agricultural purposes in the Antelope Valley has led to an increase of high-quality patches of foraging habitat (alfalfa fields) large enough to sustain Swainson's Hawks. Potential foraging habitat, consisting of annual grasslands and fallow fields, is abundant within the study area, and the species' presence in the area is likely to continue. Swainson's Hawks could also nest and forage within the City of Lancaster.

Least Bell's Vireo (*Vireo bellii pusillus*). This insectivorous species is a small, neotropical migrant that generally arrives on breeding grounds by mid-March to mid-April, depending upon elevation and local conditions. It tends to occupy early successional stages of riparian scrub, and is well known as a vociferous bird throughout the heat of the day. Although not normally found in the western Mojave Desert region, recent records exist from the South Fork of the Kern River, the southern Owens Valley, and the southern San Joaquin Valley in Tulare County. The species was also recently found in a riparian area northwest of the 20th Street West and H Street in the City of Lancaster (EDAW 2006).

Mohave Ground Squirrel (*Spermophilus mohavensis*). The Mohave ground squirrel is known to occur in portions of four counties (Inyo, Kern, Los Angeles, and San Bernardino) in the Lower Sonoran Life Zone of the western Mojave Desert. State Route 14 generally demarcates the southwestern boundary, whereas the southern boundary is limited by the San Gabriel Mountains (Brooks and Matchett 2002). The northwestern boundary is limited by the Sierra Nevada Mountains, and the Inyo and Panamint mountains define the northern and northeastern boundaries. The eastern boundary generally follows the easternmost contour of the Silurian Valley (Brooks and Matchett 2002). The limits of the geographic range of the Mohave ground squirrel are not known precisely, and therefore the California Department of Fish and Game stipulates that surveys for the species may be required in areas up to five miles from

documented boundaries (CDFG 2003). The Mohave ground squirrel occupies open creosote bush scrub, alkali desert scrub, and Joshua tree woodland in areas with flat to moderate terrain. The Mohave ground squirrel tends to avoid rocky areas and typically constructs burrows in sandy, alluvial, or gravelly soils.

The Mohave ground squirrel emerges from estivation in spring, typically between mid-February and March, and is active during the day foraging for vegetation, seeds, arthropods, and fruit and tends to stay close to its burrow while foraging. Burrows are used for predator avoidance and temperature control. The breeding season occurs soon after emergence and gestation lasts approximately 30 days. Avian and terrestrial predators of the Mohave ground squirrel include the Mojave rattlesnake (*Crotalus scutulatus*), desert kit fox (*Vulpes macrotis arsipus*), coyote, North American badger, bobcat (*Lynx rufus*), Prairie Falcon (*Falco mexicanus*), Golden Eagle (*Aquila chrysaetos*), and Red-tailed Hawk (Best 1995). After acquiring fat stores for hibernation, the Mohave ground squirrel typically enters estivation in July or August. Habitat conversion to agriculture, suburban and urban land development, and military base development and operation has contributed to a decline in the abundance of Mohave ground squirrels.

The CNDDB lists nine occurrences of Mohave ground squirrel within the quadrangles that overlay the study area. Two of the nine occurrences lie within the study area proper, and one of those two occurrences lies within the City of Lancaster. CNDDB occurrence number 26 (1984) is from the south-central portion of the City of Lancaster. CNDDB occurrence number 294 (1994) is from Edwards AFB within the study area, near its northeastern corner. The remaining seven occurrences, dating from 1977 to 1994, are scattered to the north, northeast, and east of the study area, with three of those occurrences (CNDDB occurrence numbers 265, 293, and 295) reported from the southern portion of Edwards AFB. CNDDB occurrence numbers 255, 256, and 271 are clustered near the southeastern corner of the study area, and CNDDB occurrence number 281 is located to its north, near the City of Rosamond.

Some suitable habitat for Mohave ground squirrel exists within relatively intact Joshua tree woodland and creosote bush scrub habitats within the study area and, to a lesser extent, within the City of Lancaster. In addition to the records that have already been documented, it is possible that one or more undiscovered populations of Mohave ground squirrel may still persist within these habitats.

3.8 SPECIES OF SPECIAL CONCERN AND FULLY PROTECTED SPECIES

Silvery Legless Lizard (*Anniella pulchra pulchra*). This unusual lizard is found in sandy or loose loamy soils under the sparse vegetation of beaches, chaparral, desert, pine-oak woodland, or under sycamores, cottonwoods, or oaks that grow on stream terraces. Legless lizards forage for insects and spiders underneath leaf litter or underneath sandy soil, usually at the base of shrubs or other vegetation. Their adaptation for burrowing, which requires soils with a high sand fraction, makes legless lizards vulnerable to ground-disturbing activities such as agriculture.

The CNDDB lists three records for the silvery legless lizard within the quadrangles that overlay the study area. CNDDB occurrence numbers 9 (1988) and 34 (2005) are from within the Lancaster city limits, and CNDDB occurrence number 8 (1988) is from within 0.2 miles south of the Lancaster city limits and study area. The species was also recently observed at 37th Street

West and Avenue K-4 (Impact Sciences Inc., VTM 060291/060664 Draft EIR, May 2006). Considering the wide variety of habitats silvery legless lizards are known to occupy, this species could be relatively abundant across the study area and the City of Lancaster. However, the species' cryptic nature makes it very difficult to detect, and the extent of its actual distribution across the study area is unknown.

Southwestern Pond Turtle (*Emys* [*Clemmys*] *marmorata pallida*). The southwestern pond turtle is a medium-sized brown- or olive-colored aquatic turtle, and is found west of the Sacramento-San Joaquin Delta, and south to northern Baja California, except in desert areas. Both subspecies that occur in California, the northwestern pond turtle (*E. m. marmorata*) and the southwestern pond turtle (*E. m. pallida*) have been designated Species of Special Concern by the State of California. The pond turtle is normally found in and along riparian areas, although gravid females have been reported more than 1.2 miles away from water in search of an appropriate nest site. The preferred habitat for these turtles includes ponds or slow-moving water with numerous basking sites (logs, rocks, etc.), food sources (plants, aquatic invertebrates, and carrion), and few predators (raccoons [*procyon lotor*], introduced fishes, and bullfrogs [*rana catesbeiana*]). Juvenile and adult turtles are commonly seen basking in the sun at appropriate sites, although they are extremely wary animals and often dive into the water at any perception of danger.

The CNDDB lists no records for the southwestern pond turtle within the quadrangles that overlay the study area. Nonetheless, pond turtles may be present in permanent or nearly permanent aquatic habitat (including sewage treatment ponds) within the study area and the City of Lancaster.

Coast Horned Lizard (*Phrynosoma coronatum*). The San Diego horned lizard (*P. c. blainvillei*) and California horned lizard (*P. c. frontale*) are two subspecies of the coast horned lizard, both of which are California Species of Special Concern. Both subspecies have been reported from within the study area. San Diego horned lizards and California horned lizards occupy loose sandy loam and alkaline soils in a variety of habitats including chaparral, grasslands, saltbush scrub, coastal scrub, and clearings in riparian woodlands. They primarily eat insects such as ants and beetles. They once inhabited much of the Central Valley and coastal southern California but have disappeared from much of their former range. Their population decline is mainly attributed to conversion of land for agricultural purposes. The human introduction of non-native Argentine ants, which are inedible to horned lizards and tend to displace the native carpenter ants, is another factor in their decline.

The CNDDB lists two records for the coast horned lizard within the quadrangles that overlay the study area. CNDDB occurrence numbers 147 (1964) and 34 (2005) are from within the Lancaster city limits. Occurrence number 147 was identified as a San Diego horned lizard, and occurrence number 34 was identified as a California horned lizard. Coast horned lizards, which occupy a variety of habitats, may occur in almost any upland habitat within the study area that has not been urbanized or converted to agriculture. The San Diego horned lizard may occur within the southern and central portions of the study area, while the California horned lizard may occur within the northern portions. Intergrades of the two subspecies could be present in any portion of the study area, and either subspecies or intergrades may occur within the City of Lancaster.

Mojave Fringe-toed Lizard (*Uma scoparia*). The Mojave fringe-toed lizard is a medium-sized, light-colored lizard that is restricted to habitats with a substrate of fine, loose, wind-blown sand. These lizards seek cover from temperature extremes and avoid predators by burrowing in the sand, utilizing a specialized movement of their hind limbs and body known as "sand swimming." Bases of shrubs and rodent burrows are also sometimes utilized as cover. The Mojave fringe-toed lizard may require habitats containing shrubs or annual plants to support its prey base of insects and other arthropods.

The CNDDB lists no records for the Mojave fringe-toed lizard within the quadrangles that overlay the study area. However, small, widely scattered pockets of dune land are distributed across eastern portions of the study area, and Jennings and Hayes' (1994) distribution map for the species shows the range of the species approaching very near the eastern boundary of the study area. Therefore, it is possible that one or more populations of the Mojave fringe-toed lizard may be present in eastern portions of the study area, though it is highly unlikely that the species occurs within the City of Lancaster proper.

Cooper's Hawk (*Accipiter cooperii*). The Cooper's Hawk is a medium-sized accipiter (a hawk of the genus *Accipiter*, characterized by short wings and a long tail) that can prey upon medium-sized birds (*e.g.*, jays, doves, and quail) and occasionally takes small mammals and reptiles. The Cooper's Hawk prefers landscapes where wooded areas occur in patches and groves, which facilitates the ambush hunting tactics employed by this species. Breeding pairs in California prefer nest sites within dense stands of live oak woodland or riparian areas and prey heavily on young birds during the nesting season.

The CNDDB lists no records for the Cooper's Hawk within the quadrangles that overlay the study area; however, observations of bird species that are California Species of Special Concern are rarely reported to the CNDDB. Cooper's Hawks may be year-round residents within the Antelope Valley and may breed and forage within both the study area and the City of Lancaster.

Sharp-shinned Hawk (*Accipiter striatus*). The Sharp-shinned Hawk is commonly found in dense woodland or riparian habitats bordering open areas. Sharp-shinned Hawks typically pursue small birds in semi-open country, at the edges of open woodlands, in clearings, along hedgerows, shorelines, or along passerine migration corridors. Nest sites are usually within 290 feet of a water source and located in dense stands of even-aged trees on north facing slopes.

The CNDDB lists no records for the Sharp-shinned Hawk within the quadrangles that overlay the study area; however, as stated above, observations of bird species that are California Species of Special Concern are rarely reported to the CNDDB. Sharp-shinned Hawks are unlikely to breed within the study area or the City of Lancaster and are only likely to occur in either area during periods of migration in spring and fall. They may, however, spend portions of the winter months in the study area and the City of Lancaster, foraging for small birds and other prey.

Tricolored Blackbird (*Agelaius tricolor*). Tricolored Blackbirds are found almost exclusively in the Central Valley and central and southern coastal areas of California. In 1992, surveys by the CDFG determined that the population of this species was much larger than previously believed. Thus, the concern for the species lessened considerably.

The Tricolored Blackbird is highly colonial in its nesting habits and forms dense breeding colonies of up to tens of thousands of pairs. This species typically nests primarily in tall, dense stands of cattails or tules, but also nests in blackberry, wild rose bushes, and tall herbs. Nesting colonies are typically located near standing or flowing freshwater. Tricolored Blackbirds form large, often multi-species, flocks during the non-breeding period and range more widely than during the reproductive season.

The CNDDB lists one record for Tricolored Blackbird within the quadrangles that overlay the study area. CNDDB occurrence number 205 (1995) is from Piute Ponds on the southwestern edge of Rosamond Lake, in the southern portion of Edwards AFB, within the study area. Though seemingly uncommon in the area based on reported occurrences, observations of bird species that are California Species of Special Concern are rarely reported to the CNDDB. Tricolored Blackbirds may breed in the study area and the City of Lancaster wherever suitable vegetation types and aquatic habitat are present.

Golden Eagle (*Aquila chrysaetos*). The Golden Eagle is an uncommon permanent resident and migrant in California. Golden Eagles forage upon a variety of prey, but show a preference for rabbits and rodents. The home range of a breeding pair of eagles may include a number of alternate nests, usually located on cliffs, in large trees, or on high-tension towers. Only one of these sites is used each year for breeding. Golden Eagles, their nests, and eggs are fully protected in the state of California by the California Department of Fish and Game. In addition, Golden Eagles and their nests are federally protected under the Bald Eagle Protection Act and the Migratory Bird Treaty Act.

The CNDDB lists no records for the Golden Eagle within the quadrangles that overlay the study area; however, observations of bird species that are California Species of Special Concern are rarely reported to the CNDDB. Golden Eagles prefer desert scrub, foothill woodland, and the non-native grassland habitats that ring the Antelope Valley floor. They may occasionally utilize plowed fields that occur within the study area and the City of Lancaster.

Short-eared Owl (*Asio flammeus*). Short-eared Owls occur in open habitats such as grasslands, wet meadows, marshes, fallowed areas, lakes, or dry lakebeds. They require tules or other tall grasses for nesting or daytime refuge. Short-eared Owls are likely to be rare in the study area, most likely to be encountered as a winter visitor.

The CNDDB lists one record for the Short-eared Owl within the quadrangles that overlay the study area. This 1932 occurrence is from near the southeastern corner of Rosamond Lake within the study area. Short-eared Owls may still occur within the study area; however, suitable habitat for the species within the study area is limited primarily to aquatic and marshy habitats near the 1932 occurrence. Occurrences within the City of Lancaster, while possible, are much less likely due to an even greater scarcity of suitable habitat.

Long-eared Owl (*Asio otus*). The Long-eared Owl is a medium-sized owl that nests in trees and is often found during the non-breeding season in communal roosts in isolated groves of dense trees. They often hunt in grasslands, wet meadows, and freshwater marshes where they prey upon amphibians, rodents, reptiles, and small birds. They are generally rare, but widespread throughout much of California. In the Mojave Desert, they nest and roost in desert riparian, isolated oases, and densely vegetated canyons, often with juniper and pinyon pine. As with many other owl species, Long-eared Owls begin nesting in the late winter and fledge young by

mid-May. Long-eared Owls nest nearby in the foothills of the Sierra Nevada and occasionally in winter are found on the Central Valley floor.

The CNDDB lists no records for the Long-eared Owl within the quadrangles that overlay the study area; however, observations of bird species that are California Species of Special Concern are rarely reported to the CNDDB. Long-eared Owls have been documented to nest within Lancaster city limits at Apollo Park. A post-breeding communal roost of about fifteen owls was discovered north of the study area in an athel tamarisk (*Tamarix aphylla*) grove during wildlife surveys being conducted in the Antelope Valley in June 2006 by H.T. Harvey and Associates. This roost was located north of Rosamond Boulevard, along 90th Street West. Though considered a rare breeder in the Antelope Valley, Long-eared Owls, as demonstrated by occurrence records, may occur within the study area and the City of Lancaster.

Burrowing Owl (*Athene cunicularia*). The Burrowing Owl is a small, terrestrial owl that favors flat, open grassland or gentle slopes and sparse shrubland ecosystems. These owls prefer annual and perennial grasslands, typically with sparse, or nonexistent, tree or shrub canopies. In California, Burrowing Owls are found in close association with California ground squirrels, using ground squirrel burrows for shelter and nesting. Ground squirrels also maintain areas of short vegetation height, which provide foraging habitat and allow for visual detection of avian predators by Burrowing Owls. In the absence of ground squirrel populations, habitats soon become unsuitable for occupancy by owls. Burrowing Owls are semi-colonial nesters, and group size is one of the most significant factors contributing to site constancy by breeding Burrowing Owls. The nesting season, as recognized by the California Department of Fish and Game, runs from February 1 through August 31.

The CNDDB lists nine records for the Burrowing Owl within the quadrangles that overlay the study area. Eight of the nine records are from within the study area, and three of those eight records are from within Lancaster city limits. Within the City of Lancaster, CNDDB occurrence numbers 557 (2003) and 710 (2004) are from an area west of Antelope Valley College and north of Quartz Hill. Occurrence number 709 (2004) is from an area bounded by 30th Street East, 40th Street East, Avenue J, and Avenue J-8. CNDDB occurrence numbers 166 (1993), 349 (1999), and 358 (1999) are located in the northwest quadrant of the study area, west of Edwards AFB. Occurrence numbers 750 and 751 (2005) are located in the northeast quadrant of the study area less than 0.5 miles south of Edwards AFB. Occurrence number 586 (2003) is located approximately 0.9 miles west of the study area, just south of Avenue I. The species was also recently found a 40th Street West and Avenue J, 40th Street West and Avenue K and 80th Street West and Avenue I.

H.T. Harvey & Associates' biologists documented two additional occurrences of Burrowing Owls from within the study area during wildlife surveys conducted in the Antelope Valley in June 2006. These occurrences were both located along Avenue B, between 90th Street West and 100th Street West, near the northwestern corner of the study area. The first occurrence (WGS 84 datum, UTM 11S 381170mE 3852226mN) was of an individual owl, and the second occurrence (WGS 84 datum, UTM 11S 381778mE 3852239mN) was of a pair of owls with several chicks. The numerous documented occurrences demonstrate that Burrowing Owls can be expected to occur within the study area and the City of Lancaster.

Ferruginous Hawk (*Buteo regalis*). Ferruginous Hawks winter in open habitats throughout central and southern California. The CNDDB lists no records for the Ferruginous Hawk within the quadrangles that overlay the study area; however, observations of bird species that are California Species of Special Concern are rarely reported to the CNDDB. Ferruginous Hawks would most likely forage over non-native grassland habitats within the study area and the City of Lancaster, though they may occasionally utilize plowed fields in winter.

Western Snowy Plover (*Charadrius alexandrinus nivosus*). Along coastal areas, this small plover inhabits sandy marine and estuarine shores and salt ponds. Inland populations of the species inhabit shores of alkali or brackish inland lakes. In the Antelope Valley, inland populations of Western Snowy Plovers have been documented to occur at Rosamond Lake, on Edwards AFB. In 1978, six adults, believed to be nesting, were observed along the lake's eastern shoreline. Approximately the southern one-third of the lake lies within the study area. Although no records of Western Snowy Plovers from Rosamond Lake or elsewhere within the study area have been reported to the CNDDB since 1978, this species has been observed in the Rosamond Lake area during intervening years. Western Snowy Plovers may attempt to breed along the shoreline of Rosamond Lake during any year in which enough rainfall has occurred to at least partially fill the typically dry lakebed.

Mountain Plover (*Charadrius montanus*). This member of the shorebird family is found in dry upland habitats. The Mountain Plover nests in high elevation grasslands primarily in Montana, Wyoming, Colorado, and northeastern New Mexico. During winter, this plover uses open habitats such as sparse and/or short grasslands and recently plowed or sprouting agricultural fields in California's Central Valley, Antelope Valley, Imperial Valley, southern Arizona, and northern Mexico.

The CNDDB lists two records for the Mountain Plover within the quadrangles that overlay the study area, though neither occurrence lies within the study area. CNDDB occurrence number 9 (1999) is from just south of Avenue C, approximately 1.0 mile west of the study area. CNDDB occurrence number 37 (2004) is from just west of 50th Street East, approximately 0.9 miles south of the study area. Mountain Plovers wintering or migrating through the Antelope Valley may occasionally forage in recently plowed fields in the study area and the City of Lancaster.

Northern Harrier (*Circus cyaneus*). The Northern Harrier is commonly found in open grasslands, agricultural areas and marshes. Nests are built on the ground in areas where long grasses or marsh plants provide cover and protection. Harriers hunt for a variety of prey, including rodents, birds, frogs, reptiles, and insects, by flying low and slowly in a traversing manner utilizing both sight and sound to detect prey items.

The CNDDB lists no records for the Northern Harrier within the quadrangles that overlay the study area; however, observations of bird species that are California Species of Special Concern are rarely reported to the CNDDB. Several Northern Harriers were observed foraging near the western boundary of the study area during wildlife surveys conducted in the Antelope Valley by H.T. Harvey & Associates in June 2006. Northern Harriers may forage in suitable open habitats within the study area and the City of Lancaster, especially during winter. This species may also nest in marshy areas located in the vicinity of suitable foraging habitat.

Yellow Warbler (*Dendroica petechia*). Yellow Warblers prefer deciduous, riparian habitats consisting of alders, cottonwoods, willows and other trees and shrubs. Most Yellow Warblers migrate to Mexico and South America in the fall and return to California to breed in April. Some birds spend winter in southern California lowlands.

The CNDDB lists no records for the Yellow Warbler within the quadrangles that overlay the study area; however, observations of bird species that are California Species of Special Concern are rarely reported to the CNDDB. The species was also recently observed at 37th Street West and Avenue K-4 (Impact Sciences Inc., VTM 060291/060664 Draft EIR, May 2006). While some riparian habitat within the study area appears suitable for Yellow Warbler, breeding within the study area is unlikely, as breeding by the species apparently has been extirpated from the Antelope Valley due to a combination of habitat destruction and parasitism of their nests by Brown-headed Cowbirds. Yellow Warblers are a common migrant throughout California in the spring and fall and could occur in suitable habitats within the study area and the City of Lancaster during these seasons.

White-tailed Kite (*Elanus leucurus*). This species prefers habitats with low ground cover and variable tree growth. Kite nests are built near the tops of oaks, willows, or other dense broad-leafed deciduous tress in partially cleared or cultivated fields, grassy foothills, marsh, riparian, woodland, and savannah. Kites prey primarily on small rodents (especially the California vole), but also feed on birds, insects, reptiles, and amphibians.

The CNDDB lists no records for the White-tailed Kite within the quadrangles that overlay the study area; however, observations of bird species that are California Species of Special Concern are rarely reported to the CNDDB. White-tailed Kites, once considered endangered, are now fairly common and could occur throughout the study area and the City of Lancaster.

Merlin (*Falco columbarius*). Merlins are small falcons that prey mostly on birds they catch in flight. They are a rare migrant and winter visitor to the Antelope Valley. The CNDDB lists no records for the Merlin within the quadrangles that overlay the study area. However, the species was recently observed at 37th Street West and Avenue K-4 (Impact Sciences Inc., VTM 060291/060664 Draft EIR, May 2006). The study area and, to a lesser extent, the City of Lancaster could provide foraging habitat for this species, though its presence there is expected to be incidental at most.

Prairie Falcon (*Falco mexicanus*). This large falcon is found in grasslands, deserts, and other open habitats in southwestern North America. The CNDDB lists no records for the Prairie Falcon within the quadrangles that overlay the study area; however, observations of bird species that are California Species of Special Concern are rarely reported to the CNDDB. Although sheltered, high cliffs required for nesting are absent, Prairie Falcons may forage over expanses of open habitat within the study area and within the City of Lancaster on a more limited basis.

Loggerhead Shrike (*Lanius ludovicianus*). This predatory songbird inhabits much of the lower 48 states of the United States of America. They prefer open habitats interspersed with shrubs, trees, poles, fences, or other perches from which they can hunt. Some populations of the Loggerhead Shrike, primarily those in eastern North America, have declined significantly over the last 20 years. Other populations, including those in western North America, appear to be decreasing as well. Even with this trend, Loggerhead Shrikes are still considered a fairly common species in California.

The CNDDB lists no records for the Loggerhead Shrike within the quadrangles that overlay the study area; however, the species was recently observed at 37th Street West and Avenue K-4 and observations of bird species that are California Species of Special Concern are rarely reported to the CNDDB (Impact Sciences Inc., VTM 060291/060664 Draft EIR, May 2006). Though more common in less disturbed habitats, Loggerhead Shrikes are likely to occur throughout the study area and may occur within the City of Lancaster on a more limited basis.

Double-crested Cormorant (*Phalacrocorax auritus*). This inland nesting cormorant occurs in open waters of riverine, lacustrine, and ocean habitats, frequently in flocks. The CNDDB lists no records for the Double-crested Cormorant within the quadrangles that overlay the study area; however, observations of bird species that are California Species of Special Concern are rarely reported to the CNDDB. Double-crested Cormorants may occur within the study area and the City of Lancaster as migrants or winter residents wherever suitable, open expanses of aquatic habitat are present.

Bendire's Thrasher (*Toxostoma bendirei*). This medium-sized, medium-brown bird is a locally rare species in the complex desert scrub habitats and Joshua tree woodlands in the western Mojave Desert. This is the only desert thrasher that is migratory and retreats from the Mojave Desert during the fall, to winter from central Arizona south to northern Mexico.

The CNDDB lists no records for the Bendire's Thrasher within the quadrangles that overlay the study area; however, observations of bird species that are California Species of Special Concern are rarely reported to the CNDDB. Its occurrence in the western Mojave Desert is irregular and not annual. None were observed during wildlife surveys conducted in the area by H.T. Harvey & Associates in June 2006; however, this species may periodically occupy suitable habitats within the study area and the City of Lancaster.

LeConte's Thrasher (*Toxostoma lecontei*). This medium-sized, light-brown bird is a characteristic inhabitant of open desert scrub habitats and Joshua tree woodlands. These thrashers are common and widespread throughout the Mojave Desert, but their relatively low densities and retiring nature makes them difficult to observe.

The CNDDB lists two records for the LeConte's Thrasher within the quadrangles that overlay the study area. However, neither occurrence lies within the study area. CNDDB occurrence number 57 (1968) is from approximately 4.8 miles west of Willow Springs and 5.2 miles northwest of the study area. CNDDB occurrence number 95 (1986) is from between Alpine Butte and Rock Creek, approximately 2.5 miles south of the southwestern corner of the study area. Also, at least two pairs were found during surveys conducted by H.T. Harvey & Associates in June 2006 in Joshua tree woodland habitat north of Rosamond Avenue. Despite the absence of documented occurrences within the study area, the LeConte's Thrasher could occur in suitable habitat throughout the study area and within the City of Lancaster.

Pallid Bat (*Antrozous pallidus*). Pallid bats are pale to light brown in color, and at approximately 0.84 ounces, the Pacific race is one of the State's largest bats. This medium-sized bat occurs throughout much of California and is usually found in open lowlands were it preys upon flightless insects. It prefers roosting in caves and mine tunnels, but buildings and trees may also be used. Coastal colonies commonly roost in deep crevices in rocky outcroppings, in buildings, under bridges, and in hollow trees. Colonies can range from a few individuals to over a hundred and are non-migratory. Some female/young colonies (typically the coastal subspecies) use their day roost for their nursery as well as hibernacula, while other colonies

(typically those in the desert) migrate locally on a seasonal basis. Although crevices are important for day roosts, night roosts often include open buildings, porches, garages, highway bridges, and mines. Pallid bats may travel up to several miles for water or foraging sites if roosting sites are limited. This bat prefers foraging on terrestrial arthropods in dry open grasslands near water and rocky outcroppings or old structures. They may also occur in oak woodlands and at the edge of redwood forests along the coast. Pallid bats are sensitive to human disturbances at roost sites.

The CNDDB lists no records for the pallid bat within the quadrangles that overlay the study area. Less than optimal roosting habitat is likely to be present in buildings and trees within the study area, though its preferred roosting habitat of caves and mine tunnels is much more limited. Foraging habitat exists near riparian areas and in areas with bare ground throughout the study area and Antelope Valley. Pallid bats, therefore, may forage in many areas throughout the study area and the City of Lancaster and may roost within these areas on a very limited basis.

Ringtail (*Bassariscus astutus*). The ringtail is a fully protected species in the State of California, and is protected from taking by State regulations. Ringtails are medium-sized with a long and slender body with a long, thick black and white ringed tail used when inhabiting trees. Ringtails range throughout California but are rarely found in the Sacramento Valley and the eastern tip of California. Within their range, ringtails inhabit many habitats but are most often found in chaparral, rocky hillsides, and riparian areas. Ringtails den in rock crevices, talus, boulder piles, tree hollows, and underground. They are nocturnal, foraging for arthropods, fruit, birds and mammals. Their average home range is 90 acres. Predators include great horned owls, coyotes, bobcats, and raccoons. Females give birth to three to four kits in May and June.

The CNDDB lists no records for the ringtail within the quadrangles that overlay the study area. However, there is some potential for ringtails to occur because of the presence of suitable habitat within the study area: Rocky hillsides occur in a few isolated areas at the southwestern corner of the study area and riparian habitat is also present. The potential for ringtails to occur within the City of Lancaster is much less likely.

Townsend's big-eared bat (*Corynorhinus townsendii*). California has two subspecies, *C. t. townsendii* and *C. t. pallescens*, and intergrades occur at the boundaries of the two subspecies. Townsend's big-eared bat is a colonial species and females aggregate in the spring at nursery sites known as maternity colonies. Although *Corynorhinus townsendii* is usually a cave dwelling species, many colonies are found in anthropogenic structures such as the attics of buildings or old abandoned mines. Known roost sites in California include limestone caves, lava tubes, mine tunnels, buildings, and other structures. Radiotracking studies suggest that movement from a colonial roost during the maternity season is confined to within nine miles of the nursery. This species is easily disturbed while roosting in buildings, and females are known to completely abandon their young when disturbed. This species feeds primarily on moths and other soft-bodied insects.

The CNDDB lists no records for the Townsend's big-eared bat within the quadrangles that overlay the study area. Little information is available on the current population of this species in the Antelope Valley. Suitable foraging habitat does exist, and the species could roost in old buildings within the study area and the City of Lancaster.

Western Mastiff Bat (*Eumops perotis).* Western mastiff bats are the largest of all North American bat species with a forearm length of 3.1 to 3.3 inches and weighing up to 3.5 ounces. *Eumops* can forage at 1,970 to 2,300 feet above ground level and may forage for seven hours and travel 15 miles from their roost. This species roosts primarily in cliffs or high buildings where there is a minimum of 9.8 feet of vertical drop at the entrance to roosts. Mastiff bats consume low- and slow-flying hymenopterous insects. This species is found in the central and south coastal California, the San Joaquin Valley, the southern half of the Sierra foothills, and throughout desert regions. This species may utilize bridges, rocks, or buildings as night roosts, day roosts, or maternity roosts.

The CNDDB lists no records for the western mastiff bat within the quadrangles that overlay the study area. However, suitable roosting habitat likely exists in rocky areas of the San Gabriel Mountain foothills, in the southwestern corner of the study area. This species may also roost in houses and under bridges and forage throughout many areas within the study area and the City of Lancaster.

Southern Grasshopper Mouse (*Onychomys torridus ramona*). Southern grasshopper mice are stocky bi-colored mice with a short bi-colored tail. It occurs in alkali desert scrub as well as succulent shrub, wash, and riparian communities in the Lower Sonoran Life Zone of California, Nevada, Arizona, New Mexico, Texas, and New Mexico. There are ten subspecies, one of which could occur in or near the study area. The southern grasshopper mouse is restricted to coastal Southern California, with records for Mint Canyon west of Palmdale, San Fernando, Riverside, Valle Vista, Warner Pass, La Puerta Valley, Jacumba, Santee Mountains, and the mouth of the Tijuana River Valley.

Grasshopper mice occupy abandoned burrows of small mammals. Their diet consists mainly of arthropods, but pocket mice, salamanders, crayfish, lizards, and frogs are also taken. They are nocturnally active year round. Females give birth around May to July and males play a role in caring for the young. Predators include owls, badgers, rattlesnakes, coyotes, weasels, skunks, and foxes.

The CNDDB lists no records for the southern grasshopper mouse within the quadrangles that overlay the study area. However, this species could occur in low densities in a variety of desert habitats including the study area and the City of Lancaster.

American Badger (*Taxidea taxus*). American badgers are stocky, burrowing mammals that occur in drier, open habitats throughout the western United States. They are strong diggers and feed primarily on other burrowing mammals, such as ground squirrels. Badgers are primarily nocturnal. They breed during late summer, and females give birth to a litter of young the following spring.

American badgers have historically been found in the valley and foothills of the Antelope Valley area (CNDDB 2006). There is potential for American badgers to occur in the Antelope Valley floor, especially in areas of non-native annual grassland where colonies of California ground squirrels are present.

The CNDDB lists one record for the American badger within the quadrangles that overlay the study area. CNDDB occurrence number 282 (date not provided) is from the town of Willow Springs, approximately 4.0 miles (6.4 km) north of the study area. American badgers may occur in a variety of open habitats with friable soils and could occur within the study area and the City of Lancaster.

3.9 SIGNIFICANT ECOLOGICAL AREAS

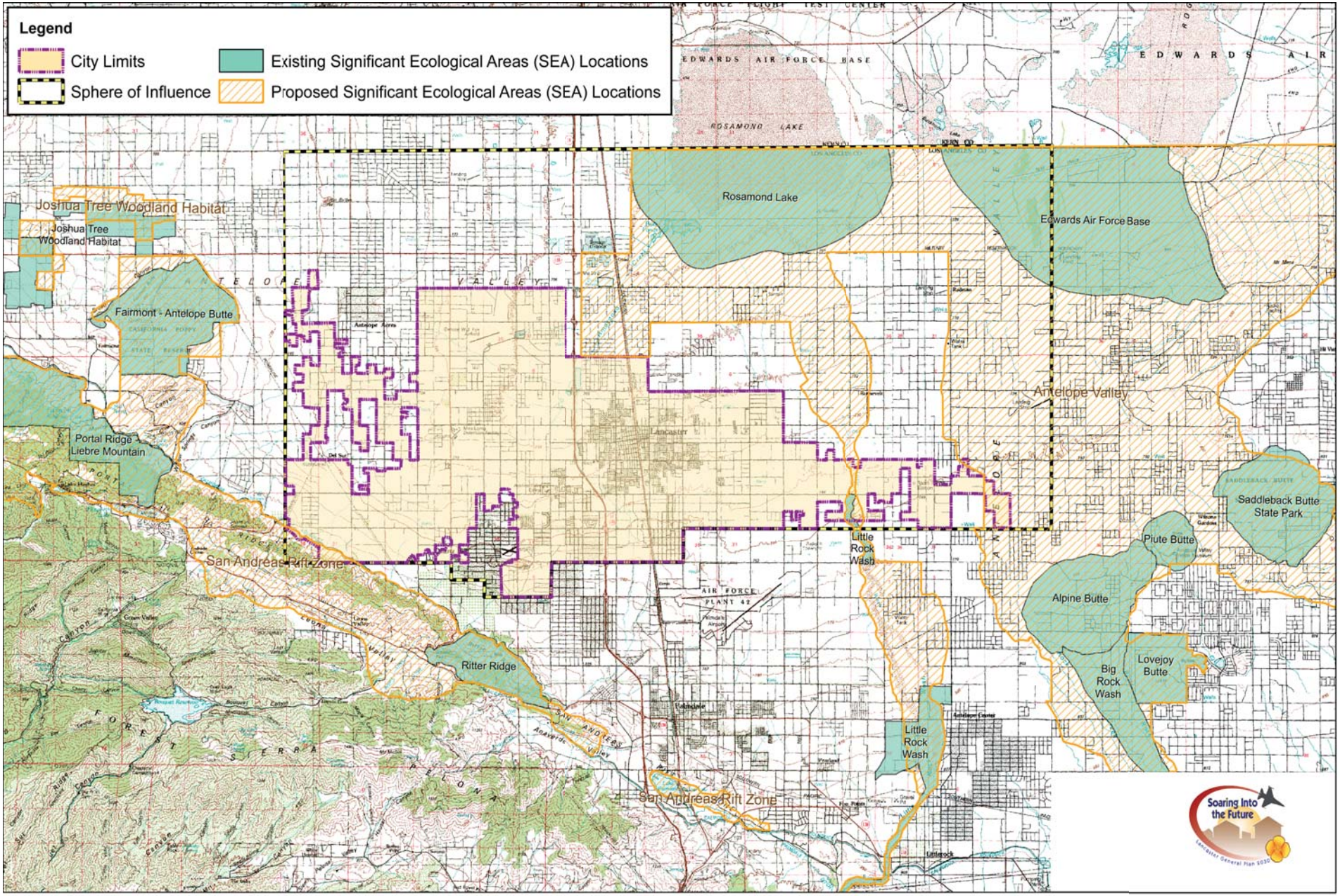
DESCRIPTION

In 1976, the Los Angeles Regional Planning Office, in conjunction with the County Parks Department, designated over 60 Significant Ecological Areas (SEAs) throughout the County. Twelve of the SEAs are located within the Antelope Valley and a portion of one SEA currently extends into the southeastern portion of the City along the Little Rock Creek wash; refer to Figure 3-5, Existing and Proposed SEA Locations. The adopted SEAs that affect the Antelope Valley are designated and described in the Antelope Valley Areawide General Plan, which was adopted by the County of Los Angeles in 1986. Land planning within these areas is monitored by the Significant Ecological Area Technical Advisory Committee (SEATAC). SEATAC recommends that these areas be preserved according to the current Antelope Valley Areawide General Plan. Once land with SEAs has been annexed into a city, the SEA designations have no legal standing. However, in 1992, the City of Lancaster incorporated policies into the General Plan that address the area of the City currently affected by the Little Rock Creek SEA.

During the process of updating the General Plan, the County of Los Angeles has proposed consolidating the 12 existing SEAs within the Antelope Valley into three large SEAs which would comprise over 300,00 acres. If adopted, they would significantly increase the area within both the City's Sphere of Influence and its incorporated boundaries that would be affected by the SEAs. Although the City supports efforts to protect the native flora and fauna, it has expressed concerns regarding the County's broad-brush approach to defining SEA boundaries.

The County has categorized SEAs into the following classifications:

- Habitat for rare, threatened, or endangered plants or animals (State or Federal).
- Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind, or are restricted in distribution on a regional basis.
- Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind, or are restricted in distribution in Los Angeles County.
- Habitat that, at some point in the life cycle of a species or group of species, serves as a concentrated breeding, feeding, resting, or migrating ground, and is limited in availability.
- Biotic resources that are of scientific interest because they are either an extreme in physical/geographical limitation, or they represent an unusual variation in a population or community.
- Areas important as habitat for game species or fisheries.
- Areas that would provide for the preservation of relatively undisturbed examples of the natural biotic communities in Los Angeles County.
- Special Areas – Areas that are worthy of inclusion, but do not fit any of the other criteria.



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Lancaster General Plan 2030

Existing and Proposed SEA Locations

Figure 3-5

There are five important factors that pertain to the proposed SEAs: 1) SEAs are not "preserves", but must undergo additional environmental scrutiny prior to land-intensive development; 2) a vast majority of the SEAs incorporate existing open space; 3) SEA regulations do not apply to areas within city limits; 4) there are many exemptions to the SEA program, including existing development and a new house proposed by an individual landowner; and 5) development that does occur within a SEA should be designed in a manner that is consistent with the overall intent of the SEA program.

Only one currently existing SEA, Little Rock Wash, falls within City limits. In addition, portions of the Rosamond Lake and Edwards AFB SEAs are located within the Lancaster sphere of influence study area. There are currently two proposed SEAs that appear to cover these currently existing SEAs: Antelope Valley and San Andreas Rift Zone; refer to Figure 3-5.

3.10 MANAGEMENT AREAS

The City's current *General Plan* was prepared in 1997 to plan for the rapid growth and development that was occurring within the City limits. The 1997 *General Plan* outlined a comprehensive program to preserve important biological resources in the Antelope Valley and the Lancaster study area. Policies and programs relating to the management of these resources are contained in the Plan for the Natural Environment in the *1997 General Plan*.

In 1982, the City financed a Vegetation Management Area Study of the four-square-mile area between Avenues K and M and 20th and 40th Streets West in response to citizen concerns about the natural vegetation of the area that was not identified in the *General Plan*. This study identified the Prime Desert Woodlands and Desert Woodlands in this area of the City. In 1983, staff prepared a policy to protect the Prime Desert Woodlands at the direction of the City Council. The policy was later incorporated into the *General Plan* (12/83) as Policy 14 under Issue 1 in the Environmental Resources Management Element.

In 1988, the City funded the Prime Desert Woodland Sites Policy Study that thoroughly examined the conditions of each of the five sites identified in the 1982 Vegetation Management Area Study. On March 20, 1989, the City Council voted to accept the report with the provision that first priority for acquisition be Site 1 (near Rawley Duntley Park).

In December of 1990, the City acquired 15 acres of land in the Site 1 Prime Desert Woodland south of Rawley Duntley Park. Since that time, other acquisitions have brought the total area owned by the City up to 125 acres, and opportunities for additional acquisitions in this area are also being pursued.

The Preserve area includes a variety of desert habitats including Joshua tree woodland, California Juniper woodland, and several small sand dune complexes. In addition to these areas, the Preserve also contains elements of several plant communities and a riparian area, as well as key wildlife species associated with woodland habitats.

The City's current General Plan policy combined with additional management efforts including those at the Prime Desert Woodland preserve will help to ensure that Lancaster manages its land use and development in such a manner as to place the highest value on people and their quality of life (City of Lancaster General Plan, Goal 1).

3.11 REFERENCES

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APPENDIX A

SPECIAL-STATUS PLANT SPECIES CONSIDERED BUT REJECTED FOR FINDING OF SIGNIFICANCE

SPECIAL-STATUS PLANT SPECIES CONSIDERED BUT REJECTED FOR FINDING OF SIGNIFICANCE						
Scientific Name	**Common Name**	**CNPS List 4 Species that are not restricted in range**	**Lack of quality habitat within the project area**	**Other edaphic factors absent from habitat in which species could occur**	**Associated species absent from the project site**	**Believed by CNPS to be extirpated from the county**
Acanthomintha obovata ssp. *Cordata*	heart-leaved thorn-mint	X				
Androsace elongata ssp. *Acuta*	California androsace	X				
Atriplex parishii	Parish's brittlescale					X
Berberis nevinii	Nevin's barberry		X			
Brodiaea filifolia	thread-leaved brodiaea		X	X		
Calochortus catalinae	Catalina mariposa lily		X			
Calochortus clavatus var. *clavatus*	club-haired mariposa lily	X				
Calochortus plummerae	Plummer's mariposa lily		X	X		
Calochortus weedii var. *intermedius*	intermediate mariposa lily		X		X	
Castilleja plagiotoma	Mojave Indian paintbrush	X				
Chorizanthe parryi var. *parryi*	Parry's spineflower		X			X
Convolvulus simulans	small-flowered morning-glory	X				
Dudleya multicaulis	many-stemmed dudleya			X		
Eriastrum hooveri	Hoover's eriastrum	X				
Erodium macrophyllum	Round-leaved filaree				X	
Goodmania luteola	golden goodmania	X				
Harpagonella palmeri	Palmer's grapplinghook	X				
Hordeum intercedens	vernal barley		X	X		
Microseris douglasii ssp. *Platycarpha*	small-flowered microseris	X				
Microseris sylvatica	sylvan microseris	X				
Mucronea californica	California spineflower	X				
Muilla coronata	crowned muilla	X				
Navarretia fossalis	spreading navarretia		X	X		

SPECIAL-STATUS PLANT SPECIES CONSIDERED BUT REJECTED FOR FINDING OF SIGNIFICANCE						
Scientific Name	**Common Name**	**CNPS List 4 Species that are not restricted in range**	**Lack of quality habitat within the project area**	**Other edaphic factors absent from habitat in which species could occur**	**Associated species absent from the project site**	**Believed by CNPS to be extirpated from the county**
Navarretia prostrate	prostrate navarretia		X			
Nemacladus gracilis	Slender nemacladus	X				
Opuntia basilaris var. *brachyclada*	short-joint beavertail		X			
Pentachaeta aurea	golden-rayed pentachaeta	X				
Piperia cooperi	chaparral rein orchid	X				
Plagiobothrys parishii	Parish's popcorn-flower					X
Quercus engelmannii	Engelmann oak	X	X			
Sidalcea neomexicana	salt spring checkerbloom					X
Stylocline masonii	Mason's neststraw		X			
Symphyotrichum defoliatum	San Bernardino aster					X
Syntrichopappus lemmonii	Lemmon's syntrichopappus	X				

4.0 Land Use

4.0 LAND USE

4.1 INTRODUCTION

This section describes the growth patterns and existing distribution of land uses within the City of Lancaster and General Plan study area; refer to Figure 1-1, Lancaster General Plan 2030 Study Area.

4.2 HISTORICAL GROWTH

The impetus for the development of Lancaster came in 1876, when the Southern Pacific Railroad established a stop near what would become Lancaster Boulevard for the loading of locally grown agricultural produce. Small manufacturing, warehousing, and industrial uses arose adjacent to the railroad to take advantage of its access. These activities in turn encouraged the development of commercial and residential uses. By the early 1880s, the rudiments of a town had formed that would eventually become the central core of Lancaster.

Until the 1950s, the town of Lancaster was basically contained within an area bounded by Avenue I, 10th Street West, Avenue J, and Division Street. Prior to 1950, Lancaster's economy was largely based on agriculture. The introduction of aerospace to the Antelope Valley in the early 1950s shifted the focus away from agriculture as the main economic base. As the population increased to fill the jobs created by aerospace, an influx of new residences and commercial uses began to expand the community outward from the urban core.

Through the 1960s and 1970s, development continued to expand outward from the original center, but in a more dispersed pattern. The construction of the Antelope Valley Freeway during this time shifted the focus away from Sierra Highway as the main thoroughfare to the Los Angeles area. As a result, residential and commercial development began to appear along both sides of the freeway, with some residential development locating as far out as 40th Street West. By the end of the 1970s, urban growth had extended into the southwest near the Quartz Hill community and to the east of 15th Street East.

During the 1980s, the cities of Palmdale and Lancaster underwent a period of tremendous population growth and urban expansion. There were basically two reasons for this growth: First, a resurgence in the aerospace industry, as a result of increased defense spending by the Reagan Administration, stimulated all sectors of the valley economy and was a replay of more historic growth trends. Second, the expansion of the single-family home market, in response to the affordable housing crisis of the 1970s created new affordable housing opportunities for a vast number of first-time home buyers who were priced out of the Los Angeles metropolitan market. Affordable housing induced thousands of young first-time homebuyers to move to the Antelope Valley.

The affordable housing migration began in the early 1980s. After 1980 residential patterns begin to fill in the west and southwest portions of the City. Later in the decade, residential development, supported by new commercial development, spread eastward of 15th Street East, reaching as far as 40th Street East by the end of the decade. Residential development also expanded north of Avenue I and west of Sierra Highway into areas that were predominantly vacant prior to 1980.

Following closely behind the boom in residential growth was a rise in commercial development to serve the new residents. The 1980s witnessed the construction of several large commercial centers in both the cities of Palmdale and Lancaster, including the beginning of construction of the first mall and large scale auto centers in the valley. Although commercial development spread to many new locations in the City, the primary location was along both sides of the freeway between Lancaster Boulevard and Avenue L.

While residential and commercial construction accelerated, new industrial development remained slow. Aside from the growth in commercial and retail service employment sectors, the aerospace industry continued to be the main employment base of the Antelope Valley.

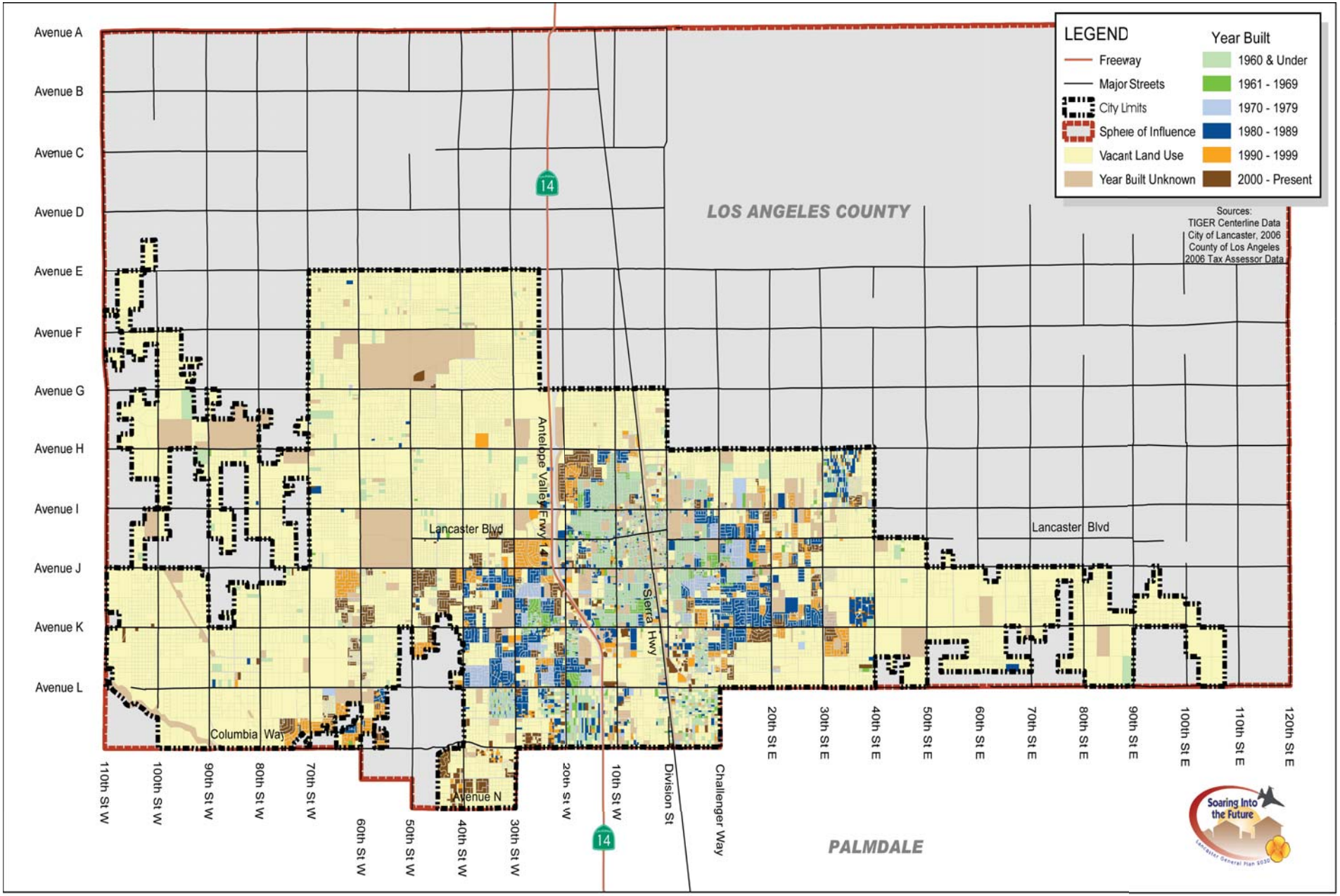
In 1987, the City began an extensive annexation process, which over a three-year period increased the City's incorporated area by more than 36 square miles. Most of the annexations occurred on the east and west sides of the City, in some places extending as far out as 110th Street West and 107th Street East. Prior to the annexations, the County of Los Angeles approved several residential subdivisions in and around the unincorporated community of Quartz Hill. By the time of the City's annexation of land surrounding Quartz Hill, many of the County approved subdivisions were completed or under construction. Additionally, City approval of subdivisions in this area established a new extension of the residential growth pattern, which now extends west of 70th Street West; refer to Figure 4-1, Historical Growth of Lancaster.

With the beginning of the 1990s, the City of Lancaster entered a period of economic recession, which affected all of southern California. As a result, there was a significant down turn in the construction of all types of housing. Construction did not pick up in Lancaster after the recession until 2004, where the number of residential building permits issued more than doubled compared to 2003. This high amount of residential construction has continued through the present. Figure 4-2, Residential Building Permits Issued 1980-2006, shows the number of residential building permits issued from 1980-2006.

4.3 EXISTING CONDITIONS

DEVELOPMENT PATTERNS

Lancaster is characterized by two distinct patterns of development. The first pattern, reflected in the downtown area, is characterized by a mix of single-family, multiple-family residential, commercial, public, and institutional uses and is organized on a closely spaced grid system. This dense network of streets provides direct access between the various land uses; for example, the commercial uses on Lancaster Boulevard are only a short drive or walk from residential uses to the north and south. Access is available to the rear of many properties by improved alleys. Parking is provided through a combination of relatively small off-street parking lots and on-street parking.



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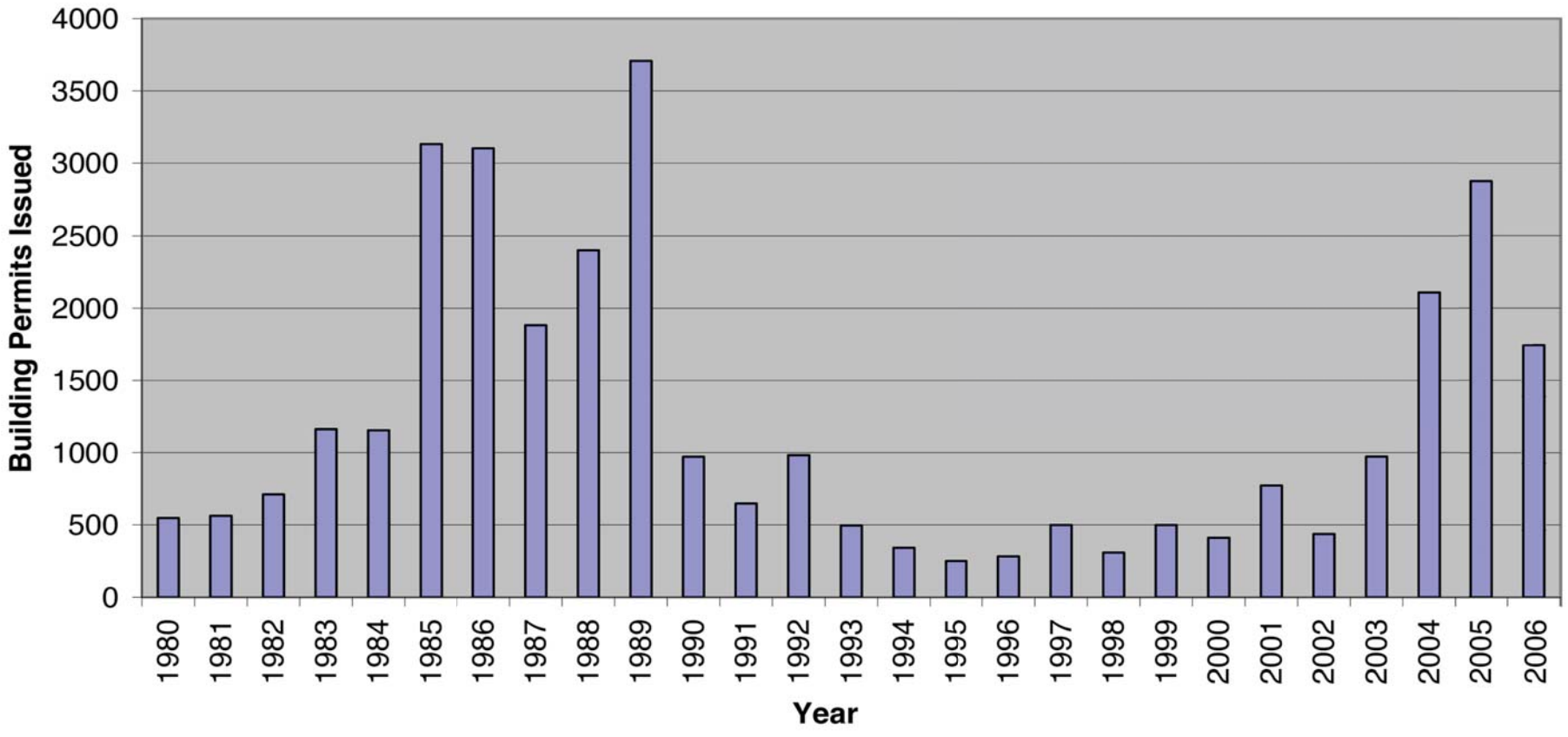
Lancaster General Plan 2030

Historical Growth of Lancaster

Figure 4-1



Source: SOCDS Building Permit Database, 2006.

Lancaster General Plan 2030

Residential Building Permits Issued (1980 - 2006)

Figure 4-2

As Lancaster experienced an increase in growth in the 1950s from the expansion of the aerospace industry, development transitioned from the traditional neighborhood design to a more conventional-style design. This development pattern is dominated by single-use zoning (i.e., shopping centers, office parks, housing tracts, etc.) and is heavily dependent on the use of the private automobile. The primary form of housing is the low-density single-family tract home, interspersed with scattered clusters of multiple-family units. Uses are purposely separated from one another and the street by walls, landscaping, and/or parking lots.

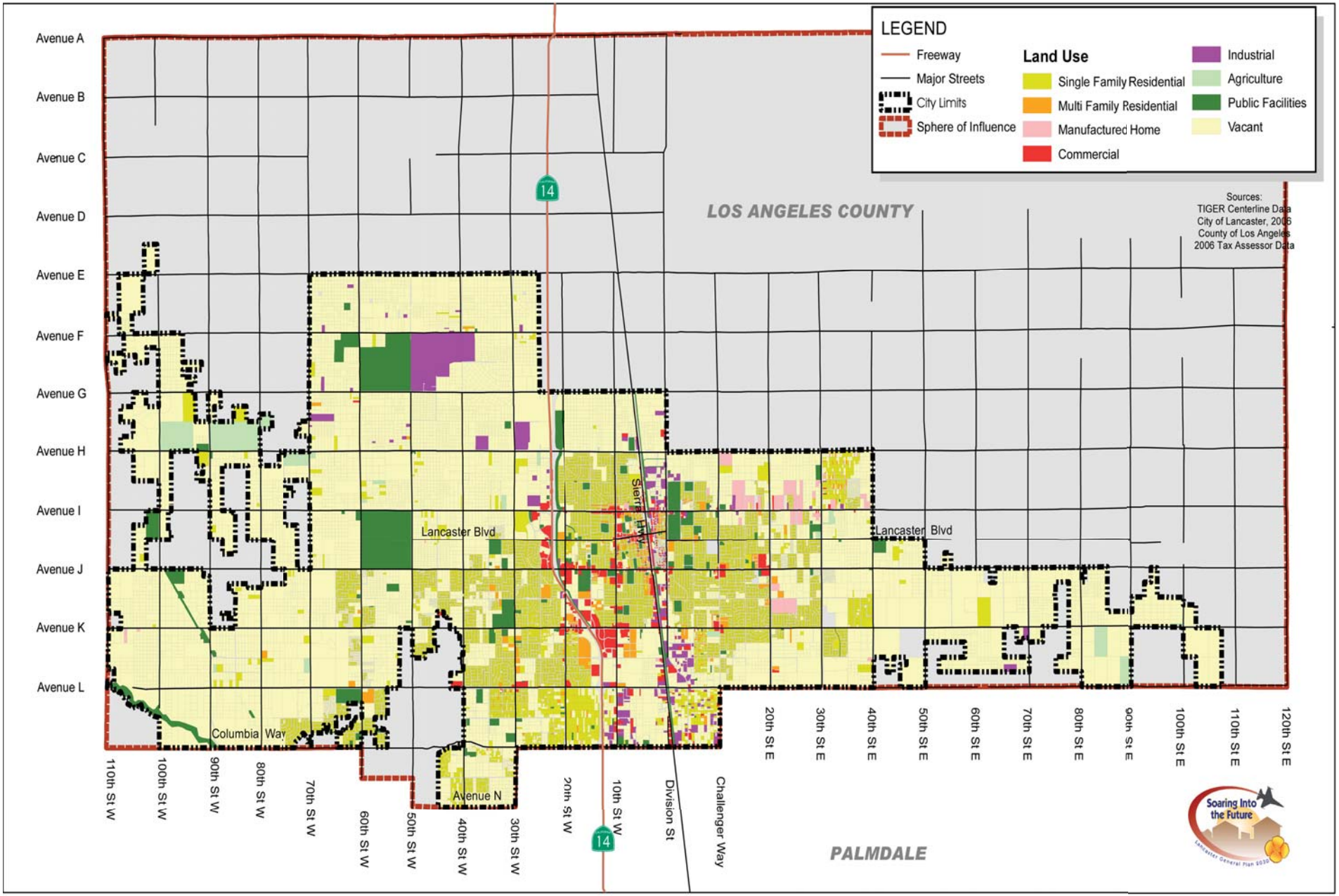
The primary reason for the change in the development pattern in Lancaster has been the emergence of the private automobile as the predominant form of transportation. Communities that developed prior to widespread ownership and use of the automobile, were, by necessity, designed for people to easily walk or use transit lines for daily activities, and the result was a relatively dense, mixed-use development pattern. However, the automobile provided the population with a high level of mobility, which in turn allowed the creation of a less dense, spread out development pattern.

As automobile use increased, attempts were made both to accommodate the automobile more efficiently and to address the negative aspects of traffic on communities. The dense grid street system, where streets had little differentiation and served multiple functions of land use access and traffic movement, was replaced by a much more hierarchical system where streets were classified and designed according to function; arterial streets were designed primarily to transport traffic, local streets were designed only for local land use access, and collector streets transported traffic between arterial and local streets. Direct access between land uses was limited in order to minimize the use of local streets by "through" traffic. Commercial "main streets," with the storefronts located adjacent to the sidewalk to allow access by pedestrians, were replaced by shopping centers and office parks designed as single, unified developments with the buildings pushed back from the sidewalk to provide parking for drivers. Residential subdivision design changed to orient building lots away from adjacent arterial streets. Residential units and yards were then buffered from the arterial street by walls and landscaping (such as landscape maintenance districts). Arterial streets and intersections were widened to accommodate increased through traffic that traveled between the various separated land uses. Numerous examples of these development patterns and design techniques exist within the newer portions of the City of Lancaster.

EXISTING LAND USES

The City of Lancaster is characterized by a pattern of low-density land uses, which extend generally from 70th Street West to 40th Street East and from Avenue F to Avenue N, with isolated areas of rural development surrounding the core of the City; refer to Figure 4-3, Existing Land Use Within the City of Lancaster.

A land use survey documenting existing land uses was conducted by the City of Lancaster in September 2006. The survey identified and classified land uses into seven generalized categories, including non-urban residential, urban residential, multiple family residential, commercial, industrial, public facilities, and roads, as summarized in Table 4-1, Existing Land Uses Within the City of Lancaster.



Lancaster General Plan 2030

Existing Land Uses Within the City of Lancaster

Figure 4-3

Table 4-1
Existing Land Uses Within the City of Lancaster

Land Use	Developed (acres)	Vacant (acres)	Total (acres)
Non-Urban Residential	1,929.55	17,891.88	19,821.43
Urban Residential	7,685.75	9,471.55	17,157.30
Multi-Family Residential	1,288.54	432.07	1,720.61
Commercial	1,099.51	995.44	2,094.95
Industrial	2,220.20	9,755.75	11,975.95
Public Facilities	1,856.85	446.23	2,303.08
Roads	5,086.68	N/A	5,086.68
TOTAL	**21,167.08**	**38,992.92**	**60,160**

Source: Existing Land Use Survey, City of Lancaster Planning Department, September 2006.

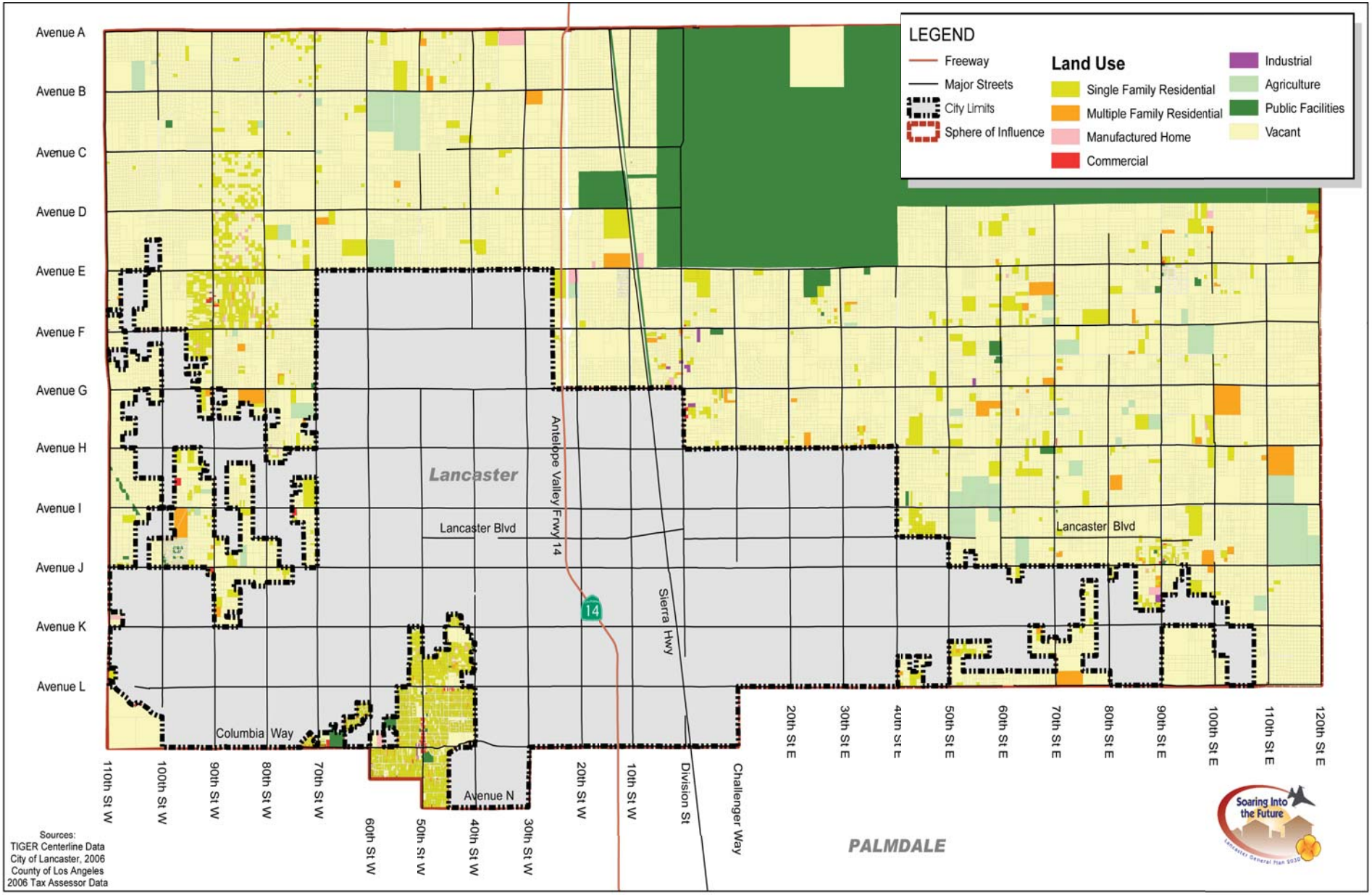
Table 4-2, Existing Land Uses Within the Unincorporated County, shows the distribution of land uses within the unincorporated County portion of the study area based on 2006 tax assessor data. Figure 4-4, Existing Land Uses Within Unincorporated Areas of the Lancaster General Plan Study Area, shows existing land uses by parcel, based on County tax assessor data. The total acreage within the City (60,160) combined with the total acreage of unincorporated land within the study area (110,800) is approximately 170,960 acres (267 square miles). Of this amount, 111,186 acres (65 percent) is vacant, while 59,774 (35 percent) is developed with various land uses. Within the incorporated area of the City, 38,993 acres (65 percent) is undeveloped, while 21,167 acres (35 percent) is developed. Figure 4-5, Vacant Land, shows the distribution of vacant land by percentage within the City limits.

Table 4-2
Existing Land Uses Within the Unincorporated County

Land Use	Developed (acres)	Undeveloped (acres)	Total Area within the unincorporated County (acres)
Single-Family Residential	6,298.60	14,530.88	20,829.48
Multi-Family Residential	1,341.63	90.12	1,431.75
Manufactured Home	296.30	0	296.30
Commercial	73.87	335.92	409.79
Industrial	46.68	852.56	899.24
Agriculture	2,775.88	55,948.89	58,724.77
Public Facilities	27,774.41	434.92	28,209.33
TOTAL	**38,607.37**	**72,193.29**	**110,800.66**

Source: 2006 Assessor Parcel Data, Los Angeles County Assessor's Office.

1. Data does not include parcels with "no data" as classified by the Los Angeles County Assessor's Office. "No data" represents an additional 2.74 acres within unincorporated County.



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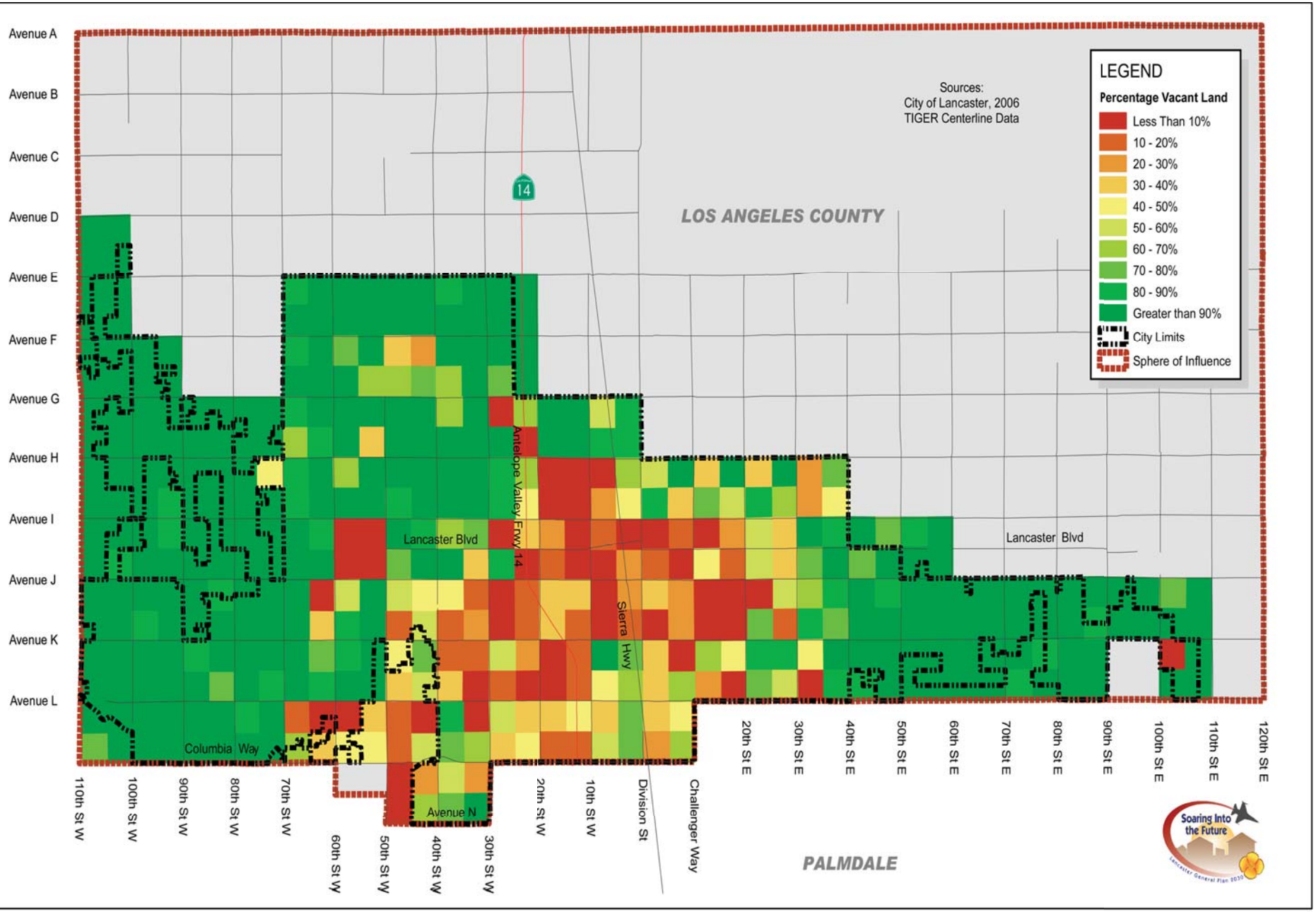
Existing Land Uses Within Unincorporated Areas of the Lancaster General Plan Study Area

Figure 4-4



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0 0.5 1 2 Miles

Lancaster General Plan 2030

Vacant Land

Figure 4-5

LAND USE PATTERNS BY AREA

Given the size of the City of Lancaster, the following section describes land uses as they relate to specific areas of the City. Table 4-3, Existing Land Uses by Area, East and West of 20th Street West, shows the distribution of land east and west of 20th Street West. As shown below, a majority of the vacant land and existing non-urban residential are located west of 20th Street West, while a majority of the existing urban residential, multi-family residential, commercial, and industrial uses are located east of 20th Street West.

Table 4-3
Existing Land Uses by Area East and West of 20th Street West

Existing Land Use	Area West of 20th Street West		Area East of 20th Street West		Total	
	Acres	Percent	Acres	Percent	Acres	Percent
Vacant	25,654.93	65.8%	13,337.99	34.2%	38,992.92	64.8%
Non-Urban Residential	1,170.07	60.6%	759.48	39.4%	1,929.55	3.2%
Urban Residential	3,070.30	39.9%	4,615.45	60.1%	7,685.75	12.8%
Multi-Family Residential	170.56	13.2%	1,117.98	86.8%	1,288.54	2.1%
Commercial	242.36	22.0%	857.15	78.0%	1,099.51	1.8%
Industrial	1,073.93	48.4%	1,146.27	51.6%	2,220.20	3.7%
Public Facilities	1,071.43	57.7%	785.43	42.3%	1,856.85	3.1%
Roads	2,493.54	49.0%	2,593.14	51.0%	5,086.68	8.5%
TOTAL	**34,947.12**	**58.09%**	**25,212.89**	**41.90%**	**60,160.00**	**100%**

Source: Existing Land Use Survey, City of Lancaster Planning Department, September 2006.

The following discussion addresses land use patterns by specific area. First the urban central core area is described followed by discussions of small segments surrounding the urban core that include: East of the Central Core; South of the Central Core; West of the Central Core; Quartz Hill; Fox Field; and the West Side.

Central Core

The urban central core, located generally between the Antelope Valley Freeway and 30th Street East, and between Avenue H and Avenue K consists of a mix of land uses, including older, as well as newer, single-family developments, multiple-family projects, and commercial retail and office uses.

The central core includes the oldest portions of the City. It contains the downtown area and some of the older residential neighborhoods. Most recognizable in this area is downtown Lancaster, generally defined by Avenue I, Avenue J, Sierra Highway, and 10th Street West. The center of downtown is along Lancaster Boulevard, which contains general retail uses, government and private offices, as well as the local museum, Performing Arts Center, Sheriff's station, Los Angeles County Public Library and the Metrolink station.

The predominant land use within the central core is single-family residential, which consists of some of the oldest of the City's residential neighborhoods, with a significant portion of the houses built prior to 1960. The area between Challenger Way and 30th Street East also contains a mix of new and older residential neighborhoods. Additionally, there are several multiple-family residential developments at various locations throughout the central core.

Commercial land use patterns in the central core generally consist of four types: the downtown commercial core; strip commercial along primary and secondary highways; older commercial/ industrial uses along Sierra Highway; and newer commercial uses, located along the Antelope Valley Freeway.

Most of the strip commercial developed prior to the City's incorporation. Patterns of strip commercial within the central core of Lancaster are primarily located along Avenue I, between 15th Street West and Division Street, along 10th Street West, between Avenue I and Avenue J, and along Avenue J between, 10th Street West and Division Street. A strip commercial/ industrial land use pattern occurs along Sierra Highway. This land use pattern was established prior to the construction of the freeway, at a time when Sierra Highway represented the City's primary business corridor. Consequently, construction of most of the commercial and industrial buildings occurred prior to City incorporation.

The commercial corridor located on both sides of the Antelope Valley Freeway, between Avenue I and Avenue L represents a newer pattern of commercial development. This corridor contains the major commercial uses like the Power Center, Commerce Center, Lancaster Auto Mall, and the Lancaster Marketplace, as well as the Lancaster Municipal Stadium.

There are several redevelopment projects underway within the downtown area including the North Downtown Lancaster Neighborhood Revitalization Transit Village Plan and the Downtown Lancaster Specific Plan; refer to the *Redevelopment Areas* discussion for more detail.

East of the Central Core

The portion of the study area east of the central core (generally east of 30th Street East) is characterized by large open tracts of vacant land, interspersed with scattered and clustered rural uses. A number of newer single-family residential subdivisions have been built south of Avenue J since the 1980s. Additionally, a few small commercial uses found north of Lancaster Boulevard generally provide limited neighborhood services to adjacent residential uses.

South of the Central Core

The portion of the City south of the central core (generally south of Avenue K and extending west of the Antelope Valley Freeway) contains a mixture of land uses ranging from low-density residential to industrial. Single-family residential land uses are primarily located east of Division Street and west of the Antelope Valley Freeway. The portion of the City south of Avenue L and west of the freeway consists mainly of rural residential uses, with lots ranging in size from ½ acre to 2½ acres or greater. However, in recent years ½ acre lot subdivisions and residential planned communities have become a trend in this area of the City. South Lancaster also includes Lancaster City Park, the largest of the City's parks.

A major new development project south of the central core is the Amargosa Creek Specific Plan. The Specific Plan area is generally bounded by 10th Street West to the west, Avenue K-8 to the north, 5th Street West to the east, and Avenue L to the south, with the exception of the eight-acre Montecito Apartments located at the southwest corner of 10th Street West and Avenue L. The Specific Plan area is comprised of approximately 150 gross acres and is anticipated to include both commercial and medical uses when developed.

Industrial land uses are primarily located south of Avenue K, between the freeway and Challenger Way, including the Lancaster Business Park Specific Plan. Phases I and II of the Lancaster Business Park Specific Plan consist of a 157-acre site located on the southeast corner of Avenue K and Division Street. The plan allows for the development of approximately 121.0 acres of industrial uses, 28.0 acres of commercial uses, and eight acres of residential land uses. As of September 2006, 41 out of 55 lots have been developed (or approximately 74 percent). Phase III, incorporating 164 acres of land, is estimated to include 3.5 million square feet of office space. According to data from April 2006, approximately 708,509 square feet of space has been developed.

The area east of the railroad tracks and south of Avenue K consists of a mixture of small-scale industrial uses, intermixed with residential uses, many of which date back several decades. In recent years a number of infill projects have been constructed in this area to fill in many of the vacant parcels.

The commercial land use patterns in south Lancaster are located along the freeway and include the Commerce Center and the Lancaster Auto Mall. Older commercial strip development is located along the west side of Sierra Highway. In recent years, a number of new commercial projects have been constructed in the area, including the recent relocation of Costco to a new facility on the northwest corner of Avenue L and 10th Street West and the development of a retail center located on the southeast corner of Avenue K and 10th Street West, which includes a new Lowe's Home Improvement store and other major tenants.

West of the Central Core

The area located between the freeway and 50th Street West, south of Avenue I and between the freeway and 80th Street West, south of Avenue J includes established residential neighborhoods and commercial areas, as well as the Antelope Valley College. The most predominant land use pattern is single-family residential, although the college area also contains multi-family housing projects. Much of the residential development in this area started in the 1980s and continues to the present. Although much of the area adjacent to Antelope Valley College is developed, there remain large tracts of vacant land generally west of 50th Street West.

Quartz Hill Area

Within the study area, the unincorporated community of Quartz Hill is generally located south of Avenue K between 40th Street West and 55th Street West. This community has long had the atmosphere and characteristics of a small town. Over the past few years, large areas surrounding the Quartz Hill community have been developed, primarily with residential subdivisions and custom homes.

Fox Field Area

The Fox Field Redevelopment Project area is one of the seven redevelopment areas in the City of Lancaster and includes 3,290 acres. The portion of the study area north of Avenue I is known as the Fox Field Industrial Corridor Specific Plan and contains the General William J. Fox Airfield, a County airport, which is the dominant land use within this area. Located just east of the airport is Apollo Park, which is also maintained by the County. The area is one of the most important developing industrial areas in the City. As of April 2006, approximately 1,973,698 square feet of commercial and industrial space has been constructed within the Specific Plan area and approximately 220,000 square feet of space has been constructed within the fairgrounds.

West Side

West of Fox Field, is the unincorporated community of Antelope Acres, which is composed of large-lot rural residential uses. A small commercial center is located in the vicinity of Avenue E-8 and 90th Street West. The typical residential lot within Antelope Acres is 2½ acres or greater in size and contains a custom home. The raising of limited numbers of livestock and small-scale agricultural production is also an aspect of the community.

Also in the West Side is the future Rancho Del Sur project. Approved in April of 2006, the project is located generally between 90th Street West, Avenue H-8, 105th Street West, and Avenue G. When it is developed, the project will add an additional 1,925 homes and associated amenities in the Antelope Acres area.

MAJOR LAND USES

There are eight major land uses that are either located within the Lancaster study area or are located outside of the study area, but have an important influence on Lancaster. They include Edwards Air Force Base, Air Force Plant 42, Antelope Valley College, Valley Central/Lancaster Marketplace, Mira Loma Detention Center and California State Prison, General William Fox Airfield, Antelope Valley Hospital, and the Los Angeles County Courthouse. These land uses are described in greater detail below.

Edwards Air Force Base and Air Force Plant 42

Although Edwards Air Force Base is located only partially within the study area, the military activities that take place there affect the City and local economy. The base is located approximately twenty miles northeast of the City of Lancaster, encompassing 470 square miles, including a 2.8-mile long main runway, within Los Angeles County, Kern County, and San Bernardino County. Two dry lakebeds, Rogers and Rosamond, provide additional runways and are often used for shuttle landings. The Precision Impact Range Area (PIRA) at the base is a principal land use and occupies the eastern third of the base. This area is divided into the West Range and the East Range. The West Range contains six precision bombing circles with scoring instrumentation and a conventional low-altitude, dual air-to-ground gunnery range, bombing and rocket range with defined airspace. The East Range contains four precision bomb targets.

U.S. Air Force Plant 42 is located to the southeast of the City of Lancaster, and occupies 5,832 acres. Although this facility is located outside of the study area, it has an important influence on Lancaster. The facility houses several specialized military aerospace programs which involves the research, assembly, and testing of aircraft. The Plant contains two main runways, each approximately 12,000 feet long, with numerous buildings and hangars for the testing, maintenance, and monitoring of aircraft. Palmdale Regional Airport also uses this facility, operating a civilian airport on 52 acres of land leased from Plant 42.

Antelope Valley College

Antelope Valley College is a local two-year community college, located approximately three miles southwest of downtown Lancaster. Its educational facilities are heavily used, generating high traffic volumes on access streets.

Valley Central and Lancaster Marketplace

Valley Central is a subregional shopping development in Lancaster, characterized by its "big box retail" uses, as well as restaurants and supporting retail services. The center is bounded by SR-14, 25th Street West, Lancaster Boulevard, and Avenue J.

The Lancaster Marketplace located on the north of Lancaster Boulevard, opposite Valley Central, contains 268,000 square feet of outlet stores, which were developed in 1995. Nearby is Clear Channel Stadium, located to the north of the Lancaster Marketplace. The Stadium was constructed in 1996 and is home to the Lancaster Jet Hawks baseball team.

In recent years, development in this area, including the construction of a new Wal-mart Superstore, has made the Valley Central and Lancaster Marketplace area one of the prime locations for commercial retail within the City of Lancaster.

Mira Loma Detention Center and California State Prison

Mira Loma Detention Center occupies approximately 40 acres south of Avenue I at 60th Street West. The facility is owned by the County of Los Angeles and operated by the County Sheriffs Department. The facility is contracted by the Immigration and Naturalization Service to house illegal immigrants until their immigration case is decided. There are three Executive Office of Immigration Review courtrooms at the facility where Federal judges conduct on-site deportation hearings.

California State Prison at Antelope Valley is located on 262 acres bounded by 60th Street West, Avenue I, 50th Street West, and Avenue J. The prison, which has a total Design Bed Capacity of 1,200 inmates, currently has an inmate population of 4,185. This area also contains the Challenger Youth Center, Animal Care/Control Center and High Desert Hospital. Combined these facilities occupy a square mile designated for public facilities in the 1997 General Plan.

General William J. Fox Airfield

Located approximately four miles northwest of downtown Lancaster, General William J. Fox Airfield is a major commercial/civilian facility within City limits. The airport, occupying approximately 1,039-acres, is bounded by Avenue F and G to the north and south and by Apollo

Park and 60th Street West to the east and west, respectively. The principal facilities at the airport consist of a passenger terminal, a fixed based operation, and the U.S. Forest Service Air Tanker Base. Although it is owned and operated by Los Angeles County, it is used primarily by private planes. The area around Fox Field is planned for industrial and business park development under the Fox Field Industrial Corridor Specific Plan, much of which is under construction.

For more detailed information about land use planning for Edwards Air Force Base, Air Force Plant 42, and General William J. Fox Airfield refer to *Land Use Planning*.

Antelope Valley Hospital

The Antelope Valley Hospital, located at 1600 West Avenue J, is the largest hospital in the high desert with 379 licensed beds. The complex is a district hospital and includes inpatient services, an emergency room, physical and occupational rehabilitation and a Family Resource Center. The Antelope Valley Hospital District operates this facility. In 2005 the Hospital began a 75,000 square foot expansion of a new Woman and Infant Center.

Michael D. Antonovich Antelope Valley Courthouse

The Michael D. Antonovich Antelope Valley Courthouse, located on 4th Street and Avenue M, serves the Antelope Valley community by adjudicating criminal, traffic, civil, and small claims cases. The courthouse has a jury assembly room, court clerk's office, and 15 completed courtrooms with a future capacity of 21 courtrooms.

OPEN SPACE LAND

Open space in the study area includes land along highway rights-of-way, land designated for drainage or floodplain management, noise management areas, power line easements, recreational trails, and desert woodland areas. These lands sometimes overlap with areas preserved for resource protection and recreation. Drainage ditches and water basins used as trails and recreational related activities are examples of where open space uses overlap.

Two major washes, the Little Rock Wash and Amargosa Creek, traverse over the eastern and central portions of the study area. Section 3.0, Biological Resources, describes in greater detail these washes and the general biological habitat located in these areas.

EXISTING AGRICULTURAL LAND INVENTORY

According to the State Department of Conservation, there are five categories of agricultural land in the study area. These categories include: prime farmland, farmland of statewide importance, grazing lands, unique farmland, and farmland of local importance. According to an aerial survey, approximately 3,800 acres or six percent of land within the City limits is under cultivation. The largest portions of agriculture land are located within the western portion of the City west of 70th Street West to the study area's western limit, between Avenue J and Avenue F, and within the eastern portion of the City east of 40th Street East to the study area's eastern limit. Smaller areas of agricultural land are located within the Urbanizing Area of the City. However, these areas are not designated as prime farmland, farmland of statewide importance, unique farmland, or grazing lands. Outside the City limits, within the City's sphere of influence,

agricultural land designated as prime farmland, farmland of statewide importance, and grazing land is located between 90th Street West and 40th Street West, and east of 40th Street East to the study area's eastern limit. According to the California Department of Conservation, no properties located within the General Plan study area are under Williamson Act contracts.[1]

APPROVED PROJECTS

Currently, there is one approved major residential development within the study area. The Rancho Del Sur project is a master planned community located in the presently remote agricultural section of Lancaster, bounded generally by 90th Street West, Avenue H-8, 105th Street West, and Avenue G. The site consists of farmland with portions of the site under cultivation and is located near the rural community of Antelope Acres.

The 645-acre Rancho Del Sur development will contain a combination of land uses, including residential, commercial, school, parks, and open space uses. The project will have approximately 1,925 single-family and duplex units, two elementary school sites, an 18-acre public park and a number of neighborhood parks, a 9.4-acre commercial center, a 1.0-acre City facility, and a lake. The 1,925 residential lots, as approved by the Planning Commission in April 2006, will vary between approximately 5,000 to 8,550 square feet in size. When developed the Rancho Del Sur Project may have a significant influence on potential land uses in adjacent areas.

Although Rancho Del Sur will be a major development within Lancaster, it constitutes only a portion of the overall approvals for various projects within the City of Lancaster. Table 4-4, Projects Approved But Not Completed Within the City of Lancaster, summarizes the number of dwelling units and square footage of commercial and industrial projects that, as of September 2006, had received City approval and were either under construction or in various stages of the plan check process.

Table 4-4
Projects Approved But Not Completed Within the City of Lancaster

Location	Single-Family Units[1]	Multi-Family Units[1]	Commercial Square Feet[1]	Industrial Square Feet
East of Division Street	4,814	0	79,408	85,675
West of Division Street	11,610	275	628,676	915,677
Total	**16,423**	**275**	**708,084**	**1,001,352**

Source: City of Lancaster, Planning Department, September 2006.
[1] Does include the Rancho Del Sur Project.

[1] Jim Nodstrom, Research Analyst II GIS, California Department of Conservation, Division of Land Resource Protection, phone communication, August 6, 2008.

4.4 INFLUENCES

GROWTH INFLUENCES

There are a variety of influences and constraints that can stimulate or hinder urban growth. To begin with, the need for affordable housing in southern California has been an important force for growth in the Lancaster area. As the price of single-family homes began to rise across the State in the 1980s, many working people were priced out of the housing market. The affordability of housing in Lancaster, coupled with the growth in the local aerospace industry, stimulated one of the largest growth periods in Lancaster's history. Although there was a dip in the housing market during the recession of the early 1990s, the demand for housing in Lancaster has been steering growth of the City for decades.

Along with housing, transportation has been a fundamental factor associated with the City's growth. The Antelope Valley Freeway provided relatively easy access to employment centers in the San Fernando Valley and Los Angeles area, allowing people to continue to move to Lancaster. However, as the population increases, traffic congestion is making this more difficult and may become a significant constraint to further growth in the future.

A number of major master-planned communities will have significant impacts on transportation and infrastructure in the region, including:

- Centennial Ranch. This master-planned development is located in the extreme western area of the Antelope Valley within unincorporated Los Angeles County approximately one mile from California Interstate 5 and adjacent to State Route 138 in the vicinity of Quail Lake. The project proposes 23,000 dwelling units and 14 million square feet of non-residential development on approximately 12,000 acres of land.

- Newhall Ranch. Encompassing approximately 11,963 acres of land just west of Santa Clarita along State Route 126, west of California Interstate 5. The project is planned to incorporate 21,615 dwelling units, one golf course, three community and ten neighborhood parks, seven schools, 630 acres of mixed-use, 67 acres of commercial, 265 acres of business park, 37 acres of visitor serving uses, 6,138 acres of open space, and 367 acres of roads and community facilities.

- Tejon Mountain Village. Located in Kern County, east of California Interstate 5 and the community of Lebec, approximately 40 miles south of Bakersfield, the project includes 3,450 dwelling units, 160,000 square feet for commercial uses, and 23,000 acres reserved as natural preserve on 28,253 acres of land.

- Gorman Post Ranch. Located at the northwest corner of the Antelope Valley within the unincorporated area of Los Angeles County on Gorman Post Road between Gorman School Road and Lancaster Road, the proposed project is planned to include 531 single-family residential units.

Combined, the projects are planned to construct 48,595 new homes over the next 20 to 30 years.

An additional constraint involves the provision of municipal services. Communities cannot exist without basic infrastructure and services. Some communities are the primary service providers. In Lancaster, many of the municipal services, such as water, sewage treatment, and solid waste management are provided by other agencies both private and public. Many of these services, like fire and law enforcement, are provided through secured agreements between the City and the service providers. The cost of providing these services continues to increase; yet the city must ensure that adequate levels of community services are maintained. Moreover, dispersed development patterns also places a continual strain on the ability of a city to provide public service in a cost effective manner.

The availability of water is another growth constraint. Water supply service depends on the availability of potable water within reasonable location to the demand. The availability of water to Lancaster and the study area will largely depend on the size of safe yields of groundwater, achieving full entitlement from the State Water Project, and the construction of adequate facilities in which to store the full entitlement.

The Lancaster physical environment also influences areas of urban growth. Future land uses should, to the greatest extent feasible, be consistent with the specific topographic features of the area. Although the valley floor and much of the study area is relatively flat, there are several areas in which the sloping topography acts as a limitation to various types of development. The slopes and hills present moderate limitations, such as excavation and grading. Steeper slopes present severe limitations, requiring extensive excavation and possibly some blasting during construction. In addition, these areas are limited due to access and utilities needed to support urbanization.

The City of Lancaster's geology and close proximity to the San Andreas and other active faults pose some concern to development. Primary seismic hazards include ground rupture and intense ground shaking. Additionally, some areas within the study area may be prone to liquefaction, differential settlement, and landslides. In general, lower density developments are typically encouraged in areas subject to these conditions; refer to Section 2.0, Earth Resources.

In addition, areas of the City of Lancaster and the study area are susceptible to flooding, caused by surrounding mountain runoff and due to its relatively flat topography. Although flooding is still a major issue in the City of Lancaster, new infrastructure has reduced issues in some areas of the City; refer to Section 10.3, Storm Drainage.

DESIGN INFLUENCES

The present form of growth, dominated by areas designated for single-use zoning and organized exclusively around the automobile, has, in the view of some critics, destroyed the cohesiveness and sense of community. The conventional pattern of growth is also seen as a contributor to economic segregation (lack of affordable housing) and as a major cause of environmental damage from vehicle air pollution and destruction of sensitive habitats due to sprawl. The economic costs to the City of continuing this pattern of growth are also a concern. The amount of infrastructure and costs of service necessary to serve this development pattern are often excessive in relation to the revenue received. In short, there is often too much infrastructure serving too little development, particularly streets.

There are a number of strategies that communities are using to reduce unnecessary infrastructure and environmental impacts, including:

- Infill Development. Developing vacant or underutilized parcels within the existing urban fabric generally requires little or no additional infrastructure. Infill projects often help preserve the natural environment and reduce the number and length of vehicle trips.

- Mixed-Use Development. Mixed-use projects allow commercial/office and residential to be in close proximity to one another by combining both uses on the same parcel. This reduces the need for vehicles, encourages pedestrian activity and social interaction, and extends the hours of activity and vitality of a space. There are two basic types of mixed-use projects. The first type is vertical mixed-use, which is characterized by the residential use placed over the commercial use in the same building. The second, referred to as horizontal mixed-use, combines residential and commercial uses on the same parcel, but in separate buildings.

- Walkable Communities. These pedestrian friendly neighborhoods are designed to accommodate the automobile, but also encourage walking, biking, and the use of transit. Many of these walkable communities incorporate enhanced sidewalks and a bike path system that links residents to schools, retail, jobs, parks and recreation. In addition, streets are designed to slow traffic by using roundabouts, bulb-outs, chokers, and other traffic calming devises.

The City of Lancaster is currently working on a number of revitalization projects including the Downtown Lancaster Specific Plan and the North Downtown Lancaster Neighborhood Revitalization/Transit Village Plan that will encourage infill, mixed-use, and walkability. Currently under construction within the North Downtown Lancaster Neighborhood Revitalization/Transit Village Plan is the Arbor Grove mixed-use project, which is the first mixed-use development in the City of Lancaster. The project will include a new 150-unit senior housing complex over 8,500 square feet for commercial space that will contain shops, restaurant, and services.

This idea of moving away from auto-dominated development is occurring in other areas of the City as well. One major example is the Northeast Gateway Corridors project, generally located between Avenue H and Avenue I to the north and south, and 10th Street East and 10th Street West to the east and west, including the old fairgrounds. The proposed 501-acre project includes the Lancaster University Center, and new and rehabilitated housing.

In addition, the Design Ad Hoc Committee formed by the City Council to make recommendations on land use and design within the City presented its findings to the Planning Commission and City Council in February 2006. These recommendations include:

- Varied housing types;
- Infill of vacant lots;
- Mixed-use development where appropriate, especially downtown;
- Large commercial buildings should be scaled appropriately for their settings;
- Attractive facades on buildings and developments fronting the freeway;
- More neighborhood parks;
- Neighborhoods with commercial centers within walking distance and easily accessible;
- Stronger pedestrian link between train station and downtown; and

- Reasonable regulations/codes for specific areas (i.e. signage, color palettes, and architectural treatments).

4.5 CURRENT AND FUTURE PLANNING

CITY OF LANCASTER

Existing Lancaster General Plan 2020

Development in the study area is subject to the policies of the Lancaster General Plan. The State of California mandates that every city and county prepare a General Plan. A General Plan is a comprehensive document outlining the capacity of future development in a city or county. The current Lancaster General Plan was adopted in 1997. This document is divided into eight elements, including the Introduction, Plan for the Natural Environment, Plan for Public Health and Safety, Plan for the Living Environment, Plan for Physical Mobility, Plan for Municipal Services and Facilities, Plan for Economic Development and Vitality, and Plan for Physical Development.

The Plan for Physical Development establishes the pattern of land use in the city and establishes densities/intensities to regulate development. Land use refers to the use of land for various activities, such as commerce, industry, recreation and residences and is therefore the element of the general plan, which is most closely linked to physical development and growth. Land use designations assign the type and intensity of development to specific areas. Residential designations for instance, measure intensity by the number of dwelling units per acre (du/ac). The intensity of other designations is defined by a floor area ratio (FAR), which is the ratio of building floor area to the total land area of the lot.

There are 14 land use designations within the existing Lancaster General Plan, which have been aggregated into the following seven general land use categories: Non-urban, Urban Residential, Multiple Family Residential, Commercial, Employment, Public and Quasi-Public Facilities, and Specific Plan. Table 4-5, General Plan 2020 Land Use Categories, lists the land uses and designated land use density/intensity. The General Plan land use designations are then translated into zoning categories, which provide site-specific standards for development, including a list of uses that are allowed in each zone, density, lot size, set backs, and other standards. All development must comply with both zoning and the General Plan.

General Plan Amendments

A number of amendments to the General Plan have been requested within the City. If approved, these amendments will allow for considerable new development. The following is a brief description of the grouped General Plan Amendments currently under consideration:

GROUP A

- A1 – GPA 03-04 (ZC 03-06/TTM 060610) and GPA 03-05 (ZC 03-05/TTM 060620). These General Plan Amendments, Zone Changes, and Tentative Tract Maps, located on the east side of 100th Street West between Lancaster Boulevard and Avenue H would change land designated as Non-Urban Residential to Urban Residential, allowing for the development of approximately 820 single-family residences on approximately 219.11 acres of land.

Table 4-5
General Plan 2020 Land Use Categories

Designation	Description	Density/ Intensity of Use
NU	Non-urban Residential	Density ranges from 0.4 to 2.0 dwelling units per acre.
UR	Urban Residential	Density ranges from 2.1 to 6.5 dwelling units per acre.
Multiple Family Residential		
MR1	Medium Density	Density ranges from 6.6 to 15 dwelling units per acre.
MR2	High Density	Density ranges from 15.1 to 30.0 dwelling units per acre.
Commercial		
C	Commercial – Includes a broad spectrum of uses, including regional, community, neighborhood, and highway-oriented uses.	Floor area ratios from 0.5 to 1.0.
OP	Office Professional - Includes office and professional uses and supporting commercial uses.	Maximum floor area ratios of 0.75.
Employment		
LI	Light Industrial - Clean, non-polluting industrial and office uses with support commercial.	Maximum floor area ratios of 0.5.
HI	Heavy Industrial - Includes a range of industrial uses in a less restrictive setting.	Maximum floor area ratios of 0.5.
Public and Quasi-Public Facilities		
H	Health Care - Includes public and private hospitals, health care facilities, and related independent or assisted-living residential facilities.	N/A
P	Public - Uses and lands in public ownership, including governmental administration and service facilities.	Maximum floor area ratio of 1.0.
S	School - Includes public schools and educational institutions.	N/A
PK	Parks - Includes publicly owned parks and recreation facilities. Existing parks are specifically delineated; future parks may be represented symbolically.	N/A
CE	Cemetery - Includes cemeteries, funeral homes, mausoleums, crematoriums, and columbariums.	N/A
SP	Specific Plan - Specific Plans and planned developments.	N/A

- A2 - GPA 04-07 (ZC 04-08/TTM 062759) and GPA 04-11 (ZC 04-12/TTM 062758). The proposed General Plan Amendments, located at the southwest corner of Avenue H and 50th Street West and the southwest corner of Avenue H and 60th Street West, would change land designated as Non-Urban Residential to Urban Residential for the development of approximately 739 single-family residences.

- A3 – GPA 04-06 (ZC 04-07/TTM 062762). The proposed General Plan Amendments, located at the southwest corner of Avenue I and 80th Street West, would change land designated as Non-Urban Residential to Urban Residential for the development of approximately 150 single-family homes.

GROUP B

- B1 – GPA 03-07 (ZC 03-07/CUP 03-14). Located at the northeast corner of Division Street and Avenue K, this General Plan Amendment would change the land use designation from Commercial to Multiple Family Residential for the construction of 279 dwelling units, parking, and amenities.

- B3 – GPA 04-09 (ZC 04-10/CUP 05-08). Located at the northwest corner of Avenue J and 40th Street West, this General Plan Amendment would change the land use designation from Urban Residential to Commercial to construct a 91,000 square foot commercial/retail shopping center.

GROUP C

- C1 – GPA 04-05 (ZC 04-06/TTM 062757). Located on the southeast corner of Avenue J and 70th Street West, this General Plan Amendment would change the land use designation from Non-Urban Residential to Urban Residential for the development of 650 residential lots on approximately 160 acres of land.

- C2 – GPA 04-08 (ZC 04-09/TTM 062332/TTM 062604). Located north of Avenue K, between 75th Street West and 80th Street West (TTM 062332) and north of Avenue L, between 75th Street West and 80th Street West (TTM 062604), this General Plan Amendment would change the land use designation from Non-Urban Residential to Urban Residential to construct an active adult community with approximately 1,200 residential units on 170 acres.

The following are other General Plan Amendments currently being processed by the City of Lancaster:

- GPA 04-04 (ZC 04-05/CUP 05-07) and GPA 06-01 (ZC 06-01) (Formerly B2). These projects were originally part of the group processing, but were removed due to lack of project information. Located on the southeast corner of 30th Street West and Avenue K, this General Plan Amendment, if approved, would change the land use designation of approximately 14 acres of land from Urban Residential to Commercial.

- GPA 05-01 and ZC 05-01. The request is to change the land use designation for 17 acres on the northwest corner of 60th Street West and Avenue K from Urban Residential to Commercial for the construction of a shopping center.

- GPA 06-03 (ZC 06-03/CUP 06-08) and GPA 06-04 (ZC 06-04/CUP 06-09/TPM 68150). Located at the southeast and northwest corners, of 60th Street West and Avenue L, this General Plan Amendment, if approved, would change the land use designation to Commercial.

- GPA 06-02/ZC 06-02. This request involves the 80-acre site of the former AV Fairgrounds, located on the northeast corner of Avenue I and Division Street. The purpose of this General Plan Amendment is to adjust the current land use designation and zoning to conform to the various uses that have been developed on the site or are planned in the future.

Major Specific Plan Areas

The City of Lancaster has designated sites where the development and use of the land is regulated by Specific Plans. A description of each specific plan site and current development activities are provided below.

- Fox Field Industrial Corridor Specific Plan (95-02). The Fox Field Industrial Corridor Specific Plan area is generally located west of SR-14, between Avenue E and Avenue H. The Specific Plan addresses land uses for an 8,200-acre site with a focus on two planning areas, Fox Field East and Fox Field West. The specific plan provides for a variety of land uses including manufacturing, light industrial, office, research and development, supporting commercial uses and open space. The Fox Field Industrial Corridor Specific Plan would allow development up to an estimated 9.7 million square feet of developable space in Fox Field East and Fox Field West (phases 1 through 4) and 81.7 million square feet in the expansion areas. As of April 2006, approximately 1,973,698 square feet of commercial and industrial space has been constructed within the Specific Plan area and approximately 220,000 square feet of space has been constructed within the new state fairgrounds.

- Lancaster Business Park Specific Plan, Phases I and II (80-02). Phases I and II of the Lancaster Business Park Specific Plan (80-02) consist of a 157-acre site located on the southeast corner of Avenue K and Division Street. The intent of this Specific Plan is to provide standards for the development of an industrial/business park. Permitted within the industrial and commercial areas of the Specific Plan include light manufacturing, light industrial, wholesale, business services, professional services, research and development, vocational or trade schools, restaurants, and other similar uses. The plan allows for the development of approximately 121.0 acres of industrial uses, 28.0 acres of commercial uses, and eight acres of residential land uses. As of September 2006, 41 out of 55 lots have been developed (or approximately 74 percent).

- Lancaster Business Park Phase III (90-01). Phase III of the Lancaster Business Park is a planned development on 164 acres of land. The Lancaster Business Park Phase III Specific Plan is located immediately south of the Lancaster Business Park Specific Plan, Phases I and II (80-02). The land use categories in Phase III include 108.0 acres of Business Park, 29.0 acres of Business Park/Rail, 24.0 acres designated for streets, and 3.0 acres dedicated for park use. It is estimated that 3.5 million square feet of office space would be available for development. According to data from April 2006, approximately 708,509 square feet of space has been developed.

Permitted uses include light manufacturing, corporate manufacturing, multi-tenant business, wholesale services, business services, professional services, research and development, vocation or trade schools and restaurants. The Business Park/Rail designation is applied to land adjacent to the Southern Pacific Railroad Line located immediately west of the Specific Plan area. The permitted uses in this category are the same as those allowed in the Business Park.

- Amargosa Creek Specific Plan (in process). This Specific Plan is generally bounded by 10th Street West to the west, Avenue K-8 to the north, 5th Street West to the east and Avenue L to the south, with the exception of the 8-acre Montecito Apartments located at the southwest corner of 10th Street West and Avenue L. It covers approximately 148 gross acres and anticipated land uses include both commercial and residential.

Redevelopment Project Areas

Within the City of Lancaster there are 27,702 acres of land within one of the seven Redevelopment Project Areas, including:

- Residential Project Area;
- Central Business District (CBD) Project Area;
- Fox Field Project Area;
- Amargosa Project Area;
- Project Area No. 5;
- Project Area No. 6; and
- Project Area No. 7.

Table 4-6, Redevelopment Project Areas, lists the redevelopment project areas with total acreage and the year the project area was established.

Table 4-6
Redevelopment Project Areas

Redevelopment Project Area	Acres	Year Established	Horizon
Residential	600	1979	2019
Central Business District	438	1981	2021
Fox Field	3,290	1982	2022
Amargosa Creek	4,599	1983	2023
Number 5	4,523	1984	2024
Number 6	12,748	1989	2029
Number 7	1,504	1992	2032
TOTAL ACRES	27,702	--	--

Major redevelopment is currently taking place within these areas of the City, inducing the following redevelopment projects:

- North Downtown Lancaster Neighborhood Revitalization/Transit Village Plan. In 2001, the City adopted a Transit District Overlay that encompasses 331.15 acres of land within a quarter mile of the Metrolink Commuter Rail Station as required by State law.

Following this, the Redevelopment Agency developed the North Downtown Lancaster Neighborhood Revitalization/Transit Village Plan designed to enhance existing residential and commercial opportunities, expand public and quasi-public facilities, expand and improve vehicular, rail, and pedestrian circulation, and provide additional public spaces within a 100-acre portion of the Transit District Overlay district. The Plan area is generally bounded by Avenue I, Lancaster Boulevard, 10th Street West, and the railroad tracks just east of Sierra Highway. Some of the projects within the Transit Village include the 116-unit Arbor Gardens apartment complex, the Children's Center of the Antelope Valley, Arbor Grove mixed-use project, and the Antelope Valley Mental Health Association.

- Downtown Lancaster Specific Plan. Also, within the Transit Village Overlay district, the Downtown Lancaster Specific Plan encompasses approximately 136.58 acres in the heart of the City. It is bounded by 10th Street West in the west, Sierra Highway to the east, Kettering Street to the north, Milling Street to the southwest, and Newgrove Street to the southeast. Existing uses in the downtown area include a mixture of civic, cultural, commercial, and office. Although the plan is still in the conception phases, the goal is "to create an enhanced, unique downtown corridor serving the community and region with a variety of destination places set in a pedestrian friendly environment that is warm and inviting."

- Northeast Gateway Corridors Revitalization Plan. This project consists of approximately 501 acres within an area generally located between Avenue H and Avenue I to the north and south, and 10th Street East and 10th Street West to the east and west, including the old fairgrounds. The project is located within four redevelopment project areas: the Amargosa Redevelopment Project, Central Business District (CBD), Redevelopment Project Number 5, and Redevelopment Project Number 6. Overall, the plan incorporates five new single-family residential developments, new and revitalized commercial uses, new and revitalized industrial uses, new commercial and office uses, new community and recreational uses, and streetscape improvements throughout. As part of the Northeast Gateway Corridors Revitalization Plan, the Lancaster University Center was constructed on the old fairgrounds at Division Street and Avenue I, to serve as a local higher education and recreational facility.

- Amargosa Creek Specific Plan. This Specific Plan covers approximately 148 gross acres, and anticipated land uses include both commercial and residential.

- Housing Needs Assessment. The Housing Needs Assessment is a citywide effort by the Lancaster Redevelopment Agency to identify neighborhoods or areas in the City with the most potential for improvement. A total of 68 neighborhoods were studied to identify basic demographics, amenities and/or specific features, general housing, rental housing, Section 8 housing, code violations, crime, and activities or opportunities. Five neighborhoods were identified as primary focus neighborhoods and six neighborhoods were identified as secondary focus neighborhoods. It is anticipated that in-depth neighborhood studies will be conducted to determine site-specific recommendations and improvements for each of the primary focus neighborhoods.

- Lowtree Neighborhood Vision Plan (LNP). Through extensive community outreach a vision plan was developed for the Lowtree Neighborhood to guide redevelopment efforts. The purpose of the LNP is to eliminate blight and develop a strategy and implementation

plan to enhance the aesthetics of the area; redevelop specific challenged housing; improve the stability of existing neighborhoods; provide subdivision and site planning design guidance for development; and ensure adequate infrastructure to enhance the livability of the Lowtree Neighborhood. The vision plan outlines two conceptual scenarios for future redevelopment that both illustrate a mix of uses, including medical, office, housing, restaurant, and retail. As of December 2006, several properties have been acquired by the Redevelopment Agency and implementation of the vision is moving forward.

4.6 INTERAGENCY LAND USE COORDINATION

This section identifies the differences in land use plans, controls, and development standards between Lancaster and other jurisdictions and agencies. For effective development and the protection of open space, coordination between adjoining jurisdictions and the City of Lancaster is necessary. In addition, regional projects that influence land use, such as municipal facilities and highways, must also be coordinated to ensure effective results. Jurisdictional coordination is crucial if regional planning is to be successful.

SPHERE OF INFLUENCE

Planning law directs that all cities preparing a General Plan to address concerns within its area of jurisdiction and any land outside its boundaries which bears relation to its planning (Section 65300). In defining a general plan study area, it is common for a city to use its sphere of influence. The sphere is defined in the law (Section 54774 of the Government Code) as "a plan for the probable ultimate physical boundaries and service areas of a local government agency."

Lancaster's sphere of influence is important to land use planning within the City, even though the City has no regulatory powers over those areas of the sphere outside the corporate limits. The City establishes land use designations for all areas within its sphere of influence as a means of formally communicating land use concerns for areas of the sphere. This cooperative planning can be used to guide the orderly and efficient extension of services and utilities, ensure the preservation of open space, agricultural, and resource conservation lands, and establish consistent standards for development in the plans of adjoining jurisdictions. Sections of this Master Environmental Assessment document discuss in detail services provided by other agencies within the study area, such as water, wastewater, solid waste, and flood control.

LAND USE CLASSIFICATIONS BETWEEN JURISDICTIONS

County of Los Angeles

The Los Angeles County General Plan was adopted in the 1980s and is currently in the process of a comprehensive update. An area wide General Plan has been adopted for certain areas within Los Angeles County. Areas surrounding Lancaster are within the *Antelope Valley Areawide General Plan* adopted in 1986. The plan designates thirteen land use classifications, including Non-urban Residential, Non-Urban 2, Urban 1½, Urban 1, Urban 2, Urban 3, Urban 3 D, Urban 4, Commercial, Office and Business Park, Industrial, Open Space, and Specific Plan.

The comprehensive General Plan Update, when adopted, will include seven land use classifications including Open Space, Non-urban Residential, Urban Residential, Commercial, Industrial, Public, and Transportation Corridor.

In establishing future land uses within the study area, it is important to consider the general conditions and development standards of the County. This will help reduce future land use incompatibilities between the City of Lancaster and the County of Los Angeles.

City of Palmdale

The City of Palmdale, directly south of the City of Lancaster, is comprised of approximately 104 square miles. Palmdale currently has 19 land use classifications: Equestrian Residential, Low Density Residential, Single-Family Residential-1, Single-Family Residential-2, Single-Family Residential-3, Medium Residential, Multi-Family Residential, Neighborhood Commercial, Office Commercial, Community Commercial, Regional Commercial, Downtown Commercial, Business Park, Commercial Manufacturing, Industrial, Airfield and Related Use, Mineral Resource Extraction, Public Facilities, and Open Space.

The City of Palmdale completed an update of its General Plan in 1992, which designates the northeastern area of Palmdale, north of Air Force Plant 42 to the southeastern boundary of Lancaster, for industrial uses, including business park, industrial, and airport related uses with the expectation that a few areas would be designed as specific plan and commercial south of Colombia Way, between SR-14 and 15th Street East. This area is designated primarily for industrial uses due to the fact that much of the area is within flood zones. In addition, portions lie within the accident potential zone and overflight zone of Air Force Plant 42. Adjacent land uses in Lancaster include light industrial uses north of Avenue M, between SR-14 and Division Street and heavy industrial uses north of Avenue M, between Division Street and Challenger Way, which are generally compatible with Palmdale's industrial designated land.

The northwestern area of Palmdale south of Colombia Way between 60th Street West and 80th Street West is designated for single-family residential with a commercial area on the southwestern corner of Colombia Way and 60th Street.

Table 4-7, General Plan Land Use Comparison Between Local Jurisdictions, shows General Plan Land Use Designations for the City of Lancaster, County of Los Angeles, and the City of Palmdale.

LAND USE PLANNING

There are several facilities under the jurisdiction of other agencies, which are partially or completely located within, or adjoin, the study area. These consist of Edwards Air Force Base, General William Fox Air Field, Air Force Plant 42/Palmdale Regional Airport, the Mira Loma Detention Center, California State Prison, and the Antelope Valley Fairgrounds. Coordination between the appropriate agencies and the City of Lancaster is necessary to ensure land use incompatibilities do not occur.

Edwards Air Force Base

Edwards Air Force Base comprises approximately 470 square miles in three counties. The base is under the jurisdiction of the Federal Government, specifically the Air Force Material Command under the Department of the Air Force within the Department of Defense.

Table 4-7
General Plan Land Use Comparison Between Local Jurisdictions

City of Lancaster	County of Los Angeles	City of Palmdale
NU - Non-urban Residential 0.4 - 2.0 dwelling units per acre	**N-1** - Non-urban Residential (To 0.5 dwelling units per acre)	**ER** – Equestrian Residential Rural Residential uses at a maximum gross density of 0.4 du/ac (1 unit per 2.5 acres)
		LDR – Low Density Residential Low Density residential uses at a maximum gross density of 1 du/ac.
	N-2 - Non-urban 2 (up to 1.0 dwelling unit per acre)	**SFR-1** – Single-Family Residential - 1 (0-2 dwelling units per acre)
	U-1(1/2) - Urban 1(1/2) (up to 2.0 dwelling units per acre)	**SFR-2** – Single-Family Residential -2 (0 - 3 dwelling units per acre)
UR - Urban Residential 2.1 - 6.5 dwelling units per acre	**U-1** - Urban 1 (To 3.3 dwelling units per acre)	
	U-2 - Urban 2 (To 6.6 dwelling units per acre)	**SFR-3** – Single-Family Residential - 3 (3.1 – 6.0 dwelling units per acre).
	U-3 - Urban 3 (To 15 dwelling units per acre)	
MR1 - Medium Density Residential 6.6 to 15 dwelling units per acre	**U-3-D** – Selected areas in Quartz Hill are designated as U-3 (D) and require adherence to stated specific development criteria as a condition of being allowed to develop at the highest density. Refer to discussion of Quartz Hill in Chapter IV of the *Antelope Valley Areawide General Plan*	**MR** - Medium Residential (6.1 to 10 dwelling units per acre)
MR2 - High Density Residential 15.1 to 30.0 dwelling units per acre	**U-4** - Urban 4 (15 or more dwelling units per acre)	**MFR** - Multi-family Residential (10.1-16 dwelling units per acre)
C – Commercial Includes a broad spectrum of uses, including regional, community, neighborhood, and highway-oriented uses, with floor area ratios ranging from 0.5 to 1.0	**C** – Community Commercial (serving commercial uses can be appropriately established at locations which conveniently serve local market areas and adjoining neighborhoods)	**NC** - Neighborhood Commercial (designated for convenience type retail/service and other such land uses
		OC - Office Commercial; including a variety of professional office uses such as medical, financial, and many other similar uses
		CC – Community Commercial Intended for businesses providing retail and service uses which primarily serve the local market (Max floor area ratio of 1.0)
		RC – Regional Commercial To accommodate retail and service uses attracting consumers from a regional market area – goods are long term in nature (Max floor area ratio of 1.0)

Table 4-7 (continued)
General Plan Land Use Comparison Between Local Jurisdictions

City of Lancaster	County of Los Angeles	City of Palmdale
		DC - Downtown Commercial; intended for traditional retail/service business core area.
OP - Office Professional Includes office and professional uses and supporting commercial services.	**OBP** - Office and business park uses can be appropriately established at locations that conveniently serve local market areas. They are not shown on the Land Use Map.	**BP** - Business Park; Intended for office research and development, light assembly/ fabrication, and other such uses.
LI - Light Industry Clean, non-polluting industrial and office uses with support commercial.	**M** - Industrial - Major Industrial Manufacturing of all types, mineral extraction sites, refineries, warehousing and storage, and product research and development.	**CM** - Commercial Manufacturing; The commercial manufacturing designation is intended to permit mixed-use development of lighter industrial uses.
HI – Heavy Industry Includes a range of industrial uses in a less restrictive setting.		**IND** – Industrial; Designated to permit a variety of industrial uses such as assembly of products, warehousing, distribution permits, and other such uses
H - Health Care Includes public and private hospitals, health care facilities, and related independent or assisted-living residential facilities.		
S - School Includes public schools and educational institutions.		
P - Public Uses in public ownership, including governmental administration and service facilities.		
PK - Parks Includes publicly owned parks and recreation facilities.	**O** - Open Space (Public and Private) includes areas committed to long-term open space use. Major open space area includes reg. parks, beaches, golf courses, cemeteries, landfills, and military reservations.	**OS -** Open Space; designated for both natural and active open space uses, such as very steep terrain, flood plains, and other such land uses.
CE - Cemetery Includes cemeteries, funeral homes, mausoleums, crematoriums, and columbariums.		
SP - Specific Plan Areas designated Specific Plan.	**SP** - Specific Plan Areas designated Specific Plan.	**SP** - Specific Plan Areas designated Specific Plan.

Much of the flight activity associated with the base occurs to the north and northeast, outside of the Lancaster General Plan study area. However, the nature of flight and weapons testing are such that land use planning should consider uses that would not lead to the permanent presence of people in the area from the base boundary south to Avenue E and the base boundary east to the San Bernardino County line.

In 1990, the Department of Defense proposed that representatives of cities and counties surrounding Edwards Air Force Base attend a meeting to introduce the concept of a joint land use study. The intent of the study was to develop methods to provide for compatible land uses within those areas adjacent to Edwards Air Force Base. In 1993, the Lancaster City Council directed staff to assume the role of lead agency with the participation of Los Angeles, Kern and San Bernardino Counties and the City of California City. On August 1, 1994 the Lancaster City Council adopted the *Edwards Air Force Base Joint Land Use Study*.

The *Edwards Air Force Base Joint Land Use Study* addresses land uses associated with Edwards Air Force Base by function and jurisdiction. In regards to Lancaster, land use concerns occur in the West Flight Corridor and Southeast Buffer Area. Due to the speed of high performance aircraft, flight corridors extend far beyond the base boundaries and as a result of noise and safety concerns, can affect adjacent property within local cities and counties. The West Flight Corridor is not located within or directly adjacent to the City of Lancaster. However, at its closest point, the West Flight Corridor is just under a distance of one mile in the vicinity of 105th Street West. Approximately 24 miles does fall within Lancaster's sphere of influence. Currently, the General Plan designation for the area is generally compatible with the corridor. The *Edwards Air Force Base Joint Land Use Study* recommends that the County of Los Angeles notify the City of any land use proposal in the West Flight Corridor that were within the City's sphere of influence.

The Southeast Buffer Area abuts the City of Lancaster for a distance of approximately 4.5 miles; however, the Buffer Area is not within the City limits. Approximately 35.5 square miles of the Buffer Area are within Lancaster's sphere of influence. Currently, the General Plan designation for the area is generally compatible with most of the Buffer Area. However, approximately 0.3 square miles is currently designated for urban residential uses. The *Edwards Air Force Base Joint Land Use Study* recommends that the City consider redesignation of the undeveloped area to a land use designation that is compatible and requests the County of Los Angeles notify the City of any land use proposal in the Southeast Buffer Area that ware within the City's sphere of influence.

Air Force Plant 42 and Palmdale Regional Airport

Land uses in the vicinity of Air Force Plant 42 and the Palmdale Regional Airport that are located within the City of Lancaster include mainly single-family residential, with some vacant land closer to Air Force Plant 42. Land northwest of Air Force Plant 42 in the vicinity of Sierra Highway is generally comprised of small scale industrial uses intermixed with single-family residential uses.

The City of Palmdale, City of Lancaster and the U.S. Air Force formed the Joint Land Use Committee (JLUC) in 1991 to discuss airport land use compatibility issues. The JLUC developed a number of policies affecting land use decisions for projects in the general vicinity of Air Force Plant 42. These policies were incorporated into the *1997 Lancaster General Plan*.

The Air Force Plant 42 Air Installation Compatible Use Zone (AICUZ) Study (2002) addresses the health, safety and general welfare in the areas surrounding Air Force Plant 42. The study is an update of the 1990 Production Flight Test Installation, Air Force Plant 42 Air Installation Compatible Use Zone Study. The 2002 AICUZ study documents aircraft operations and provides noise contours and compatible use guidelines for land areas surrounding the installation based on a combination of the November 2001 operations and the anticipated future aircraft and maintenance runup operations. The purpose of the AICUZ program is to promote compatible land development in areas subject to aircraft noise and accident potential. The AICUZ study is to be used in the planning process of affected jurisdictions to prevent incompatible land uses.

Air Force AICUZ guidelines establish land use recommendations for the clear zones (CZ), accident potential zones (APZ) I and II and for the four noise zones. The AICUZ Study defines a CZ as an obstruction-free surface on the ground symmetrically centered on the extended runway centerline beginning at the end of the runway and extending outward 3,000 feet. APZ I begins at the outer end of the CZ and is 5,000 feet long and 3,000 feet wide. APZ II begins at the outer end of APZ I and is 7,000 feet long and 3,000 feet wide. The noise contours represent composite noise resulting from aircraft operations and flight tracks. The AICUZ Study shows the CZ, APZ and noise contours for Air Force Plant 42. In addition, the Overflight Zone established by the 1990 Joint Land Use Committee, developed a general zone where aircraft maneuver to enter and leave the traffic pattern. Proposals concerning development within the AICUZ require coordination between the City of Lancaster and the Department of Defense.

General William J. Fox Airfield

General William J. Fox Airfield is comprised of 1,039 acres located approximately four miles northwest of downtown Lancaster within the City of Lancaster. The urbanized area of Lancaster is approximately three miles southeast of the runway end. The land surrounding the airport is zoned for industrial development as part of the Fox Field Industrial Corridor Specific Plan, with a considerable amount of new commercial and industrial development located immediately south of the airport.

In 2004, the Los Angeles County Airport Land Use Commission (ALUC) adopted the *General William J. Fox Airfield Land Use Compatibility Plan (Compatibility Plan)*, which establishes land use compatibility policies applicable to future development in the vicinity of the airport. The policies are designed to ensure that future land uses in the surrounding area will be compatible with potential long-range aircraft activity at the airport. The *Compatibility Plan* encourages the City of Lancaster to use the policies to modify the City's General Plan, zoning ordinances and other local land use policies to assure that future land use development will be compatible with aircraft operations and in making planning decisions regarding specific development proposal involving the lands impacted by aircraft activity.

The *Compatibility Plan* defines the airport and surrounding area by zone. The zones include Zone A – Runway Protection Zone, Zone B1 – Inner Approach/Departure Zone, Zone B2 – Adjacent to Runway, Zone C – Extended Approach/Departure Zone, Zone D – Primary Traffic Patterns and Zone E – Other Airport Environs. Prohibited uses and other development conditions are identified for each zone. The *Compatibility Plan* identifies noise contours for the airport and establishes noise compatibility criteria. In addition to noise, overflight factors are identified along with safety and airspace protection factors. Specific policies are identified

addressing noise, safety and airspace protection to ensure that land uses within each zone are compatible with airport functions.

Mira Loma Detention Center

The Mira Loma Detention Center, located west of downtown Lancaster, is owned by the Los Angeles County Sheriffs Department and is contracted by the Immigration and Naturalization Service to house illegal immigrants until their immigration case is decided.

California State Prison at Antelope Valley

California State Prison is located on 262 acres bounded by 60th Street West, Avenue I, 50th Street West, and Avenue J. The Prison is operated by the California Department of Corrections and Rehabilitation.

Antelope Valley Fairgrounds

The Department of Food and Agriculture (CDFA), Division of Fairs & Expositions (F&E), provides fiscal and policy oversight of the network of California fairs including the Antelope Valley Fair located on the 80-acre Antelope Valley Fairgrounds at 2551 West Avenue H, adjacent to the Antelope Valley Freeway.

4.7 REGIONAL PLANS AND PROGRAMS

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

The County of Los Angeles is within the six county jurisdiction of the Southern California Association of Governments (SCAG), which also includes Ventura, Orange, San Bernardino, Riverside and Imperial counties. SCAG has divided its jurisdiction into 14 subareas to facilitate regional planning efforts. The Antelope Valley is located in the North Los Angeles County Subregion, which includes the cities of Palmdale and Lancaster and unincorporated areas under the jurisdiction of Los Angeles County. For purposes of transportation planning, the subregion also includes the City of Santa Clarita and unincorporated portions of the Santa Clarita Valley.

The North Los Angeles County Subregion is bordered by Kern County to the north, the San Bernardino Associated Governments Subregion to the east, San Gabriel Valley Association of Cities, Arroyo Verdugo and City of Los Angeles Subregions to the south, and Ventura Council of Governments (Ventura County and City of Santa Clarita) to the west.

Regional Comprehensive Plan

SCAG is currently updating the *1996 Regional Comprehensive Plan and Guide*. This Regional Comprehensive Plan will be a comprehensive document which identifies policies, recommendations, and financial strategies for nine specific areas of planning, including Land Use and Housing, Solid and Hazardous Waste, Energy, Air Quality, Habitat and Open Space, Economy and Education, Water, Transportation, Security and Emergency Preparedness, and Finance.

The Land Use and Housing Chapter recommends actions for the State, SCAG, and local agencies to implement regarding land use and housing policy. The plan encourages that jurisdictions keep their General Plans up-to-date and respond to the community's needs. The plan also encourages the development of Specific Plans, mixed use development, infrastructure planning, affordable housing incentives, and establishing uniform mitigation.

Regional Transportation Plan (RTP)

The *Regional Transportation Plan* (RTP), adopted in April 2004, provides basic policy and program framework for the regional transportation system. Through a regional visioning process the Growth Visioning subcommittee developed a scenario and vision for the future of the region that: utilizes infill where appropriate to revitalize underutilized development sites; focuses growth and density along transit corridors and nodes; provides housing opportunities to match changing demographics; preserves natural open space; incorporates the decentralized aviation strategy proposed on the Plan; and respects the local input and feedback process in the development of growth distribution.

The RTP addresses each major mode of transportation in the region, including the movement of goods, aviation, highways and arterials, and public transit. The General Plan program relies on long-term growth projections produced by the 2004 RTP for populations, households, and employment.

Regional Housing Needs Assessment (RHNA)

The Regional Housing Needs Assessment (RHNA) is the tool which local jurisdictions use to determine their housing needs. Through the RHNA, jurisdictions plan for the provision of housing adequate to meet regional housing needs. Each jurisdiction's allocation is to be used in the Housing Element of the General Plan. The type and tenure of the housing that is needed is also analyzed as part of the RHNA. RHNA determines the housing growth that local jurisdictions need to plan for in the Housing Elements of their General Plans. Local zoning, subdivision, and other regulations within the City must confirm to the Lancaster General Plan, and therefore implements RHNA. The RHNA process from the January 1, 2006 to June, 30, 2014 Housing Element planning period is scheduled to be complete by July 1, 2007 with the adoption of the Housing Element due by July 1, 2008.

Compass Blueprint 2% Strategy

In an effort to provide local decision-makers with the tools they need to plan more effectively for the six million new residents projected to live in southern California by 2030, SCAG undertook a growth-visioning initiative called Southern California Compass. The objective of this effort was to develop a comprehensive new vision for southern California over the next 30 years. The Compass Blueprint 2% Strategy is a guideline to implement this vision. It calls for changes to current land use and transportation trends on 2% of the land area of the region - the 2% Strategy Opportunity Areas. The strategy is designed to yield the greatest progress toward improving measures of mobility, livability, prosperity and sustainability for local neighborhoods and their residents using the region's planning resources and efforts.

REGIONAL TRANSPORTATION AGENCIES

Transportation planning sets the stage for new growth and development within the region. Planning new facilities and improvements to existing facilities in Lancaster must be coordinated with the following regional and state agencies, in addition to SCAG and the County of Los Angeles, as previously mentioned.

- Antelope Valley Transit Authority (AVTA). The Antelope Valley Transit Authority is responsible for administering and managing the delivery of transit services in the Antelope Valley. The Antelope Valley Transit Authority Long-Range Plan adopted in April 2005, provides long-range strategic planning and priorities for expanding transit services to meet future growth demands.

- Southern California Regional Rail Authority. The Southern California Regional Rail Authority, a Joint Powers Authority (JPA) between the counties of Los Angeles, Orange, San Bernardino, and Riverside operate and maintain the regional commuter rail system know as "Metrolink." The City of Lancaster owns one of the 54 Metrolink stations within southern California.

- Caltrans. The California Department of Transportation (Caltrans) is responsible for the planning, building, maintenance, and operation of the State highway system, including all freeways, along with limited responsibility for planning and funding transit facilities. Coordination between the City and Caltrans is especially important for determining future transportation facilities and expansion of existing facilities.

COUNTY OF LOS ANGELES

Land in unincorporated areas surrounding the City is governed by Los Angeles County. The following plans and policies effect planning within the General Plan study area:

- Los Angeles County General Plan. As previously mentioned, the *Antelope Valley Areawide General Plan* adopted in 1986 provides policy for development within unincorporated areas of the study area. The County is currently in the process of a comprehensive General Plan update, which is not scheduled to include an update of the Antelope Valley Areawide General Plan.

- Congestion Management Program for Los Angeles County (CMP). The 2004 Congestion Management Program (CMP) was created to link local land use decisions with the impacts on regional transportation and air quality and to develop a partnership among transportation decision makers on devising appropriate transportation solutions that include all modes of travel. The CMP analyzes growth, transportation and the roadway systems, and land use. The Land Use Analysis Program requires all development projects that are required by a local jurisdiction to prepare and Environmental Impact Report (EIR) to incorporate a CMP Transportation Impact Analysis (TIA). The TIA is required to identify site-specific impacts and mitigation measures for the regional highway, freeway and transit systems.

- Los Angeles County Highway Plan. In Lancaster, land is closely related to circulation, particularly freeways, highways, and bikeways. The highways, freeways and bikeways in the unincorporated area surrounding the City is governed by the Los Angeles County Highway Plan, which is a part of the Los Angeles County General Plan.

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5.0 Population

5.0 POPULATION

5.1 INTRODUCTION

The population section provides a demographic profile of the City of Lancaster. Population is described in terms of historical growth, existing population, and growth trends for Lancaster and the County. In addition to population, this section describes other demographic characteristics including education, ethnicity and the jobs/housing balance. Information in this section is from various sources and includes data from the Census, State of California Department of Finance, Southern California Association of Governments (SCAG) and economic studies. These sources obtain and present data for different purposes and geographic areas. Wherever possible information in this section is provided for the City of Lancaster, Antelope Valley, Los Angeles County, and the SCAG region.

COUNTY OF LOS ANGELES

In 2000, Los Angeles County's population consisted of 9,519,338 residents, which represented over 28 percent of the State of California's total population of 33,871,648 persons. From 2000 to 2006 the County population grew to an estimated 10,245,572 residents, a total growth of approximately 726,234 residents. On average, this growth represents a 1.26 percent annual increase. According to SCAG, the population of Los Angeles County is expected to grow from approximately 9.5 million persons in 2000 to approximately 12.2 million persons by 2030, which represents a 28 percent increase in population over the 30-year period. This increase of 2,702,461 persons from 2000 to 2030 represents an average annual growth rate of 0.95 percent. Table 5-1, Population Summary, provides population numbers for the County of Los Angeles, North Los Angeles County Subregion and the City of Lancaster.

Table 5-1
Population Summary

Area of Study	2000	2006	Growth Rate (2000-2006)		2030	Growth Rate (2000-2030)	
			Change	Annual Average Percent		Change	Total Growth Percent
Los Angeles County	9,519,338	10,245,572	726,234	1.27	12,221,799	2,702,461	28.4
North Los Angeles County Subregion[1]	512,391	614,502[2]	102,111	3.32	1,179,228	666,837	130.1
City of Lancaster	118,718	138,392	19,674	2.76	259,696	140,978	118.8

Sources: U.S. Census Bureau, 2000.
State of California, Department of Finance, E-5 Population and Housing Estimates for Cities, Counties and the State, 2001-2006, with 2000 Benchmark. Sacramento, California, May 2006, SCAG 2004 RTP.

[1] North Los Angeles County Subregion includes the Cities of Lancaster, Palmdale, Santa Clarita and other unincorporated areas of North Los Angeles County.
[2] Represents 2005 population for North Los Angeles County from SCAG, City Projections, 2004.

NORTH LOS ANGELES SUBREGION

SCAG functions as the Metropolitan Planning Organization (MPO) for six counties: Los Angeles, Orange, San Bernardino, Riverside, Ventura and Imperial, and includes 184 cities; refer to Figure 5-1, SCAG Region. The region encompasses a population exceeding 15 million persons in an area of more than 38,000 square miles. SCAG provides data on southern California's counties and its 13 subregions. Lancaster is located in the North Los Angeles County subregion along with the City of Palmdale and other unincorporated areas of Los Angeles County. For purposes of transportation planning, the subregion also includes the City of Santa Clarita and unincorporated portions of the Santa Clarita Valley.

SCAG's Regional Comprehensive Plan and Guide (RCPG) is a comprehensive document that serves as a framework for decision making in the SCAG Region with respect to anticipated growth and changes within a 20-year horizon. Currently, the Growth Management Chapter within the RCPG discusses population growth, demographic characteristics, employment and growth management policies in the North Los Angeles County subregion. SCAG is in the process of completing an updated (RCPG) on a chapter-by-chapter basis.

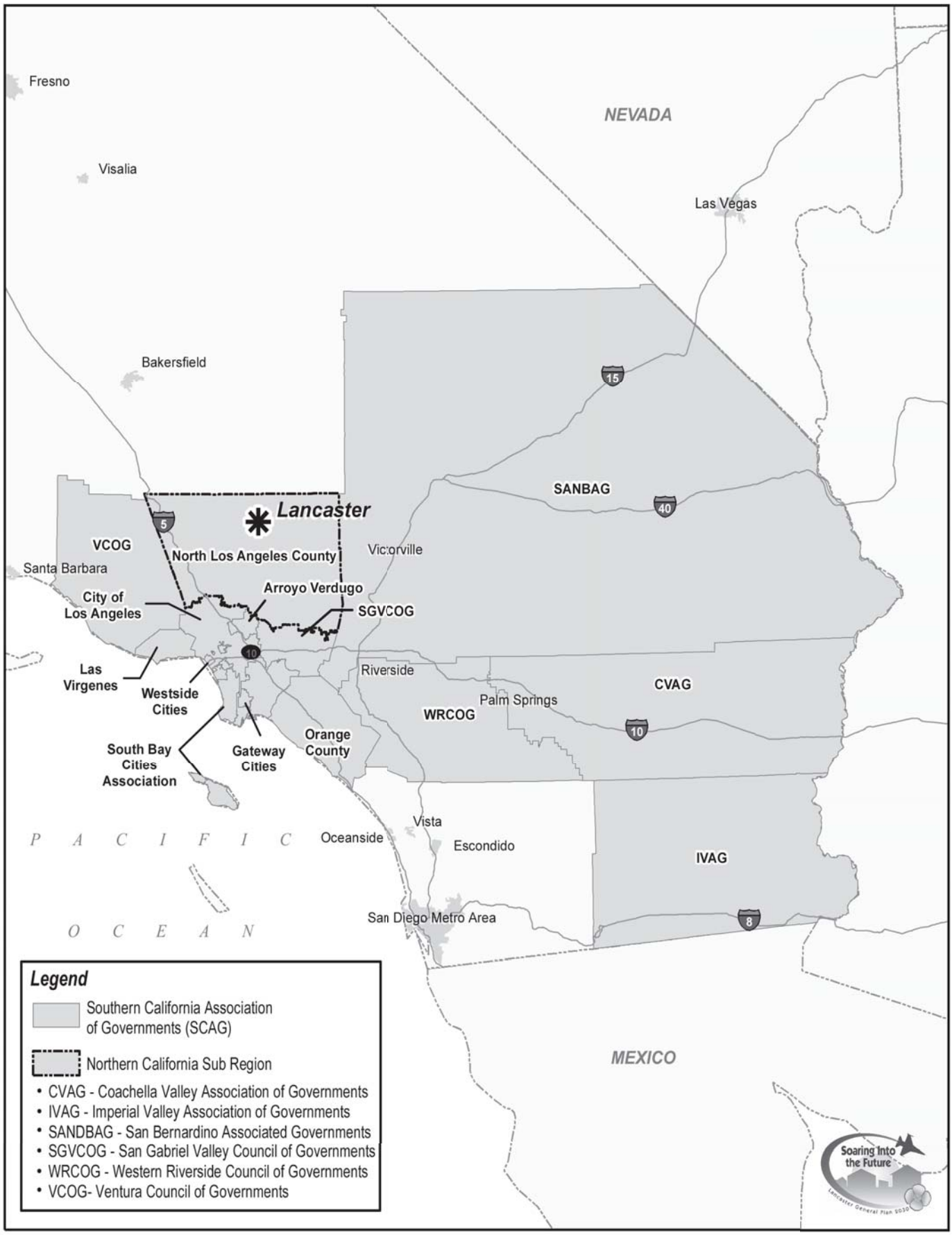
According to SCAG, in 2000 the North Los Angeles County subregion had a population of 512,391 persons, which represented approximately 5.3 percent of the total Los Angeles County area population of 9.5 million. From 2000 to 2006, the subregion experienced an approximate 3.3 percent annual growth rate, which was larger than the County's 1.3 percent annual growth rate during that same time. More significantly however, was that the north Los Angeles County subregion's growth during this period represented fully 14 percent of the total county growth. The North Los Angeles County subregion population is anticipated to experience a 130 percent increase to approximately 1.18 million residents by 2030, which will represent 9.6 percent of the County population by that time compared to 5.4 percent in 2000. According to SCAG projections, 25 percent of all County growth between 2000 and 2030 will take place in north Los Angeles County.

CITY OF LANCASTER

The Lancaster study area is located within 30 U.S. Census Tracts in the Antelope Valley. The City of Lancaster had a population of 118,781 residents in 2000, which grew to approximately 138,392 residents in 2006. This represents a 2.76 percent annual growth rate over the six-year period. The City's 2000 population is expected to increase by approximately 119 percent to an estimated 259,696 residents by 2030. Lancaster's projected annual growth of approximately 4.0 percent is higher than the County's projected annual growth of 0.95 percent from 2000 to 2030. This growth will represent 2.1 percent of the County's population by that time compared to only 1.2 percent in 2000.

5.2 GROWTH TRENDS

Population trends are generally reflective of lifestyle changes and the economic characteristics of an area. The North Los Angeles County subregion is unique in Los Angeles County in that the affordable housing market in the Lancaster area has provided opportunities for people to purchase homes in the area while continuing to work outside of the region. Much of Lancaster's historic population trends were directly related to the growth and decline in the aerospace industry. In particular, employment at Edwards Air Force Base and U.S. Air Force Plant 42



RBF CONSULTING

Source: SCAG
ESRI Street Data

Lancaster General Plan 2030

SCAG Region

Figure 5-1

provided the backbone of the economy into the 1990s and created an employment draw for the communities of Lancaster and Palmdale. The recession in the early 1990s, which hit the manufacturing section hardest, is reflected in the dramatic slowing of population growth that occurred during that time in the Antelope Valley. Although the Antelope Valley economy continued to be influenced by the growth incentive of affordable housing that first began to shape the subregion in the 1980s, the recession had a severe effect on the housing market, as reflected in the decrease in housing sales and price, and the increase in housing foreclosures.

Growth trends continued to show residents trading lifestyles, leaving the congestion and high housing costs of Los Angeles and Orange counties for less crowded, affordable areas. These residents have moved to Ventura County, western San Bernardino and Riverside counties, and more recently into the Antelope Valley, where the cities of Palmdale and Lancaster have been primary destinations.

In 2000, population growth began to recover from the recession and as of 2006 continues to grow at an increased rate. During this time, Lancaster began to expand and diversify its employment, and overall workforce characteristics in the Antelope Valley have began to transform to support more of the workforce population in the area. The housing industry has also reflected the City's growth. Home sales in Lancaster increased approximately 24 percent from 2001 to 2002, which is a significant increase from the four percent decline in sales experienced from 1999 to 2000. From 2001 to 2005 housing sales increased at an average annual rate of 19.4 percent and the average price per square foot of homes increased from 64 dollars in 2000 to 149 dollars in 2005.

The affordable housing market continues to be a primary factor for people living in, or relocating to, the Antelope Valley. In many cases, an initial decision to move may have been motivated by the ability to buy a larger house for less money, or the availability of lower priced housing. Although housing prices have increased, according to the *Antelope Valley Roundtable Report* (2005), Lancaster rates second in Antelope Valley on the affordable housing index.

5.3 HISTORICAL POPULATION GROWTH

Historically, the City of Lancaster has experienced periods of rapid growth followed by slow growth. During the decade from 1950 to 1960, the City expanded at a fast rate with an annual average growth rate of nearly 21.0 percent by 1960. In contrast, the City experienced slow growth between 1960 and 1970 with an annual average growth rate of approximately 0.60 percent. During the 1970s, expansion increased in the City and by 1980 the City of Lancaster and the Antelope Valley were among the fastest growing areas of southern California. During the 1980s, the City's population more than doubled and reached one percent of Los Angeles County's 8.6 million residents. During this time, the population in Los Angeles County grew by 16 percent.

With a 2.2 percent average annual growth rate from 1990 to 2000, as shown in Table 5-2, Historic Growth Trends, Lancaster's population represented 1.2 percent of the County's total population in 2000. This growth trend appears to be continuing as Lancaster's 2006 population represents approximately 1.4 percent of the County's total population. Additionally, the North Los Angeles County Subregion grew at an annual rate of 3.32 percent from 2000 to 2006, representing approximately 5.4 percent of the County's population. Thus, population for both the City of Lancaster and the North Los Angeles County Subregion have grown at a faster rate

than Los Angeles County, which grew at an annual rate of approximately one percent from 1990 to 2000.

Table 5-2
Historic Growth Trends

Year	City of Lancaster				Los Angeles County	
	Population*	Percent of County Population	Average Annual Growth	Average Annual Growth Rate (%)	Population	Average Annual Growth Rate (%)
1950	10,250	0.2	N/A	N/A	4,151,687	N/A
1960	31,503	0.5	2,125	20.7	6,038,771	4.5
1970	33,460	0.5	196	0.6	7,041,980	1.7
1980	48,027	0.6	1,457	4.4	7,477,503	0.6
1990	97,291	1.0	4,926	10.3	8,691,099	1.6
2000	118,781	1.2	2,149	2.2	9,519,338	1.0
2006	138,392	1.4	3,269	2.8	10,245,572	1.5

Source: U.S. Census Bureau, FactFinder, 2000.
U.S. Census Bureau, FactFinder, 2005 American Community Survey, 2005.
City of Lancaster, Lancaster Master Environmental Assessment, 1997.

* Population total represents the number of residents recorded at the end of that decade.

5.4 AGE OF POPULATION

During the period from 1990 to 2005, there were noticeable changes in the age distribution of Lancaster residents. As shown in Table 5-3, Population Characteristics, the percentage of the population ages five to 19 increased slightly from 24.3 percent in 1990 to 27.4 percent in 2000. Growth in this age group continued, reaching 29.4 percent of the total population by 2005. The number of people ages 45 to 54 increased from 8.8 percent of the total population in 1990 to approximately 12.6 percent by 2005, while the number of people ages 25 to 44 decreased from 36.4 percent of the total population in 1990 to 25.6 percent in 2005. The oldest sector of the population numbers, residents 65 years and older, has also increased, but has decreased as a percentage of the total population. The increase of children and adults may reflect the affordable housing market, which historically and, to date, continues to attract families and retirees to the Antelope Valley.

The City's median age of 30.7 years in 1990 grew to 31.1 years by 2000 and remained the same into 2005. This increase may reflect the recent influx of retirees. The 2005 average household size of 3.2 persons per household reinforces Lancaster's reputation as a community of families.

Table 5-3
Population Characteristics

Population Breakdown	1990		2000		2005	
	Population	Percent of Total Population	Population	Percent of Total Population	Population	Percent of Total Population
City of Lancaster	97,291	100.0	118,718	100.0	135,225	100.0
Gender						
Males	48,979	50.3	60,257	50.8	64,873	48.0
Females	48,312	49.7	58,461	49.2	70,352	52.0
Age						
< 5	9,535	9.8	9,544	8.0	11,451	8.5
5–19	23,672[1]	24.3	32,474	27.4	39,716	29.4
20-24	5,983[1]	6.1	7,650	6.4	9,351	6.9
25-44	35,423	36.4	37,209	31.3	34,580	25.6
45-54	8,556	8.8	13,763	11.6	17,003	12.6
55-64	6,458	6.6	7,877	6.6	12,662	9.3
65 +	7,664	7.9	10,201	8.6	10,462	7.7

U.S. Census Bureau, American FactFinder, 1990.
U.S. Census Bureau, FactFinder, 2000.
U.S. Census Bureau, FactFinder, 2005 American Community Survey, 2005.

[1] 1990 census broke age categories into 5 to 20 and 21 to 24.

5.5 EDUCATION ATTAINMENT

The 2000 Census indicates that the number of residents with a high school diploma or higher has increased in the City since 1990. As shown in Table 5-4, Education Attainment, 78.3 percent of the adult population (25 and older) in Lancaster are high school graduates, and 15.8 percent are individuals with a Bachelor's Degree or higher. In all, over fifty percent of high school graduates have some level of college experience. Although these percentages have increased since 1990 and general education levels continued to increase into 2005, recent data also indicates that approximately 14.0 percent of the population have a Bachelor's, Master's, or Doctorate degree, which is a 1.8 percent reduction in five years.

Table 5-4
Education Attainment

Year	City of Lancaster			Los Angeles County		
	Population 25 and Older	Percent High School Graduates or Higher	Percent Bachelor's Degree or Higher	Population 25 and Over	Percent High School Graduates or Higher	Percent Bachelor's Degree or Higher
1990	58,101	67.9	15.5	5,448,018	41.1	12.0
2000	69,282	78.3	15.8	5,882,948	69.9	24.9
2005	74,707	81.1	14.0	6,105,497	74.4	27.6

Sources: U.S. Census Bureau, American FactFinder, 1990.
U.S. Census Bureau, FactFinder, 2000.
U.S. Census Bureau, FactFinder, 2005 American Community Survey, 2005.

Educational levels in Lancaster compared to Los Angeles County reveal that a larger percentage of Lancaster residents have a high school diploma or higher when compared to Los Angeles County. However, the percentage with four years of college or more was greater at the County level.

5.6 ETHNICITY

Table 5-5, Race and Ethnicity, provides a breakdown of ethnicity for the City of Lancaster and the County of Los Angeles. Although minority groups represent less than half of the total population in Lancaster, Table 5-5 indicates that both Spanish/Hispanic and Black or African American persons as a percentage of the population has increased since 2000. Specifically, persons who identified themselves as of Hispanic or Spanish origin (and may also be represented in other ethnic groups) increased most dramatically from approximately 15.2 percent of the population in 1990 to approximately 32.0 percent of the population in 2005. In contrast, persons who identified themselves as White, Asian, American Indian and Alaska Native have decreased as a percent of population from 1990 to 2005.

Table 5-5
Race and Ethnicity

Race and Ethnicity	City of Lancaster						Los Angeles County 2005	
	1990		2000		2005			
	Total Persons	Percent of Population	Total Persons	Percent of Population	Total Persons	Percent of Population	Total Persons	Percent of Population
White	77,225	79.4	74,573	62.8	75,258	55.7	4,968,846	50.9
Black or African American	7,207	7.4	19,009	16.0	27,298	20.2	868,199	8.9
Asian[1]	3,618	3.7	4,523	3.8	4,330	3.2	1,273,995	13.1
American Indian and Alaska Native	903	0.9	1,213	1.0	1,106	0.8	48,544	0.5
Native Hawaiian and Pacific Islander	N/A	N/A	278	0.2	834	0.6	29,841	0.3
Other/Some Other Race	8,328	8.6	19,122	16.1	18,431	13.6	2,313,362	23.7
Spanish/Hispanic[2] (of any race)	14,816	15.2	28,644	24.1	43,223	32.0	4,613,450	47.3

Sources: U.S. Census Bureau, American FactFinder. http://www.census.gov/, 1990, 2000 and 2005.

NOTE: This table does not display those who identified themselves as two or more races.
[1] Includes Pacific Islander population for year 1990.
[2] Ethnicity is identified with various races including those listed in the table, therefore the percentage is representative of the total city population.
N/A – This population category was not available for the 1990 Census and individuals likely chose the next most appropriate category to represent their race.

5.7 JOBS/HOUSING BALANCE

Analysis of the imbalance of jobs and housing in communities is being incorporated into various regional planning programs. Imbalances between the location of housing and employment are linked to many problems, ranging from increased traffic congestion along corridors, to local fiscal strain, air pollution, and an overall lessening of the quality of life. The theory is that by achieving a balance between available employment and the labor force residing in a given area, these negative impacts will be reduced.

The concept of jobs/housing balance is often perceived simply as a balance between the number of houses and number of jobs in a community. However, a true balance would also include a correlation between the cost of housing in an area and the income of area workers, as

well as the type of jobs available in the community. A balance between jobs and housing in a metropolitan region can be defined as an adequate supply of housing to house workers employed in a defined area (i.e., community or region). Alternatively, and more appropriate for the City of Lancaster, a jobs/housing balance can be defined as an adequate provision of employment in a defined area that generates enough local workers to fill the housing supply.

Two major factors have emerged over the last decade that run counter to achieving a greater job/housing balance throughout the region. The first is the economic ascendancy of high-tech, information-based industries. The second is the "fiscalization" of land use brought about by voter approved State tax laws.

The new economy jobs in the high-tech fields, which pay high salaries and attract young professionals, tend to be located in coastal areas within the SCAG region. These high-tech employers locate in clusters where a majority of the venture capital is being invested. High-tech clusters have very strong economies, and locate in areas where outside amenities will assist in attracting businesses desired by employees. This characteristic creates a challenge to dispersing high-tech clusters and their sizable economic impacts to housing-rich regions in the inland areas, including Lancaster.

Second, State tax law, particularly Proposition 13 and Proposition 218, has greatly reduced City property tax revenues, which has created a competition among cities for sales tax-generating commercial uses for land. Tax limitations have made residential land uses less desirable, leaving commercial as the primary means for a city to provide an adequate quality of life for its residents. As a result, commercial and other sales tax generating land uses have increased in all jurisdictions. Incentives for residential use and particularly low-income housing consist of State standards and grants for those who qualify.

Land fiscalization has not been a large barrier to residential growth in the Antelope Valley and the City of Lancaster. SCAG reports indicate Lancaster has historically been a housing-rich region. However, the trade-off for many working households who choose to purchase an affordable home in Lancaster is a long commute to work. It is not unusual for workers living in this area of affordable homes to commute two hours or more each way to their jobs in the urban core areas to the south. Historically, the Antelope Valley has been a commuter area with more than 30 percent of employed residents commuting to another area for work by car or public transportation. As of 2005, the Antelope Valley Transit Authority reported a total annual commuter ridership of 289,022 persons, which represents a 3.42 percent annual increase since 2003. Additionally, in 2005, Metrolink reported that 373 daily riders come from Lancaster, of those, approximately 81 percent are work commuters.

Other factors that may influence the effectiveness of the jobs/housing balance concept include the following:

- Housing prices and characteristics such as neighborhood quality, parks, and other amenities;
- Individual preferences; for example, workers may choose to live in lower density, rural locations, which are generally found further from the job site;
- An increased number of multiple worker households, which means that living near one resident's job site may not mean living near another resident's job site; and

- Incremental commuting costs may be much less and therefore more popular than higher housing costs.

Some argue that a jobs/housing balance will not solve congestion problems, since there is no assurance that jobs created in a given area will actually be filled by area residents. However, improving the balance between the jobs and housing available in the community creates the opportunity to decrease the future commuter population in relation to total population. As gas prices and congestion increase, the desire to spend less time on the road increases and induces life changes.

According to SCAG, a balanced region would have a ratio of approximately 1.22 jobs per dwelling unit (1.22:1). This would result in the availability of 1.22 jobs for each housing unit in the community. In 1997, the County of Los Angeles had a job/housing ratio of 1.41:1, which indicated an overall job surplus. This is understandable considering Los Angeles is a large city and economic core. In 1997, the North Los Angeles County region had a total of 136,472 jobs and 153,943 housing units resulting in a jobs/housing ratio of 0.98:1. This ratio indicates a deficit of jobs in a housing-rich area. In that same year, the City of Lancaster had an estimated jobs/housing ratio of 1.13:1, which is still below the ideal balance stated above. According to SCAG projections, the North Los Angeles County region will remain a housing-rich area into 2030.

Lancaster's jobs/housing ratio of 1.13:1 is only slightly below the desired ratio of 1.22:1. Although Lancaster's current jobs/housing ratio is approaching a balance, the ratio by itself does not reveal the characteristics of the local job market. Many of the jobs currently available in Lancaster are low paying service-oriented jobs, which do not provide the income necessary to support a household, and therefore, a significant portion of the working population must continue to commute to Los Angeles or other areas for adequate employment.

There is no single, simple solution to the problem of achieving a jobs/housing balance. Possible measures identified by SCAG for housing rich regions include the following:

- Enterprise zones can be established to encourage economic activity and hiring the unemployed;
- Establish a process to fund priority projects that could be implemented which would redirect job growth in housing-rich regions;
- Locate new job-inducing public facilities, such as a university and/or airport;
- Provide amenities that are desirable to young graduates to entice high-tech businesses to locate in the outlying area;
- Provide incentives to encourage developers to build commercial and industrial facilities in job-poor regions;
- Support and promote the new economy/high-tech firms to decentralize employment and economic activity;

- Identify potential growth industries and provide incentives to attract these industries to tailor the City's economic activities so that they best match the population's characteristics;

- Provide education, training, and support services to the resident labor force to increase the labor supply for future businesses;

- Provide industrial sites to accommodate new and expanding industries;

- Invest in public education; and

- Increase emphasis on accommodating suburban employment growth in higher-density, mixed-use work centers.

Some of the measures are currently in place in the City, such as the enterprise zone, and opportunities to implement other measures exist at a local and regional level, as well. As of 2006, SCAG has initiated a Compass Blueprint Program, which offers the opportunity for cities and counties in southern California to partner with SCAG and receive Demonstration Project assistance. Project selection is based in part on the project's ability to provide balanced transportation choices with a mixture of land uses and housing needs, in a manner that will employ the principles of the Compass Blueprint. If qualified, the city will be provided with the benefit of consultant services, technical assistance, and/or staff time to promote examples of creative, forward thinking and sustainable development solutions that fit local needs and support shared regional values.

Another approach, which can be done concurrently, is to foster land use planning actions at the local level that encourage citizens to abandon the single occupant vehicle as a mode of transportation. By encouraging people to travel with others or to utilize alternative forms of transportation, traffic congestion would improve, as fewer vehicles are on the road and fewer miles are traveled. Consequently, a reduction in the volume of pollutants emitted by motor vehicles would also occur.

Actions to encourage a reduction in the number of single travelers through the coordination of land use and transportation decisions include: changes to existing zoning, general plan amendments, and specific plans to encourage concentrated, mixed use, transit- and pedestrian-oriented developments as tools that reduce vehicle miles traveled (VMT).

Although these factors focus on commute efficiency and will not equalize the job/housing balance, land use policies and approaches must be taken together to reduce congestion, improve environmental quality and improve mobility. Additionally, achievement of a balance also requires residents to understand the importance of their choices and make the choice to work near their home or vice versa. The result of an increased proportion of area residents able to obtain local employment and taking advantage of that opportunity is reduced VMTs, which would theoretically improve regional air quality. However, as air is a shared resource, improvements made in one region may be difficult to quantify due to neighboring regions' impacts. Reduced VMTs have other benefits as well; for instance, the amount of time required for childcare and the number of hours children remain alone can be reduced. A balance between area employment and workers would also reduce the costs and time of extensive road expansions and the development of a commuter rail system. Reduced traffic and congestion would reduce stress associated with it and improve the quality of life and health. The goal is an

overall increase in the quality of life within the region by reducing traffic congestion, improving air quality, and providing for an environment, in which one can live, work, and play in close proximity to one another.

Problems associated with the jobs/housing imbalance have become so pronounced throughout the State that the State Legislature passed Assembly Bill 2864 (Torlakson) which establishes the Jobs-Housing Balance Improvement Program that provides State funding to local governments for projects that will mitigate the imbalance of jobs and housing in local communities. This bill provides $110 million for projects and programs in housing-rich communities that will attract new businesses and jobs, and projects in jobs-rich communities that will increase the supply of housing.

Other relevant information concerning housing characteristics in the City of Lancaster is discussed in Section 4.0, Land Use, and in the *Housing Element* of the City's *General Plan.* Additional economic data and the local economy is discussed in Section 13, Fiscal Resources.

5.8 REFERENCES

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6.0 Transportation and Circulation

6.0 TRANSPORTATION AND CIRCULATION

6.1 INTRODUCTION

This section summarizes the existing transportation conditions in the City of Lancaster. Multi-modal transportation elements including conditions of the City's local roadway system, transit system, bicycle paths, goods movement infrastructure, parking availability, and air transport facilities are discussed. The City of Lancaster is served by one major regional freeway (State Route 14), one major freight/commuter train line, an extensive roadway network, and several different bus transit lines, including two different commuter services.

6.2 EXISTING CIRCULATION SYSTEM

FUNCTIONAL STREET CLASSIFICATIONS

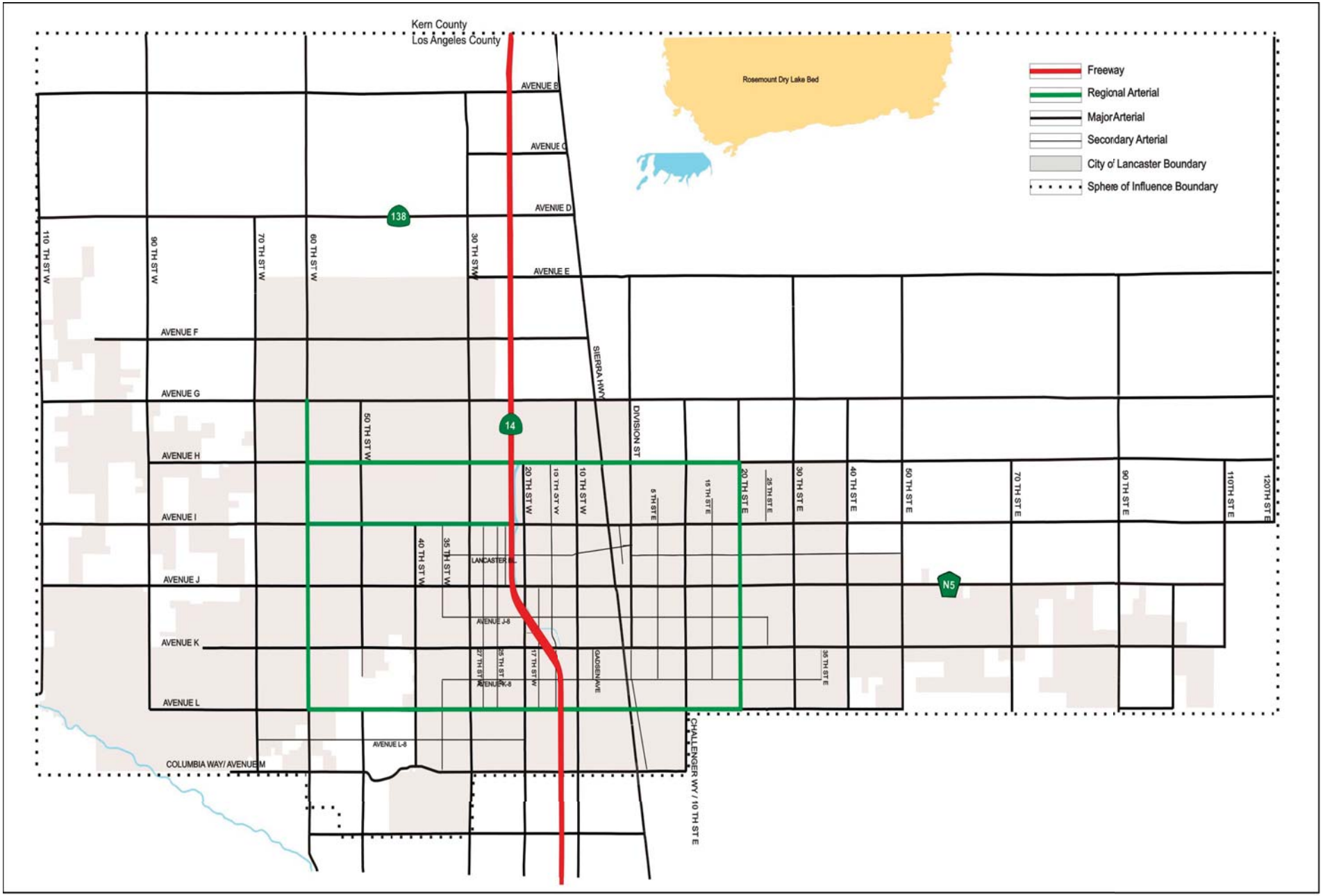
The existing regional and local roadway network in Lancaster is a hierarchical system of highways and local streets developed to provide regional traffic movement and local access. The following section provides a description of the functional classification of the facilities within the study area. Because the City's sphere of influence extends to portions of the County of Los Angeles, the Los Angeles County Classification is also included and is applicable to all roadway segments within the County's jurisdiction. City of Lancaster's street classifications for the major facilities in the study area are shown on Figure 6-1, Street Classifications. Figure 6-2, Typical Cross-Sections, depicts typical cross-sections for all of the roadway types in the study area.

Lancaster Roadway Classifications

Regional Arterials. Regional arterials are limited access facilities that provide service to non-local through trips with minimal direct access to adjacent land uses. They have a design cross-section of eight lanes (four in each direction) with medians and turn lanes at a limited number of access points. Regional arterials are designated as 106-foot roadways, typically within a 120-foot right-of-way. At their design capacity of Level of Service (LOS) D, most regional arterials can carry between 49,500 and 64,000 vehicles per day. Some bike lanes currently exist within primary and regional arterials, however current City policy is to provide new bike lanes on secondary arterials only.

Major Arterials. Major arterials are primarily intended to serve through, non-local traffic and provide limited local access. They have a cross-section of three through lanes, and a raised landscape median and turn lanes at a limited number of access points. Major arterials are designated as 84-foot roadways, within a 100-foot right-of-way. At LOS D, major arterials can accommodate between 40,000 and 44,000 vehicles per day.

Secondary Arterials. Secondary arterials provide more local access than major arterials, while also providing a reduced level of non-local through traffic service. Secondary arterials have a cross-section of four through lanes, a bike lane in each direction and a left-turn lane within 68 feet of curb-to-curb space, within an 84-foot right-of-way. These roadways are usually undivided with the potential for limited on-street parking, turn lanes at major intersections, and partial control of vehicular and pedestrian access from driveways, cross streets, and crosswalks. Secondary arterials can accommodate between 22,000 and 24,000 vehicles per day at an acceptable level of service.



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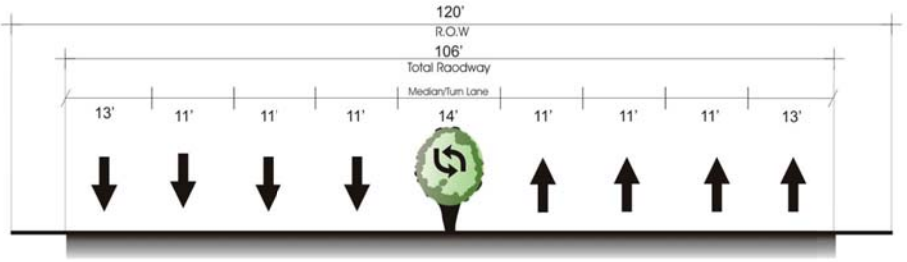
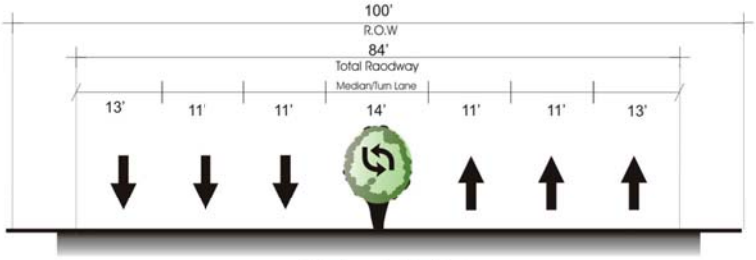
Lancaster General Plan 2030

Street Classifications

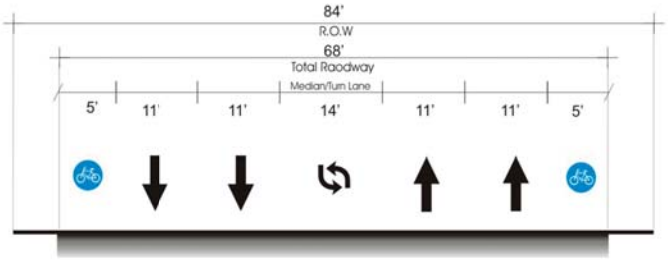
Figure 6-1



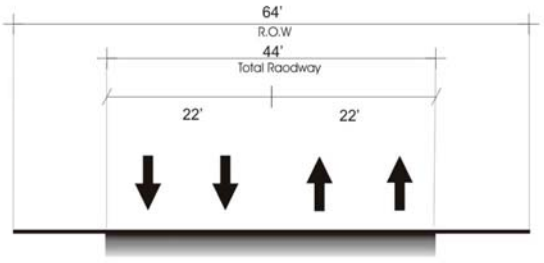
Regional Arterial



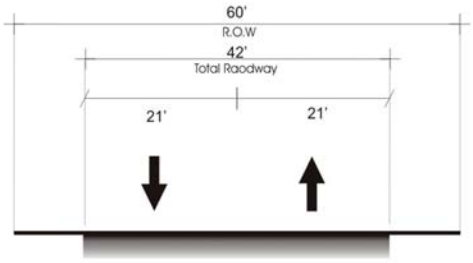
Major Arterial



Secondary Arterial



Collector



Local Street

Soaring Into the Future
Lancaster General Plan 2030

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Lancaster General Plan 2030

Typical Cross-Sections

Figure 6-2

Collectors. The primary role of collector roadways is to provide access between the arterial network and the neighborhoods and commercial development. These roadways are typically two lanes wide with limited access to driveways and cross streets. They are usually undivided and do not have turn lanes at intersections. Collectors in Lancaster are 44 feet, curb to curb, within 64-foot right-of-ways. The typical capacity of a collector street is approximately 15,000 vehicles per day.

Local Residential Streets. These streets serve adjacent residential land uses only, allowing access to residential driveways and providing on-street parking for neighborhoods. Local residential streets in Lancaster are designated as 42-foot roadways within a 60-foot right-of-way. These streets are not intended to serve through traffic traveling from one street to another. Traffic volumes on these streets should not exceed 2,500 vehicles per day and 200 to 300 vehicles per hour.

County of Los Angeles Classifications

Freeways/Expressways. The Freeway is the highest level of roadway in the planning area and accommodates regional and interstate travel. Freeways typically have a minimum 180-foot cross-section and at least four through lanes (two per direction). Freeways have limited access at interchanges and have a typical design capacity of over 2,000 vehicles per hour per lane.

Major Highways. The major highway is intended to accommodate the majority of traffic connecting between cities and communities in the region and the regional freeway system. Major highways have an ultimate design cross-section of at least four lanes (two in each direction) with medians and turn lanes at limited number of access points. The right-of-way for major highways is typically 100 feet. At their design capacity of LOS E, most major highways can carry between 49,500 and 54,000 vehicles per day. Also classified as major highways, are key inter-urban roads, non-urban access ways and recreational roads. While many of these may not be planned for urban-type improvements, the wider right-of-way is needed for other transportation uses including bus turnouts and separate bicycle and pedestrian facilities.

Secondary Highways. The secondary highway is primarily intended to serve through traffic and collect traffic from limited secondary highways and collectors. In rural areas, secondary highways also serve as connecting highways between non-urban communities or in locations where widening a roadway to major highway width is not practical. Secondary highways normally have a cross-section of four through lanes with limited access from cross streets and driveways. Medians and turn lanes at limited locations are usually provided when adequate right-of-way (80 feet is the desired width) is developed and traffic and/or safety conditions warrant. At LOS E, secondary highways can accommodate between 40,000 and 44,000 vehicles per day.

Limited Secondary Highways. Limited secondary highways are typically found in the foothills and mountain and canyon areas. Their primary function is to provide access to low-density settlements and recreational areas. The standard for this type of roadway is two through lanes in a 64-foot right-of-way. These roadways are undivided with possible turn lanes at major intersections, graded shoulders, and limited control of vehicular and pedestrian access from driveways, cross streets, and crosswalks. Limited secondary highways can accommodate between 22,000 and 24,000 vehicles per day at an acceptable level of service, however they are typically low-volume roads.

Parkways. Parkways are a type of County roadway that has at least an 80-foot right-of-way with four through lanes and turn lanes at primary intersections. Roadway improvements vary depending on the composition and volume of traffic carried. Parkways are so named because of their park-like features either within or adjacent to the roadway.

DESCRIPTION OF ROADWAYS

The existing roadway network in Lancaster and the sphere of influence is primarily designed in a north-south and east-west grid pattern with major and secondary arterials spaced at one mile and one-half mile intervals, respectively. Some of the major and secondary arterials within the City of Lancaster are discontinuous because construction is currently incomplete and many roadways are not built out to the full paved cross-section along the entire length. This is particularly problematic in the far western and eastern extensions of the City due to the irregular boundaries in these areas and because under the Los Angeles County Master Plan of Highways, major and secondary arterials are required to be improved only to rural street standards.

Regional Roadways

The Antelope Valley Freeway, State Route 14 (SR-14) is an important regional north-south transportation link to and from the Antelope Valley. SR-14 provides the primary regional connection between the City of Lancaster, City of Palmdale and the Santa Clarita Valley, as well as metropolitan Los Angeles, approximately 45 miles (75 vehicle-travel miles) to the south. SR-14 runs north to Kern County and then transitions to Interstate Highway 395 north of Inyokern. Highway 58 branches from SR-14 at Mojave to extend northwest to Bakersfield.

Various arterials in the City of Lancaster and the study area also serve regional functions. Avenue D (State Route 138) extends west from SR-14, and connects the Golden State Freeway (I-5) near the Ventura County border, and extends east from the City of Palmdale, connecting with (I-15). Avenue I becomes Lancaster Road at 110th Street West, and then proceeds northwest to intersect with Avenue D at 250th Street West. Sierra Highway links Lancaster with the community of Rosamond to the north and the City of Palmdale to the south. Sierra Highway continues south and connects to San Fernando Road in the northern San Fernando Valley. Consequently, Sierra Highway is commonly used as an alternate route to SR-14 by southbound commuters trying to connect to the San Fernando Valley. Similarly, mountain roads such as Soledad Canyon Road, Bouquet Canyon Road, and San Francisquito Canyon Road are utilized to travel from the Antelope Valley to Santa Clarita.

Major Arterials

Several of the major arterials in the City have connecting segments that vary in the number of operating lanes. Table 6-1, Description of Major Arterials, provides a detailed description of the existing major arterials and their limits within the study area.

Secondary Arterials

Table 6-2, Description of Secondary Arterials, provides a detailed description of the secondary arterials within the study area.

Table 6-1
Description of Major Arterials

Name	Total # of Lanes	Extends		Continuously Paved?	Paved	
		From	To		From	To
Avenue A	2	300th Street West	Division Street	N	170th Street West	Sierra Highway
Avenue B	2	280th Street West	Sierra Highway	N	110th Street West	90th Street West
					30th Street West	Sierra Highway
Avenue C	2	110th Street West	Division Street	N	110th Street West	85th Street West
					30th Street West	10th Street West
Avenue D	2	Sierra Highway	I-5	Y	Completely	
Avenue E	2	120th Street West	140th Street East	N	30th Street West	120th Street East
Avenue F	2	120th Street West	90th Street East	N	90th Street West	Sierra Highway
					Division Street	10th Street East
					50th Street East	90th Street East
Avenue G	2-6	110th Street West	120th Street East	N	110th Street West	90th Street East
Avenue H	2-7	120th Street West	120th Street East	N	90th Street West	140th Street East
Avenue I	2-8	120th Street West	120th Street East	Y	Completely	
Avenue J	2-6	110th Street West	170th Street East	Y	Completely	
Avenue K	2-6	110th Street West	160th Street East	Y	Completely	
Avenue L	2-6	90th Street West	120th Street East	N	90th Street West	30th Street East
					40th Street East	60th Street East
Columbia Way (Avenue M)	2-4	70th Street West	Challenger Way (10th Street East)	Y	Completely	
Avenue N	2	60th Street West	Sierra Hwy	Y	Completely	
110th Street West	2	Avenue A	Johnson Road	Y	Completely	
90th Street West	2	Avenue A	Avenue L	Y	Completely	
80th Street West	2	Avenue A	Avenue L	Y	North of Avenue A	
					Avenue D	Avenue G
					Avenue J	Avenue L
70th Street West	2	Avenue A	Avenue N	Y	Completely	
60th Street West	2-8	Avenue A	Avenue N	Y	Completely	
50th Street West	2-4	Avenue G	Avenue N	Y	Completely	
40th Street West	2-6	Avenue I	Avenue L-8	Y	Completely	
30th Street West	2-4	Avenue A	City of Palmdale	Y	Completely	
20th Street West	2-6	Avenue E	City of Palmdale	N	Avenue E	Avenue F
					South of Avenue H	
10th Street West	2-6	Avenue G	City of Palmdale	Y	Completely	
Sierra Highway	2-6	Mojave	I-5/SR-14 Interchange	Y	Completely	
Division Street	2-4	Avenue E	Avenue K-8	Y	Completely	
Challenger Way (10th Street East)	2-4	Avenue E	Avenue M	Y	Completely	
20th Street East	2-6	Avenue E	Avenue H	Y	Completely	
30th Street East	2-4	Avenue E	Plant 42	Y	Completely	
40th Street East	2-3	Avenue G	Avenue M	Y	Completely	
50th Street East	2	Avenue E	City of Palmdale	Y	Completely	
60th Street East	2	Avenue E	Avenue I	Y	Completely	

Table 6-1 [continued]
Description of Major Arterials

Name	Total # of Lanes	Extends		Continuously Paved?	Paved	
		From	To		From	To
70th Street East	2	Avenue E	City of Palmdale	Y	Completely	
80th Street East	2	Avenue H	Avenue I	Y	Completely	
90th Street East	2	Avenue E	City of Palmdale	Y	Completely	
110th Street East	2	Avenue H	Avenue J	Y	Completely	
120th Street East	2	Avenue I	Edwards Air Force Base	Y	Completely	

Table 6-2
Description of Secondary Arterials

Name	Total # of Lanes	Extends		Continuously Paved?	Paved	
		From	To		From	To
Avenue G-8	2	30th Street West	Fairgrounds	Y	Completely	
Avenue H-8	2-3	20th Street West	Sierra Highway	Y	Completely	
		Division Street	7th Street East	Y		
		15th Street East	20th Street East	Y		
		30th Street East	37th Street East	Y		
Lancaster Boulevard	2-4	35th Street West	50th Street East	N	Completely	
Avenue J-8	2-4	65th Street West	57Th Street East	N	Completely	
		50th Street West	37th Street West		Completely	
		36th Street West	12th Street West		Completely	
		Division Street	40th Street East		Challenger Way	25th St. East
					27th Street East	40th Street East
Avenue K-8	2-4	62nd Street West	57th Street West	N	Completely	
		35th Street West	10th Street West			
		Division Street	15th Street East			
		30th Street East	35th Street East			
Avenue L-8	2	77th Street West	70th Street West	Y	Completely	
		67th Street West	20th Street West	N	67th Street West	27th Street West
		10th Street West	6th Street West	Y	Completely	
Avenue M-8	2	70th Street West	30th Street West	N	70th Street West	35th Street West
65th Street West	2	Avenue L	Avenue M-8	Y	Completely	
55th Street West	2	Avenue L	Avenue N	Y	Completely	
45th Street West	2	Avenue J	Avenue L-14	Y	Completely	
		Quartz Hill Road	Avenue N-8			
35th Street West	2	Lancaster Boulevard	Avenue J-8	N	Completely	
		Avenue K-8	Avenue M			
		Avenue M-8	Avenue M-12			

Table 6-2 [continued]
Description of Secondary Arterials

Name	Total # of Lanes	Extends		Continuously Paved?	Paved	
		From	To		From	To
25th Street West	2-4	Lancaster Boulevard	Avenue L	Y	Completely	
		Avenue L-12	Avenue M			
15th Street West	2-4	Avenue H	Avenue K	N	Completely	
		Avenue K-8	Avenue L			
5th Street East	2-3	Avenue H-8	Avenue J-4	N	Completely	
		Avenue J-9	Avenue K-12			
15th Street East	2-4	Avenue H	Avenue K-8	N	Completely	
25th Street East	2	Avenue H-8	Avenue J-4	N	Completely	
		Avenue J-8	Avenue K			
35th Street East	2-3	Avenue K-8	Avenue J-8	N	Completely	
		Avenue H-8	Avenue I			

Collector and Local Street System

Collector streets are 44-foot roadways in 64-foot rights-of-way; local streets are 40-foot roadways in 60-foot rights-of-way. These roadways are distributed in various configurations and continuity throughout the City, between major and secondary arterials.

6.3 TRAVEL DEMAND FORECASTING MODEL

The City of Lancaster has had its own travel demand forecasting model since the early 1980s, which was completed as part of the City's previous Circulation Element. During the 1990s this model has undergone various improvements, enhancements and augmentations. These have included combined joint model development efforts with the City of Palmdale and the Southern California Association of Governments (SCAG) in the development of a broader, more comprehensive Antelope Valley Transportation Analysis Model (EAVTAM) model. The third generation of the EAVTAM is currently being re-calibrated for use in the General Plan update to include a new 2004 base year and 2030 socioeconomic data as provided by the 2004 SCAG Regional Transportation Plan. This latest version of the area-wide traffic model was developed in 1997 in a cooperative effort between the City of Lancaster, City of Palmdale and County of Los Angeles, with funding by SCAG. The model was derived from SCAG's regional traffic analysis model and is, therefore, able to provide travel demand forecasting that is compatible with the regional travel demand model.

6.4 EXISTING VOLUMES AND LEVELS OF SERVICE

Because General Plans generally evaluate circulation conditions on a macro scale, they typically do not analyze intersection operations or conditions during the peak periods of traffic. More detailed analyses are typically done as part of sub-area traffic plans or traffic analyses being completed for specific development projects and environmental evaluations. In addition, intersection performance can vary significantly between the morning and evening peak periods

as the flow of commuter traffic reverses direction. The Circulation Element of a General Plan Update typically evaluates and identifies the adequacy of the overall arterial system in terms of coverage, continuity and generalized traffic carrying capacity on a daily basis. Therefore, a more general planning measure is to review the operations of particular roadway segments in aggregate over the course of a typical day.

LEVEL OF SERVICE DEFINITIONS AND STANDARDS

Assessment of the volume and level of operation of selected corridors in the region is conducted biennially through the County's Congestion Management Program (CMP) process. In addition, other traffic volume data is collected by local agencies during other planning exercises and traffic studies conducted for development projects.

By statute, each CMP must include a performance element containing measures that evaluate current and future multimodal system performance for the movement of goods and people. The level of service indicators for the highway and roadway system is based on the volume of traffic for designated sections of roadway during a typical day and the practical vehicular capacity of that segment. These two measures for each monitored segment of the roadway system are expressed as a ratio. The volume-to-capacity ratio (V/C) is then converted to an alpha descriptor identifying operating conditions and expressed as a level of service, LOS A through LOS F. LOS A identifies the best operating conditions along a section of roadway and is characterized by free-flow traffic, low volumes, and little or no restrictions on maneuverability. LOS F characterizes forced traffic flow with high traffic densities, slow travel speeds, and often stop-and-go conditions. LOS standards in the County can be set no lower than LOS E or no lower than the current level of service and V/C ratio if the LOS is already below E. City of Lancaster has established LOS D as its criterion for an acceptable LOS.

Table 6-3, Level of Service Criteria, defines and describes the level of service criteria for roadway segments.

Table 6-3
Level of Service Criteria

Level of Service	Interpretation	Volume-to-Capacity Ratio
A	Free-flow speeds prevail. Vehicles are almost unimpeded in their ability to maneuver within the traffic stream	0.00 - 0.60
B	Reasonably free-flow speeds are maintained. The ability to maneuver within traffic is only slightly restricted.	0.61 - 0.70
C	Flow with speeds at or near free-flow speed of the roadway. Freedom to maneuver within the traffic stream is noticeably restricted and lane changes require more care and vigilance on the part of the driver.	0.71 - 0.80
D	Speeds begin to decline slightly with increasing flows. In this range, density begins to increase somewhat more quickly with increasing flow. Freedom to maneuver within the traffic stream is noticeably limited.	0.81 - 0.90
E	Operation at capacity with no usable gaps in the traffic stream. Any disruption to the traffic stream has little or no room to dissipate.	0.91 - 1.0
F	Breakdown of the of the traffic flow with long queues of traffic. Unacceptable conditions.	>1.0

Source: Los Angeles County MTA 2003 Congestion Management Program.

ROADWAY CAPACITIES

The capacity per lane for each roadway type can be defined for different analysis periods. For the average daily traffic along a roadway segment, the City of Lancaster has established the following capacities:

- 7,000 vehicles per lane (vpl) per day for secondary arterials; and
- 8,000 vpl per day for major arterials.

These capacity assumptions were used to calculate the LOS for the City's roadway segments which, are shown in Table 6-4, Existing Volumes and Level of Service.

Table 6-4
Existing Volumes and Level of Service

Roadway Section	Number of Lanes Combined	Type of Arterial	Volume	Capacity	V/C	LOS
Avenue E						
30th Street West to 25th Street West	2	Major	50	16,000	0.003	A
Avenue F						
70th Street West to 60th Street West	2	Major	1,400	16,000	0.088	A
60th Street West to 30th Street West	2	Major	1,200	16,000	0.075	A
30th Street West to 25th Street West	2	Major	1,200	16,000	0.075	A
Avenue G						
100th Street West to 90th Street West	2	Major	100	16,000	0.006	A
70th Street West to 60th Street West	2	Major	900	16,000	0.056	A
60th Street West to 50th Street West	2	Major	1,300	16,000	0.081	A
50th Street West to 30th Street West	2	Major	1,700	16,000	0.106	A
30th Street West to SR-14 Freeway	2	Major	2,000	16,000	0.125	A
SR-14 Freeway to 10th Street West	2	Major	1,900	16,000	0.119	A
10th Street West to Sierra Highway	2	Major	2,000	16,000	0.125	A
Sierra Highway to Division Street	2	Major	2,600	16,000	0.163	A
Avenue H						
70th Street West to 60th Street West	2	Major	500	16,000	0.031	A
60th Street West to 50th Street West	2	Major	1,400	16,000	0.088	A
50th Street West to 30th Street West	2	Major	1,700	16,000	0.106	A
30th Street West to SR-14 Freeway	2	Major	2,800	16,000	0.175	A
SR-14 Freeway to 20th Street West	2	Major	9,700	16,000	0.606	B
20th Street West to 15th Street West	2	Major	9,600	16,000	0.600	B
15th Street West to 10th Street West	3	Major	9,300	24,000	0.388	A
10th Street West to Sierra Highway	3	Major	9,000	24,000	0.375	A
Sierra Highway to Division Street	3	Major	8,800	24,000	0.367	A
Division Street to 10th Street East	2	Major	5,800	16,000	0.363	A
Challenger Way (10th Street East) to 20th Street East	2	Major	3,500	16,000	0.219	A
20th Street East to 30th Street East	2	Major	2,700	16,000	0.169	A
30th Street East to 40th Street East	2	Major	2,200	16,000	0.138	A

Table 6-4 [continued]
Existing Volumes and Level of Service

Roadway Section	Number of Lanes Combined	Type of Arterial	Volume	Capacity	V/C	LOS
Avenue I						
70th Street West to 60th Street West	2	Major	2,000	16,000	0.125	A
60th Street West to 50th Street West	2	Major	5,900	16,000	0.369	A
50th Street West to 40th Street West	2	Major	7,500	16,000	0.469	A
40th Street West to 30th Street West	2	Major	8,700	16,000	0.544	A
30th Street West to 27th Street West	8	Major	9,300	64,000	0.145	A
27th Street West to SR-14 Freeway	8	Major	12,000	64,000	0.188	A
SR-14 Freeway to 20th Street West	4	Major	24,100	32,000	0.753	C
20th Street West to 15th Street West	6	Major	27,200	48,000	0.567	A
15th Street West to 10th Street West	6	Major	27,700	48,000	0.577	A
10th Street West to Sierra Highway	6	Major	26,200	48,000	0.546	A
Sierra Highway to Yucca Avenue	4	Major	26,500	32,000	0.828	D
Yucca Avenue to Division Street	4	Major	24,000	32,000	0.750	C
Division Street to 5th Street East	6	Major	21,100	48,000	0.440	A
5th Street East to 15th Street East	4	Major	14,500	32,000	0.453	A
15th Street East to 20th Street East	4	Major	12,600	32,000	0.394	A
20th Street East to 30th Street East	4	Major	11,100	32,000	0.347	A
30th Street East to 40th Street East	4	Major	7,300	32,000	0.228	A
Lancaster Boulevard						
35th Street West to 30th Street West	4	Secondary	4,800	28,000	0.171	A
30th Street West to 25th Street West	4	Secondary	7,400	28,000	0.264	A
25th Street West to Valley Central Way	4	Secondary	9,500	28,000	0.339	A
Valley Central Way to 20th Street West	4	Secondary	14,500	28,000	0.518	A
20th Street West to 15th Street West	4	Secondary	19,700	28,000	0.704	C
15th Street West to 10th Street West	4	Secondary	17,300	28,000	0.618	B
10th Street West to Sierra Highway	4	Secondary	17,900	28,000	0.639	B
Sierra Highway to Yucca Avenue	4	Secondary	12,500	28,000	0.446	A
Yucca Avenue to Division Street	4	Secondary	2,500	28,000	0.089	A
Division Street to 5th Street East	4	Secondary	8,100	28,000	0.289	A
5th Street East to Challenger Way (10th Street East)	4	Secondary	8,900	28,000	0.318	A
Challenger Way (10th Street East) to 15th Street East	4	Secondary	5,200	28,000	0.186	A
15th Street East to 20th Street East	4	Secondary	6,000	28,000	0.214	A
20th Street East to 30th Street East	2	Secondary	8,200	14,000	0.586	A
30th Street East to 40th Street East	2	Secondary	6,600	14,000	0.471	A
40th Street East to 50th Street East	2	Secondary	4,400	14,000	0.314	A
Avenue J						
70th Street West to 60th Street West	3	Major	5,700	24,000	0.238	A
60th Street West to 50th Street West	3	Major	6,400	24,000	0.267	A
50th Street West to 40th Street West	3	Major	9,800	24,000	0.408	A
40th Street West to 35th Street West	4	Major	11,700	32,000	0.366	A
35th Street West to 30th Street West	5	Major	8,800	40,000	0.220	A
30th Street West to 25th Street West	6	Major	14,500	48,000	0.302	A
25th Street West to Valley Central Way	6	Major	19,900	48,000	0.415	A

Table 6-4 [continued]
Existing Volumes and Level of Service

Roadway Section	Number of Lanes Combined	Type of Arterial	Volume	Capacity	V/C	LOS
Avenue J (continued)						
Valley Central Way to SR-14 Freeway	6	Major	29,100	48,000	0.606	B
SR-14 Freeway to 20th Street West	6	Major	32,300	48,000	0.673	B
20th Street West to 15th Street West	6	Major	25,900	48,000	0.540	A
15th Street West to 10th Street West	5	Major	25,900	40,000	0.648	B
10th Street West to Sierra Highway	6	Major	21,200	48,000	0.442	A
Sierra Highway to Division Street	6	Major	31,600	48,000	0.658	B
Division Street to 5th Street East	4	Major	30,300	32,000	0.947	E
5th Street East to Challenger Way (10th Street East)	4	Major	25,600	32,000	0.800	D
Challenger Way (10th Street East) to 15th Street East	5	Major	23,200	40,000	0.580	A
15th Street East to 20th Street East	5	Major	15,800	40,000	0.395	A
20th Street East to 30th Street East	3	Major	9,700	24,000	0.404	A
30th Street East to 40th Street East	2	Major	8,400	16,000	0.525	A
40th Street East to 50th Street East	2	Major	7,100	16,000	0.444	A
Avenue J-8						
35th Street West to 30th Street West	4	Secondary	8,800	28,000	0.314	A
30th Street West to 25th Street West	4	Secondary	8,500	28,000	0.304	A
25th Street West to 15th Street West	4	Secondary	13,200	28,000	0.471	A
15th Street West to 10th Street West	2	Secondary	11,600	14,000	0.829	D
5th Street East to Challenger Way (10th Street East)	2	Secondary	2,100	14,000	0.150	A
Challenger Way (10th Street East) to 15th Street East	3	Secondary	3,700	21,000	0.176	A
15th Street East to 20th Street East	4	Secondary	2,700	28,000	0.096	A
20th Street East to 25th Street East	2	Secondary	2,400	14,000	0.171	A
Avenue K						
70th Street West to 60th Street West	2	Major	1,500	16,000	0.094	A
60th Street West to 50th Street West	2	Major	5,700	16,000	0.356	A
50th Street West to 45th Street West	2	Major	7,100	16,000	0.444	A
42nd Street West to 40th Street West	2	Major	9,900	16,000	0.619	B
40th Street West to 35th Street West	4	Major	14,300	32,000	0.447	A
35th Street West to 30th Street West	6	Major	21,000	48,000	0.438	A
30th Street West to 25th Street West	6	Major	23,200	48,000	0.483	A
25th Street West to 20th Street West	6	Major	26,000	48,000	0.542	A
20th Street West to 15th Street West	6	Major	27,600	48,000	0.575	A
15th Street West to 10th Street West	6	Major	28,800	48,000	0.600	B
10th Street West to Sierra Highway	6	Major	28,300	48,000	0.590	A
Sierra Highway to Division Street	6	Major	30,100	48,000	0.627	B
Division Street to 5th Street East	6	Major	22,900	48,000	0.477	A
5th Street East to Challenger Way (10th Street East)	5	Major	23,100	40,000	0.578	A
Challenger Way (10th Street East) to 15th Street East	6	Major	22,200	48,000	0.463	A
15th Street East to 20th Street East	6	Major	13,400	48,000	0.279	A
20th Street East to 25th Street East	4	Major	10,600	32,000	0.331	A
25th Street East to 30th Street East	4	Major	9,400	32,000	0.294	A
30th Street East to 35th Street East	5	Major	7,700	40,000	0.193	A

Table 6-4 [continued]
Existing Volumes and Level of Service

Roadway Section	Number of Lanes Combined	Type of Arterial	Volume	Capacity	V/C	LOS
Avenue K (continued)						
35th Street East to 40th Street East	2	Major	7,300	16,000	0.456	A
40th Street East to 50th Street East	2	Major	5,100	16,000	0.319	A
Avenue K-8						
35th Street West to 30th Street West	3	Secondary	3,500	21,000	0.167	A
30th Street West to 25th Street West	3	Secondary	7,200	21,000	0.343	A
25th Street West to 20th Street West	3	Secondary	7,900	21,000	0.376	A
20th Street West to 15th Street West	4	Secondary	9,800	28,000	0.350	A
15th Street West to 10th Street West	2	Secondary	9,500	14,000	0.679	B
Division Street to 5th Street East	2	Secondary	1,700	14,000	0.121	A
5th Street East to Challenger Way (10th Street East)	2	Secondary	900	14,000	0.064	A
30th Street East to 35th Street East	3	Secondary	1,000	21,000	0.048	A
Avenue L						
70th Street West to 60th Street West	2	Major	4,400	16,000	0.275	A
60th Street West to 50th Street West	3	Major	11,500	24,000	0.479	A
42nd Street West to 35th Street West	4	Major	22,700	32,000	0.709	C
35th Street West to 30th Street West	4	Major	24,800	32,000	0.775	C
30th Street West to 25th Street West	4	Major	30,500	32,000	0.953	E
25th Street West to 20th Street West	4	Major	29,100	32,000	0.909	E
20th Street West to 15th Street West	5	Major	29,600	40,000	0.740	C
15th Street West to 10th Street West	6	Major	33,200	48,000	0.692	B
10th Street West to Sierra Highway	6	Major	29,600	48,000	0.617	B
Sierra Highway to Business Center Parkway	6	Major	26,500	48,000	0.552	A
Business Center Parkway to Challenger Way (10th Street East)	4	Major	15,400	32,000	0.481	A
Challenger Way (10th Street East) to 20th Street East	2	Major	6,800	16,000	0.425	A
20th Street East to 30th Street East	2	Major	3,700	16,000	0.231	A
Avenue L-8						
70th Street West to 60th Street West	4	Secondary	3,600	28,000	0.129	A
60th Street West to 55th Street West	3	Secondary	4,800	21,000	0.229	A
40th Street West to 35th Street West	2	Secondary	3,900	14,000	0.279	A
35th Street West to 30th Street West	2	Secondary	3,300	14,000	0.236	A
Columbia Way (Avenue M)						
70th Street West to 60th Street West	3	Major	5,500	24,000	0.229	A
57th Street West to 55th Street West	2	Major	5,700	16,000	0.356	A
45th Street West to 40th Street West	2	Major	9,600	16,000	0.600	B
40th Street West to 35th Street West	2	Major	9,500	16,000	0.594	A
35th Street West to 30th Street West	2	Major	10,000	16,000	0.625	B
30th Street to 20th Street West	2	Major	11,200	16,000	0.700	C
20th Street West to SR-14 Freeway	2	Major	8,500	16,000	0.531	A
SR-14 Freeway to 10th Street West	2	Major	19,200	16,000	1.200	F
10th Street West to Sierra Highway	4	Major	21,100	32,000	0.659	B
Sierra Highway to Business Center Parkway	4	Major	23,400	32,000	0.731	C
Business Center Parkway to Challenger Way (10th Street East)	4	Major	17,900	32,000	0.559	A

Table 6-4 [continued]
Existing Volumes and Level of Service

Roadway Section	Number of Lanes Combined	Type of Arterial	Volume	Capacity	V/C	LOS
Avenue N						
45th Street West to 40th Street West	2	Secondary	7,300	14,000	0.521	A
40th Street West to 30th Street West	2	Secondary	9,100	14,000	0.650	B
70th Street West						
Avenue E to Avenue G	2	Major	200	16,000	0.013	A
Avenue G to Avenue H	2	Major	400	16,000	0.025	A
Avenue H to Avenue I	2	Major	1,200	16,000	0.075	A
Avenue I to Avenue J	2	Major	1,000	16,000	0.063	A
Avenue J to Avenue K	2	Major	1,700	16,000	0.106	A
Avenue K to Avenue L	2	Major	2,900	16,000	0.181	A
Avenue L to Avenue L-8	2	Major	4,200	16,000	0.263	A
Avenue L-8 to Columbia Way (Avenue M)	2	Major	2,100	16,000	0.131	A
60th Street West						
Avenue E to Avenue F	2	Major	1,600	16,000	0.100	A
Avenue F to Avenue G	2	Major	1,900	16,000	0.119	A
Avenue G to Avenue H	2	Major	1,600	16,000	0.100	A
Avenue H to Avenue I	2	Major	2,600	16,000	0.163	A
Avenue I to Avenue J	3	Major	5,500	24,000	0.229	A
Avenue J to Avenue K	5	Major	5,900	40,000	0.148	A
Avenue K to Avenue L	3	Major	8,000	24,000	0.333	A
Avenue L to Avenue L-8	3	Major	11,400	24,000	0.475	A
Avenue L-8 to Columbia Way (Avenue M)	4	Major	8,900	32,000	0.278	A
50th Street West						
Avenue G to Avenue H	2	Major	500	16,000	0.031	A
Avenue H to Avenue I	2	Major	1,100	16,000	0.069	A
Avenue I to Avenue J	3	Major	2,400	24,000	0.100	A
Avenue J to Avenue K	3	Major	5,700	24,000	0.238	A
Avenue K to Avenue K-8	2	Major	8,700	16,000	0.544	A
40th Street West						
Avenue I to Avenue J	2	Major	1,700	16,000	0.106	A
Avenue J to Avenue K	5	Major	6,700	40,000	0.168	A
Avenue K to Avenue L	4	Major	11,800	32,000	0.369	A
Avenue L to Avenue L-8	2	Major	2,500	16,000	0.156	A
Avenue L-8 to Avenue L-12	2	Major	400	16,000	0.025	A
35th Street West						
Lancaster Boulevard to Avenue J	2	Secondary	1,500	14,000	0.107	A
Avenue J to Avenue J-8	2	Secondary	1,900	14,000	0.136	A
Avenue K-8 to Avenue L	2	Secondary	1,900	14,000	0.136	A
Avenue L to Avenue L-8	2	Secondary	1,800	14,000	0.129	A
Avenue L-8 to Columbia Way (Avenue M)	2	Secondary	1,900	14,000	0.136	A
30th Street West						
Avenue E to Avenue F	2	Major	100	16,000	0.006	A
Avenue F to Avenue G	2	Major	300	16,000	0.019	A

Table 6-4 [continued]
Existing Volumes and Level of Service

Roadway Section	Number of Lanes Combined	Type of Arterial	Volume	Capacity	V/C	LOS
30th Street West (continued)						
Avenue G to Avenue H	4	Major	500	32,000	0.016	A
Avenue H to Avenue I	4	Major	2,700	32,000	0.084	A
Avenue I to Lancaster Boulevard	4	Major	5,500	32,000	0.172	A
Lancaster Boulevard to Avenue J	4	Major	9,600	32,000	0.300	A
Avenue J to Avenue J-8	4	Major	9,400	32,000	0.294	A
Avenue J-8 to Avenue K	4	Major	16,900	32,000	0.528	A
Avenue K to Avenue K-8	4	Major	18,800	32,000	0.588	A
Avenue K-8 to Avenue L	4	Major	13,100	32,000	0.409	A
Avenue L to Avenue L-8	3	Major	15,000	24,000	0.625	B
Avenue L-8 to Columbia Way (Avenue M)	2	Major	13,900	16,000	0.869	D
Columbia Way (Avenue M) to Avenue N	2	Major	10,000	16,000	0.625	B
27th Street West						
Avenue I to Lancaster Boulevard	4	Secondary	700	28,000	0.025	A
25th Street West						
Lancaster Boulevard to Avenue J	4	Secondary	5,500	28,000	0.196	A
Avenue J to Avenue J-8	4	Secondary	8,500	28,000	0.304	A
Avenue J-8 to Avenue K	4	Secondary	6,000	28,000	0.214	A
Avenue K to Avenue K-8	2	Secondary	4,500	14,000	0.321	A
Avenue K-8 to Avenue L	4	Secondary	3,000	28,000	0.107	A
Valley Central Way						
Avenue I to Lancaster Boulevard	4	Secondary	6,800	28,000	0.243	A
Lancaster Boulevard to Avenue J	4	Secondary	11,500	28,000	0.411	A
SR-14 On Ramp						
Avenue J-6 to Avenue J-8	2	Secondary	9,400	14,000	0.671	B
20th Street West						
Avenue H to Avenue I	4	Major	6,200	32,000	0.194	A
Avenue I to Lancaster Boulevard	4	Major	9,600	32,000	0.300	A
Lancaster Boulevard to Avenue J	4	Major	19,600	32,000	0.613	B
Avenue J to Avenue J-8	6	Major	32,700	48,000	0.681	B
Avenue J-8 to Avenue J-12	6	Major	20,800	48,000	0.433	A
Avenue J-12 to Avenue K	6	Major	18,100	48,000	0.377	A
Avenue K to Avenue K-8	6	Major	15,500	48,000	0.323	A
Avenue K-8 to Avenue L	4	Major	14,200	32,000	0.444	A
Avenue L to Columbia Way (Avenue M)	2	Major	8,000	16,000	0.500	A
17th Street West						
Avenue J-12 to Avenue K	2	Secondary	5,400	14,000	0.386	A
Avenue K to Avenue K-8	2	Secondary	5,600	14,000	0.400	A
15th Street West						
Avenue H to Avenue I	2	Secondary	2,900	14,000	0.207	A
Avenue I to Lancaster Boulevard	4	Secondary	6,300	28,000	0.225	A
Lancaster Boulevard to Avenue J	4	Secondary	11,700	28,000	0.418	A

Table 6-4 [continued]
Existing Volumes and Level of Service

Roadway Section	Number of Lanes Combined	Type of Arterial	Volume	Capacity	V/C	LOS
15th Street West (continued)						
Avenue J to Avenue K	4	Secondary	20,100	28,000	0.718	C
Avenue K-2 to Avenue K-8	2	Secondary	1,200	14,000	0.086	A
Avenue K-8 to Avenue L	2	Secondary	6,300	14,000	0.450	A
10th Street West						
Avenue G to Avenue H	2	Major	500	16,000	0.031	A
Avenue H to Avenue I	4	Major	8,200	32,000	0.256	A
Avenue I to Lancaster Boulevard	5	Major	18,800	40,000	0.470	A
Lancaster Boulevard to Avenue J	6	Major	23,900	48,000	0.498	A
Avenue J to Avenue J-8	6	Major	28,600	48,000	0.596	A
Avenue J-8 to Avenue K	5	Major	26,900	40,000	0.673	B
Avenue K to Commerce Center Drive	6	Major	30,900	48,000	0.644	B
Commerce Center Drive to Avenue K-8	6	Major	30,100	48,000	0.627	B
Avenue K-8 to Avenue L	6	Major	28,600	48,000	0.596	A
Avenue L to Columbia Way (Avenue M)	3	Major	25,800	24,000	1.075	F
Gadsden Avenue						
Avenue K to Avenue K-8	2	Secondary	2,900	14,000	0.207	A
Sierra Highway						
Avenue G to Avenue H	2	Major	4,300	16,000	0.269	A
Avenue H to Avenue I	3	Major	4,600	24,000	0.192	A
Avenue I to Lancaster Boulevard	5	Major	6,000	40,000	0.150	A
Lancaster Boulevard to Avenue J	4	Major	13,200	32,000	0.413	A
Avenue J to Avenue J-8	4	Major	23,900	32,000	0.747	C
Avenue K to Avenue L	4	Major	22,100	32,000	0.691	B
Avenue L to Columbia Way (Avenue M)	4	Major	23,800	32,000	0.744	C
Yucca Avenue						
Avenue I to Lancaster Boulevard	4	Secondary	1,900	28,000	0.068	A
Lancaster Boulevard to Milling Street	4	Secondary	6,400	28,000	0.229	A
Division Street						
Avenue G to Avenue H	2	Major	2,900	16,000	0.181	A
Avenue H to Avenue H-8	2	Major	5,000	16,000	0.313	A
Avenue H-8 to Avenue I	4	Major	5,200	32,000	0.163	A
Avenue I to Lancaster Boulevard	4	Major	8,300	32,000	0.259	A
Lancaster Boulevard to Avenue J	4	Major	13,700	32,000	0.428	A
Avenue J to Avenue K	4	Major	16,400	32,000	0.513	A
Avenue K to Avenue K-8	4	Major	14,100	32,000	0.441	A
Business Center Parkway						
Avenue K-8 to Avenue L	4	Secondary	14,300	28,000	0.511	A
5th Street East						
Avenue H-8 to Avenue I	2	Secondary	3,500	14,000	0.250	A
Avenue I to Avenue J	2	Secondary	4,300	14,000	0.307	A
Avenue J to Avenue J-8	2	Secondary	1,800	14,000	0.129	A
Avenue J-8 to Avenue K	2	Secondary	2,600	14,000	0.186	A

Table 6-4 [continued]
Existing Volumes and Level of Service

Roadway Section	Number of Lanes Combined	Type of Arterial	Volume	Capacity	V/C	LOS
5th Street East (continued)						
Avenue K to Avenue K-8	2	Secondary	4,000	14,000	0.286	A
Challenger Way (10th Street E)						
Avenue H to Avenue I	2	Major	3,800	16,000	0.238	A
Avenue I to Lancaster Boulevard	4	Major	10,100	32,000	0.316	A
Lancaster Boulevard to Avenue J	4	Major	8,400	32,000	0.263	A
Avenue J to Avenue J-8	4	Major	18,400	32,000	0.575	A
Avenue J-8 to Avenue K	4	Major	19,600	32,000	0.613	B
Avenue K to Avenue K-8	4	Major	12,800	32,000	0.400	A
Avenue K-8 to Avenue L	4	Major	14,400	32,000	0.450	A
Avenue L to Columbia Way (Avenue M)	2	Major	5,700	16,000	0.356	A
15th Street East						
Avenue H-8 to Avenue I	2	Secondary	2,100	14,000	0.150	A
Avenue I to Lancaster Boulevard	4	Secondary	4,500	28,000	0.161	A
Lancaster Boulevard to Avenue J	4	Secondary	5,800	28,000	0.207	A
Avenue J to Avenue J-8	4	Secondary	6,200	28,000	0.221	A
Avenue J-8 to Avenue K	4	Secondary	4,900	28,000	0.175	A
Avenue K to Avenue K-8	4	Secondary	400	28,000	0.014	A
20th Street East						
Avenue H to Avenue I	2	Major	800	16,000	0.050	A
Avenue I to Lancaster Boulevard	2	Major	900	16,000	0.056	A
Lancaster Boulevard to Avenue J	4	Major	8,200	32,000	0.256	A
Avenue J to Avenue J-8	4	Major	13,300	32,000	0.416	A
Avenue J-8 to Avenue K	4	Major	10,300	32,000	0.322	A
Avenue K to Avenue L	2	Major	6,100	16,000	0.381	A
30th Street East						
Avenue H to Avenue I	2	Major	3,300	16,000	0.206	A
Avenue I to Lancaster Boulevard	3	Major	4,300	24,000	0.179	A
Lancaster Boulevard to Avenue J	2	Major	5,100	16,000	0.319	A
Avenue J to Avenue K	4	Major	3,200	32,000	0.100	A
Avenue K to Avenue L	3	Major	4,000	24,000	0.167	A
35th Street East						
Avenue K to Avenue K-8	2	Secondary	1,400	14,000	0.100	A
40th Street East						
Avenue H to Avenue I	2	Major	300	16,000	0.019	A
Avenue I to Lancaster Boulevard	2	Major	1,200	16,000	0.075	A
Lancaster Boulevard to Avenue J	2	Major	3,000	16,000	0.188	A
Avenue J to Avenue K	2	Major	3,500	16,000	0.219	A
Avenue K to Avenue L	2	Major	900	16,000	0.056	A
50th Street East						
Lancaster Boulevard to Avenue J	2	Major	3,700	16,000	0.231	A
Avenue J to Avenue K	2	Major	3,800	16,000	0.238	A
Avenue K to Avenue L	2	Major	6,100	16,000	0.381	A

ROADWAY CONDITIONS – DAILY

Table 6-4 lists the latest daily volumes, capacities and V/C ratios for 284 selected key segments of County and municipal roadways as identified by the study. Figure 6-3, Existing Daily Traffic Volumes, illustrates the average daily traffic volumes for each of the roadway segments. Traffic count data was assembled from field traffic counts conducted in January 2005.

The data indicates that a vast majority of the City's arterial segments are operating at free-flow LOS A conditions, with only a limited number of segments at LOS B, C or D, which are acceptable operating conditions. Only five of the 284 segments are currently operating at an unacceptable LOS (LOS E or F) according to City of Lancaster's standards. These segments are:

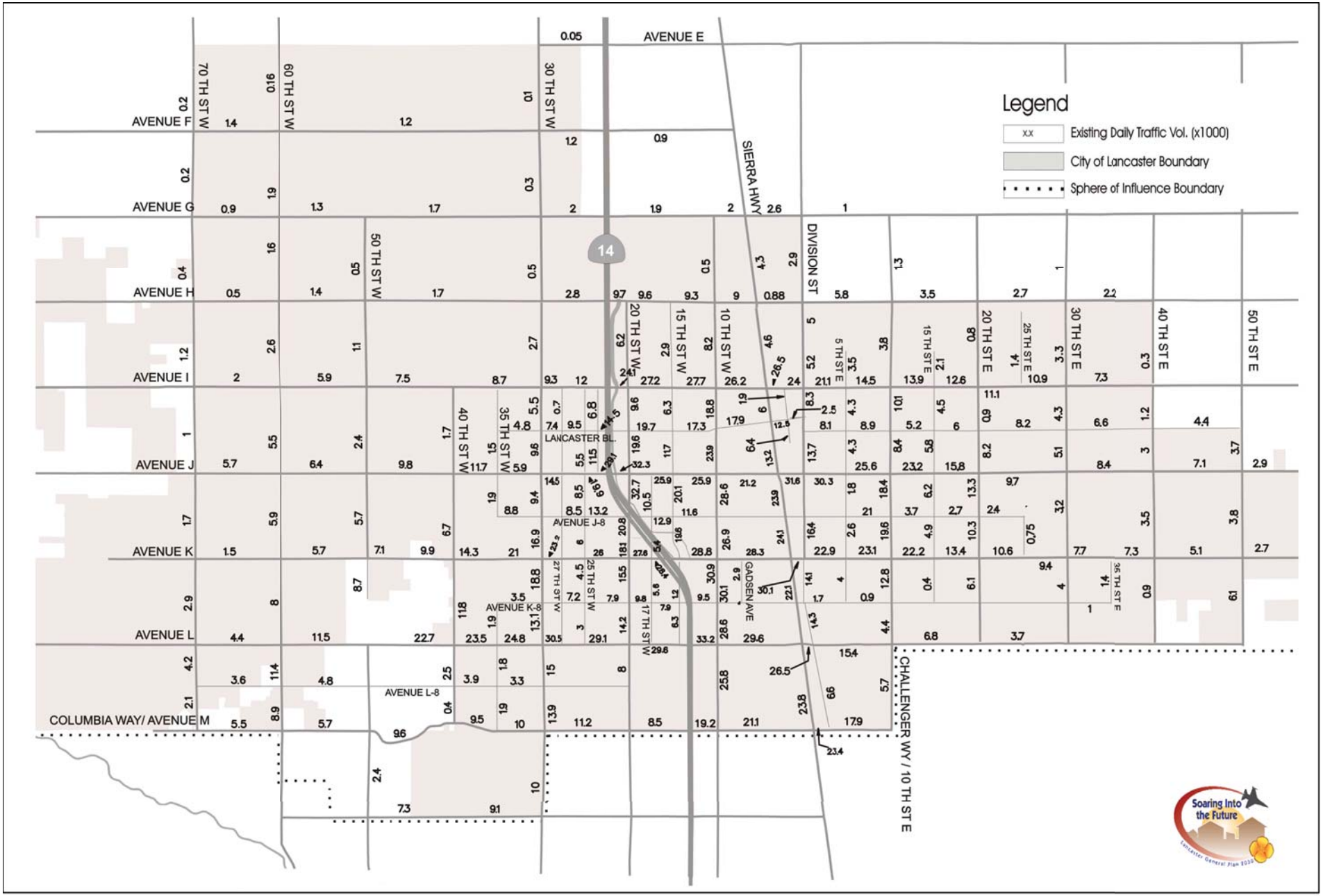
- Avenue J between Division Street and 5th Street East (LOS E);
- Avenue L between 30th Street West and 25th Street West (LOS E);
- Avenue L between 25th Street West and 20th Street West (LOS E);
- Avenue M between SR-14 and 10th Street West (LOS F); and
- 10th Street West between Avenue L and Avenue M (LOS F).

6.5 TRAFFIC SIGNALS AND INTELLIGENT TRANSPORTATION SYSTEMS

One method for improving the capacity of existing streets and highway without extensive lane widening is the development of an Intelligent Transportation System (ITS), or what is often referred to as "Smart Roads." These types of system alternatives include traffic signals that can monitor traffic flow and adjust to the needs of traffic to reduce unnecessary delay. Driver information systems can provide motorists with information on changing road conditions to allow them to avoid congested locations and use less congested alternative routes. Another alternative are video monitors so that intersections and roadway segments can be monitored to identify developing conditions and identify potential problem conditions.

The Traffic Engineering Section of the Engineering Division of the City's Public Works Department is responsible for all traffic engineering services within the City of Lancaster. Services include the design and approval of all traffic control devices such as signs, striping, markings and traffic signals, the preparation and review of traffic studies, transportation planning and responding to citizen requests.

The City has a total of 132 traffic signals, which are controlled individually. Nineteen more signals are programmed and 267 others are planned for the future. There is an existing Traffic Operations Center; however, it is not currently operating due to low staff levels. The City has implemented various intelligent technologies, as funding has become available during the past decades, and will continue to do so. As technology improvements reduce the cost of these technologies, more systems will find their way onto area streets and highways. The City has plans to coordinate and re-time all the signals in the near future.



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Lancaster General Plan 2030

Existing Daily Traffic Volumes

Figure 6-3

6.6 TRIP REDUCTION AND TRAVEL DEMAND MEASURES

The City of Lancaster, through Municipal Code Section 15.56.030, has established a Transportation Demand Management (TDM) program. Per this program, prior to approval of any development project, applicants are required to make provisions for, at a minimum, all of the following applicable transportation demand management and trip reduction measures:

Nonresidential developments of 25,000 square feet (s.f.) or more are to provide:

- A bulletin board, display case, or kiosk displaying transportation information located in a highly visible place. Information in the area is to include, but is not limited to, the following:

  - Current maps, routes and schedules for public transit routes serving the site;
  - Telephone numbers for referrals on transportation information including numbers for the regional ridesharing agency and local transit operators;
  - Ridesharing promotional material supplied by commuter-oriented organizations;
  - Bicycle routes and facility information, including regional/local bicycle maps and bicycle safety information; and
  - A listing of activities available for carpoolers, vanpools, bicyclists, transit riders and pedestrians at the site.

Nonresidential development of 50,000 s.f. or more shall comply with the above requirements and shall provide:

- Not less than 10 percent of employee parking area shall be located as close as is practical to the employee entrance(s), and shall be reserved for use by potential carpool/vanpool parking vehicles, without displacing handicapped and customer parking needs. Spaces will be signed/striped as demand warrants; provided that at all times at least one space for projects between 50,000 s.f. and 100,000 s.f. and two spaces for projects over 100,000 s.f. will be signed/striped for carpool/vanpool vehicles;

- Preferential parking spaces reserved for vanpools must be accessible to vanpool vehicles; and

- Bicycle racks or other secure bicycle parking shall be provided to accommodate four bicycles per the first 50,000 s.f. of nonresidential development and one bicycle per each additional 50,000 s.f. of nonresidential development. A bicycle parking facility may also be a fully enclosed space or locker accessible only to the owner or operator of the bicycle, which protects the bike from inclement weather.

Nonresidential development of one 100,000 s.f. or more is to comply with the above provisions and shall provide:

- A safe and convenient zone in which vanpool and carpool vehicles may deliver or board their passengers;

- Sidewalks or other designated pathways following direct and safe routes from the external pedestrian circulation system to each building in the development;

- If determined necessary by the city to mitigate the project impact, bus stop improvements must be provided; and

- Safe and convenient access from the external circulation system to bicycle parking facilities on-site.

Nonresidential developments of all sizes are to provide:

- A bulletin board, display case or kiosk displaying transportation information located in the main sales office where it is highly visible. Information in the area shall include, but is not limited to the following:

    - Current maps, routes and schedules for public transit routes serving the site;
    - Telephone number for referrals on transportation information including numbers for the regional ridesharing agency and local transit operators;
    - Ridesharing promotional material supplied by commuter-oriented organizations;
    - Bicycle route and facility information, including regional/local bicycle maps and bicycle safety information; and
    - A listing of activities available for carpoolers, vanpools, bicyclists, transit riders and pedestrians at the site.

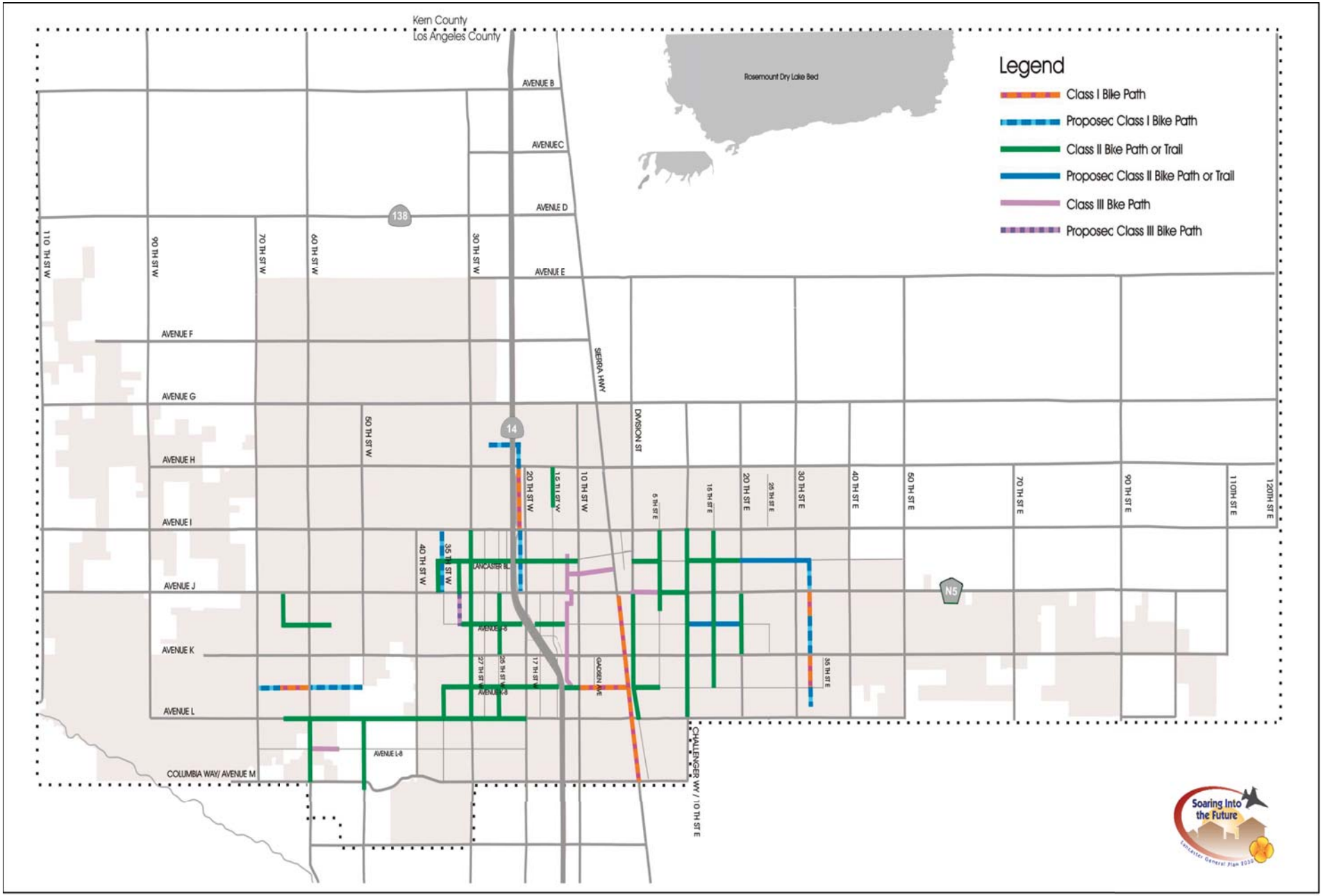
Monitoring to ensure compliance with this program occurs prior to issuance of a certificate of occupancy.

6.7 BIKEWAYS AND TRAILS

Bicycling as a transportation mode can play an increasingly significant role as an alternative to the single-occupant automobile. U.S. Census 2000 indicated that approximately 2.13 percent of all trips made in Los Angeles County at that time were made by bicycle. Furthermore, the Los Angeles County Metropolitan Transportation Authority's (Metro) most recent Long Range Transportation Plan indicates that approximately 2.4 percent of all trips in the County are made by bicycle with a goal of five percent by 2025. While bicycle trips are significantly higher in the urban areas of the County, the role that bicycling and walking can play in developing suburban areas as an alternative mode can be significant.

CITY OF LANCASTER BICYCLE PLAN

The City of Lancaster currently has Class I, II, and III facilities on segments of many streets. Figure 6-4, Existing and Proposed Bicycle Routes and Trails, illustrates the existing and proposed bike lanes and trails within the study area. Class I bikeways provide a separate right-of-way (outside the pavement used for automobiles) for bicycles and other uses. Class II bikeways provide a restricted right-of-way for bicycles, which is most often in the form of a painted line and signs on the road. Motor vehicles are allowed to enter the bike lane when making turns within 200 feet of an intersection and to park when permitted. Class III bikeways allow for sharing of a travel lane by motor vehicles and bicycles and are indicated only by signs.



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Existing and Proposed Bicycle Routes and Trails

Figure 6-4

REGIONAL BICYCLE PLANNING

Los Angeles Metro recently approved two companion transportation planning documents to improve mobility in the region through the use of bicycles: the Metro *Bicycle Transportation Strategic Plan* (BTSP) and the *Bicycle Transportation Account Compliance Document* (BTA Document). The BTSP includes policy recommendations, identification and evaluation of bike-transit hubs, development of Bike Transit Access Plans (BTAP), system gap identification, and incentive creation. The BTA document contains local information and serves three purposes: (1) helps local agencies establish funding eligibility for the State Bicycle Transportation Account (BTA) program, (2) provides Metro with an inventory and mapping of existing and proposed bicycle facilities in the County, an estimate of ridership, and future local needs, and (3) provides information for production of a public bike map. Lancaster's Metrolink Station was identified in the BTSP as a Bike-Transit Hub.

In order to be eligible for BTA grant funds, a city or county must have an adopted Bicycle Transportation Plan (BTP) that is no more than five years old and that addresses items (a – k) in Streets and Highways Code Section 891.2. If a city plans to use the countywide BTP to establish their eligibility for BTA funds, the countywide BTP must include a discussion of items (a – k) for that agency.

TRAILS

The City's Parks and Recreation Department is working with the City's Public Works and Planning Department to create a trails system in Lancaster. A new Parks, Recreation and Arts Master Plan effort is currently underway. Two of Lancaster's parks have trails: Amargosa Creek Linear Park and the Prime Desert Woodland Preserve. Additionally there are some multi-use trails, however these trails do not function as a cohesive system as they lack connectivity and do not lead to any specific destinations; refer to Figure 6-4.

6.8 PARKING FACILITIES

PARKING STANDARDS

The City of Lancaster has revised its parking standards on several occasions since the City's incorporation to more adequately attend to parking needs as land use changes occur. When the City incorporated in 1977, it adopted the Los Angeles County Zoning Ordinance, which included parking standards. Finding the standards were not sufficient to accommodate new development, the City revised its office/commercial parking standards. The City also has revised residential standards, specifically high-density residential uses such as apartments. In general, multi-family residents in Lancaster tend to be more auto-dependant and have higher auto-ownership rates. The City linked parking standards to number of bedrooms in order to provide enough parking for such uses.

A change in the nature of industrial development also led the City to change its parking standards. Heavy manufacturing was slowly replaced by a combination of research and development, office and warehouse uses. The City updated its parking requirements to reflect this change.

Further changes in parking requirements were made to provide flexibility in parking lot design, and to provide spaces for bicycles and alternative fuel vehicles and more compact cars. The

City's parking requirements for each land use can be found in Chapter 17 of the *Municipal Code*.

DOWNTOWN PARKING

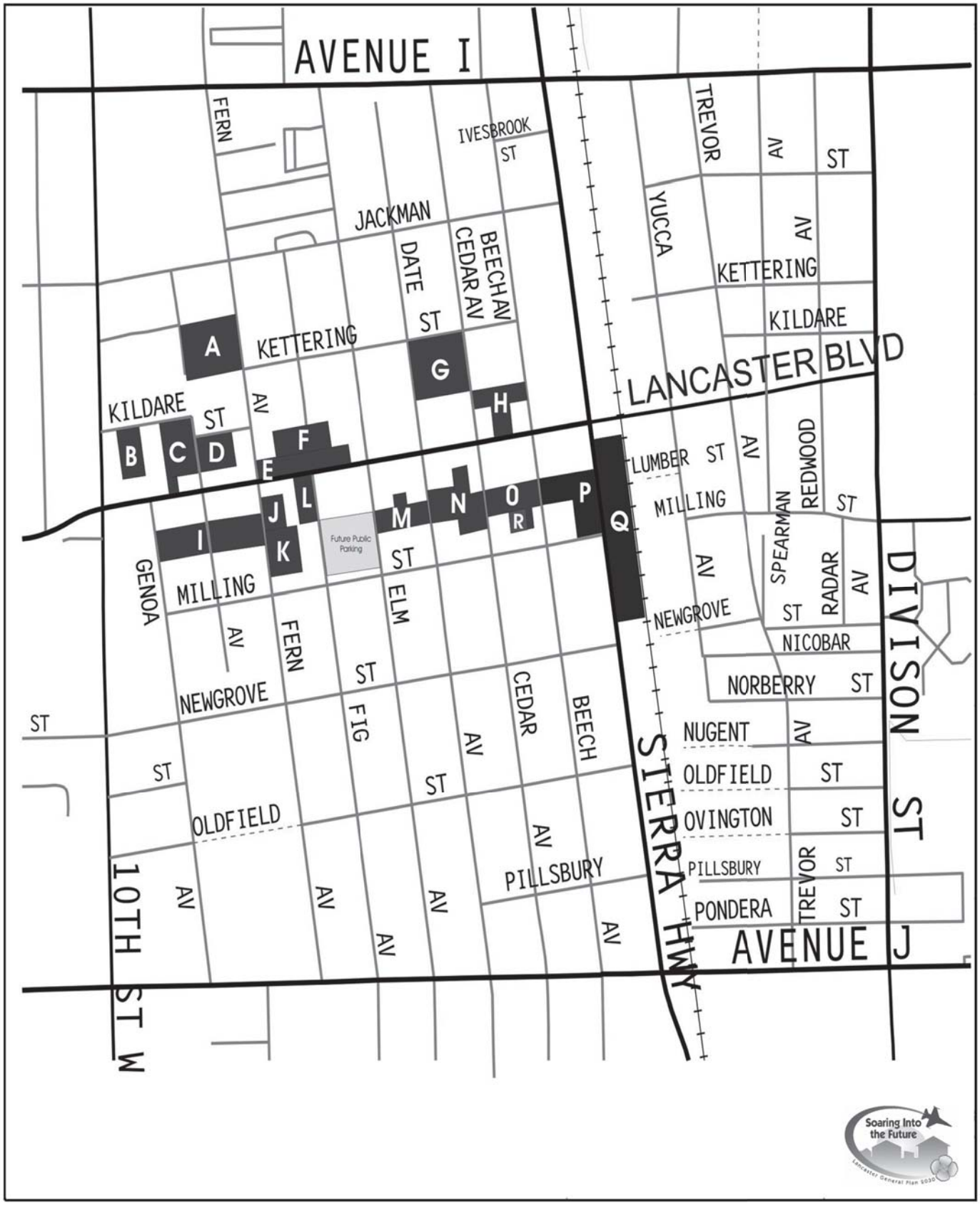
The need for on-street parking depends upon the ability of parking lots and other forms of off-street parking to accommodate parking demand. The only area in the City that currently relies on on-street parking is the downtown. The City has developed several parking lots to serve the downtown parking needs. Table 6-5, Downtown Parking Facilities, provides an overview of the existing downtown parking facilities. Figure 6-5, Downtown Parking Facilities, illustrates the locations of the downtown parking facilities outlined in Table 6-5.

Table 6-5
Downtown Parking Facilities

Site	Location	Spaces
a	City Hall, west side of Fern Avenue, north of Lancaster Boulevard	243
b	South side of Kildare Street, east of 10th Street West	46
c	Southwest corner of Kildare Street and Gadsden Avenue	84
d	Southwest corner of Gadsden Avenue and Kildare Street	44
e	East side of Fern Avenue, north side of Lancaster Boulevard	127
f	Between Elm Avenue and Fern Avenue, north of Lancaster Boulevard	60
g	Los Angeles County Library, Cedar Avenue to Date Avenue	230
h	Beech Avenue to Cedar Avenue, north side of Lancaster Boulevard	54
i	Fern Avenue to Genoa Avenue, south of Lancaster Boulevard	223
j	East side of Fern Avenue, south of Lancaster Boulevard	18
k	East side of Fern Avenue, south of Lancaster Boulevard	72
l	Southwest corner of Fig Avenue and Lancaster Boulevard	36
m	Date Avenue to Elm Avenue, south of Lancaster Boulevard	32
n	Cedar Avenue to Date Avenue, south of Lancaster Boulevard	132
o	Beech Avenue to Cedar Avenue, south of Lancaster Boulevard	55
p	Sierra Highway to Beech Avenue, south of Lancaster Boulevard	187
q	Metrolink Station, southeast corner of Lancaster Boulevard and Sierra Highway	120
r	East Cedar Avenue 250 feet south of Lancaster Boulevard	18
	Total Spaces	**1,781**

On-street parking is currently permitted within certain areas of the City. The City, together with the downtown business community, will continue to develop parking facilities as needed in order to minimize the use of on-street parking.

Two separate planning projects are currently underway and both will impact parking policy in the downtown area. The first is the Downtown Lancaster Specific Plan, which will address parking demands and policy for a series of proposed downtown development projects. The second is the North Downtown Lancaster Neighborhood Revitalization/Transit Village Plan. This plan will also address parking issues in downtown, including those related to the portions of north downtown that are currently being developed.



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Downtown Parking Facilities

Figure 6-5

PARK AND RIDE FACILITIES

As the commuter population grows, so does the need for parking stalls at Park and Ride facilities. The City currently operates several park and ride lots in various locations throughout the City; refer to Table 6-6, Park and Ride Facilities.

Table 6-6
Park and Ride Facilities

Lot Location	Number of Spaces	Acres
SW corner of 5th Street East and Avenue I	192	3.1
NW corner of Avenue K and SR-14	118	1.2
SW corner of Avenue K-8 and 10th Street West	761	8.3
SE corner of Sierra Highway and Lancaster Boulevard	145	2.0*
NE corner of Sierra Highway and Lancaster Boulevard	174	1.7*
Total	**1,390**	**16.3**
Source: Lancaster Department of Public Works.		
* Metrolink Station.		

6.9 PUBLIC TRANSIT

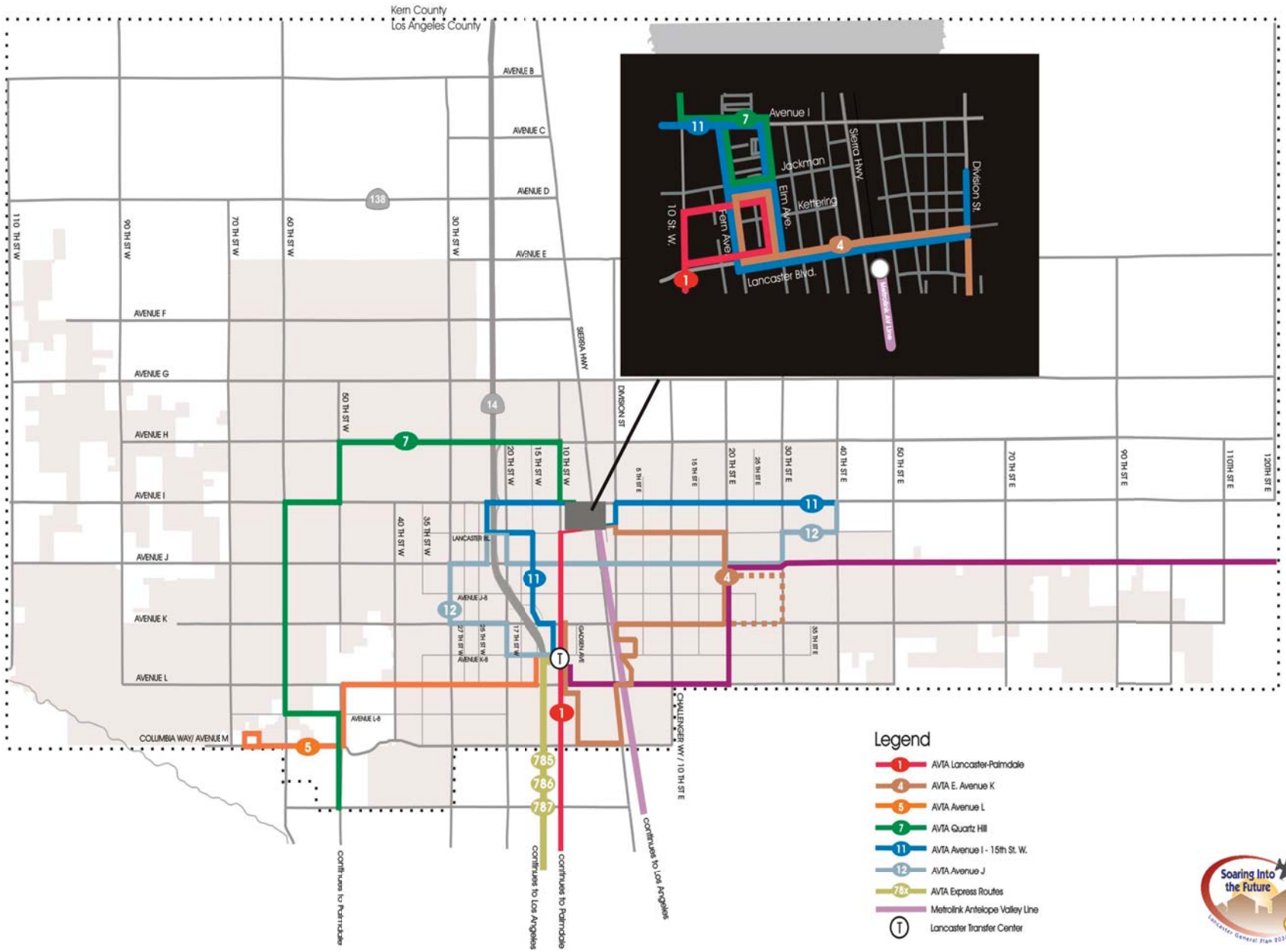
Public transit service in Lancaster includes local fixed-route bus services, commuter bus services, commuter rail lines, and para-transit services. Public transit service has expanded over the last 25 years, following population growth, changes in land use and population distribution patterns. Figure 6-6, Existing Transit Routes, illustrates the existing transit routes in the study area.

LOCAL FIXED-ROUTE SERVICES

The Antelope Valley Transit Authority (AVTA) was formed as a Joint Powers Authority by Los Angeles County, the City of Palmdale, and the City of Lancaster to administer and manage transit service in the Antelope Valley. AVTA currently operates seven regular local fixed routes within the City of Lancaster. Service hours and rates vary per route.

Route 1

Route 1 operates between downtown Lancaster and southeast Palmdale, primarily via 10th Street West, Palmdale Boulevard, 10th Street East, Avenue R, 5th Street East, and Avenue S. Route 1 is one of the busiest AVTA routes in terms of ridership and has 30-minute service throughout the day on weekdays and every hour on weekends. The route's main passenger generators are: residential areas along Avenue S; the Palmdale business district on Palmdale Boulevard; the Antelope Valley Mall; commercial development at 10th Street West and Avenue K; Lancaster Community Hospital; and the downtown Lancaster businesses and Senior Center.



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Lancaster General Plan 2030

Existing Transit Routes

Figure 6-6

Route 4

Route 4 operates on 60-minute headways between the Lancaster City Park Transfer Center and the Senior Center, primarily via Lancaster Boulevard, 20th Street East, Avenue K, Division Street, Business Center Drive, Sierra Highway, Avenue M, 6th Street West, Avenue L-8, and 10th Street West. Passenger generators include: the Senior Center, the Los Angeles County Courthouse, the Department of Social Services, and Eastside Walmart Shopping Center and the Senior Center. AVTA provides AM/PM deviated service to 30th Street East and Avenue J for students using Route 4 to travel to Antelope Valley High School.

Route 5

Route 5 operates on 60-minute headways between Lancaster City Park and Mayflower Gardens primarily via Avenue K-8, 15th Street West, Avenue L, 50th Street West, and Avenue M to 67th Street West. Route 5 provides connections to other routes at Lancaster City Park. Main passenger generators are the Mayflower Gardens, shopping areas on Avenue L, Kaiser Medical Facility and downtown Quartz Hill.

Route 7

Route 7 provides 60-minute weekday and two-hour weekend headway service between the Senior Center and the Palmdale Transfer Center. Route 7 operates primarily via 10th Street West, Avenue H, 50th Street West, Avenue I, 60th Street West, Avenue L-8, Rancho Vista Boulevard, Avenue P, 10th Street West and Technology Drive. Route 7 connects with Route 4 at the Senior Center and continues to east Lancaster as Route 4. Route 7 also provides connections to other routes at either end of the route. Passenger generators for this route include downtown Lancaster businesses, the Senior Center, the High Desert Hospital, Mayflower Gardens and Antelope Valley Fairgrounds, Rite Aid Distribution Center, Michael's Warehouse, Antelope Valley State Prison, Quartz Hills High School, and the Antelope Valley Mall.

Route 11

Route 11 provides 30-minute weekday and 60-minute weekend headway service between Lancaster City Park and 40th Street East and Avenue I primarily via 12th Street West, Avenue K, 15th Street West, Lancaster Boulevard, Valley Central Way, Avenue I, Fern Street, Lancaster Boulevard, Division Street, and Avenue I. Route 11 connects with Route 12 at both ends of the route, providing through service to most of the urban center of Lancaster. Together, Routes 11 and 12 have the highest ridership of any route in the AVTA network. Route 11 provides connections to MetroLink and to other routes at Lancaster City Park.

Route 12

Route 12 provides 30-minute- weekday and 60-minute weekend headway service between Lancaster City Park and the intersection of 40th Street East and Avenue I, primarily via Avenue K- 8, 20th Street West, Avenue K, 30th Street West, Avenue J, Valley Central Way, Lancaster Boulevard, Avenue J, and 30th Street East, Lancaster Boulevard, and 40th Street East. Route 12 connects with Route 11 at both ends of the route. Route 12 provides connections to other routes at the Lancaster City Park. Passenger generators include the Antelope Valley College, the Lancaster Marketplace, and the Social Security Administration Office.

Lake L.A. Express

The Lake L.A. Express line provides service between Lancaster City Park and the Town Center Plaza in Lake Los Angeles primarily via Avenue L, 20th Street East, Avenue J, 170th Street East, Avenue N, 155th Street East, and Avenue N-8. There are two buses during each weekday peak period and one bus every four hours during the weekend.

COMMUTER SERVICE

Commuter service in the City of Lancaster is provided by bus and rail lines.

Bus and Van-Pool Services

Antelope Valley Transit Authority. AVTA operates three commuter service routes from the Antelope Valley to downtown Los Angeles, Century City and San Fernando Valley. Service operates from approximately 4:00 AM to 8:00 PM. Within the Antelope Valley, all commuter routes stop at Lancaster City Park and the Palmdale Transportation Center.

- Route 785. Lancaster/Palmdale to Los Angeles provides commuter service to downtown Los Angeles. There are seven morning trips, with 12 stops in downtown Los Angeles, and seven afternoon trips with 14 stops in downtown Los Angeles.

- Route 786. Lancaster/Palmdale to Century City/West Los Angeles provides commuter service to Westwood, Century City, Beverly Hills, West Los Angeles, and West Hollywood. Two buses depart every morning each with different routing in Century City and West Los Angeles and two buses depart in the afternoon.

- Route 787. Lancaster/Palmdale to West San Fernando Valley provides commuter service to the San Fernando Valley. This route serves CSU-Northridge and Warner Center, as well as the communities of Granada Hills, Chatsworth, Northridge, Canoga Park, Woodland Hills, Tarzana and Van Nuys. There are nine morning runs to the Valley and nine afternoon runs from the Valley.

Santa Clarita and Kern County. Both these agencies provide additional regional service to the City.

Greyhound. Greyhound provides Lancaster with inter-city service to various other cities. Lancaster is an intermediate stop along routes departing from Los Angeles to Northern California.

Antelope Valley Express. The Antelope Valley Express provides reservation-only scheduled vans between the Antelope Valley and Los Angeles International Airport, as well as service to local airports.

Ridesharing. Through a joint partnership of the Los Angeles Metro, the Orange County Transportation Authority, Riverside County Transportation Commission, San Bernardino Associated Governments and the Ventura County Transportation Commission, provide an Internet rideshare and vanpool matching service, “RideMatch.info”.

Rail

Metrolink. The Southern California Regional Rail Authority (SCRRA) operates MetroLink, the commuter rail service of southern California. Metrolink provides passenger service to Lancaster. The Lancaster station is the terminus of the Antelope Valley Line, which passes through the City in a north-south direction, parallel to Sierra Highway. Currently, Metrolink operates six trains to Los Angeles in the morning hours and six trains in the afternoon and evening hours from Los Angeles to Lancaster. Approximately 440 people board Metrolink trains every morning at the Lancaster Station.

PARATRANSIT SERVICES

AVTA operates Dial-A-Ride (DAR) service in the Antelope Valley, providing curb-to-curb van service to seniors and disabled persons. AVTA DAR operates from 6:00 AM to 7:30 PM on weekdays and from 8:00 AM to 6:00 PM on weekends.

6.10 GOODS MOVEMENT

RAIL FREIGHT

The main railroad track route traverses the City in a north-south direction adjacent to Sierra Highway and is part of the main freight route that carries goods and commodities between Canada and Mexico. This route is at-grade through the City, with grade separations at Avenue L and Avenue H. Approximately 20 Union Pacific trains travel through the City every day. Union Pacific trains share this track with SCRRA's Metrolink trains.

The rail freight element of the State Rail Plan provides a detailed account of the State's freight rail system and how it operates and serves the people of the North County region. Several freight issues are discussed that impact the railroad's ability to move freight efficiently. Areas include mainline choke points caused by geographic restrictions and mainline congestion caused by tremendous growth in intermodal traffic and increases in the number of passenger trains operating on freight railroad facilities. Port projects in southern California show a doubling of international container shipments by the Year 2020. Capacity issues are a growing concern among California's railroads and rail freight shippers.

This growth in rail freight activity and the promotion of the advantages of rail freight versus truck shipping is addressed in the County's CMP. The plan identifies credit factors for qualifying projects that will have a documented effect on reducing the vehicle-miles-traveled (VMT) of trucks by projects that promote rail freight use.

TRUCKING

Lancaster does not have a comprehensive and consistent truck route system and truck route signage. Much of this is because of the limited number of non-primary roads. Increases in commercial and industrial land uses in the Victor Valley area and the Inland Empire affect the Antelope Valley because some through trucks use SR-138/SR-18 to and from SR-14 in lieu of the congestion that they face on SR-395 (through Adelanto). SR-14 is the logical route for trucks serving Mojave and points to the north, to and from metropolitan Los Angeles. Some trucks access Edwards Air Force Base (from the south on Avenue E via either 120th Street East

or 140th Street East), but most trucking activity in Lancaster is concentrated in the five designated industrial areas and along Sierra Highway.

The County conducted a study of truck needs and activity patterns in 2002. Surveys were sent to the cities of Santa Clarita, Palmdale, and Lancaster and the County relating to freight activity and goods movement. The survey requested information and opinions on many issues including truck-related congestion, parking, pavement deterioration, noise, air pollution, seasonal activities, neighborhood truck traffic intrusion, locations of truck facilities/generators and other issues.

The highest ranked issue (rated most severe impact) for Lancaster was Truck Parking (average severity rating of 4 on a scale of 1 for "no impact" and 5 for "severe impact"). The next highest ranked issue was Street Deterioration Due to Trucks with a rating of 3. Truck noise, air pollution, congestion due to trucks and neighborhood truck intrusion were next (average severity rating 1). No impacts were indicated as severe.

6.11 AIR TRANSPORTATION

FACILITIES

There are three Federal Aviation Administration (FAA) recognized facilities located in and around the City of Lancaster. Two of the facilities are military: Edwards Air Force Base and Air Force Plant 42. The civilian Palmdale Regional Airport shares the site and runways of Air Force Plant 42. The third, Fox Field Airport, is a civilian facility. Figure 6-7, Airport Locations, illustrates the locations of local air facilities.

Edwards Air Force Base

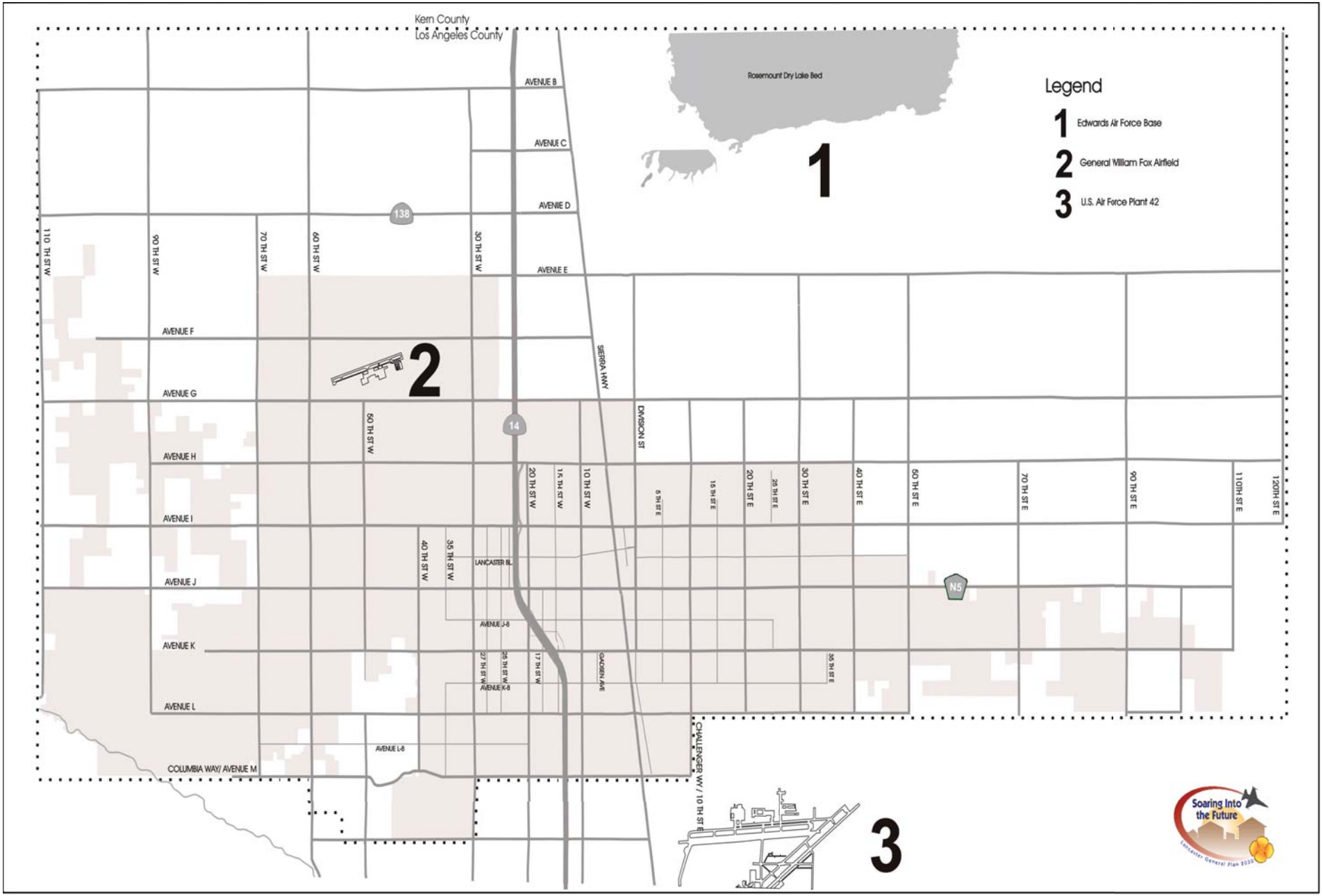
Located approximately 20 miles northeast of the City of Lancaster, Edwards Air Force Base is considered one of the finest flight testing and research centers in the world. The base encompasses 470 square miles, including a 2.8-mile main runway and two dry lakes beds, which provide additional runways. The Rogers Dry Lake Bed is used by NASA's Space Shuttles as a landing site following their space missions.

Plant 42

Located southeast of the City of Lancaster, U.S. Air Force Plant 42 occupies 5,832 acres and houses several specialized military aerospace programs. The plant is used for aircraft research, assembly and testing. The plant contains two main runways, with numerous buildings and hangers.

Palmdale Regional Airport (PMD)

This facility owned and operated by the City of Los Angeles World Airports (LAWA), is located on 54 acres leased from Air Force Plant 42. The present 25 year joint agreement allows Palmdale Regional Airport (PMD) to use two existing Plant 42 runways. The airport features a modern 9,000 square-foot terminal capable of handling up to 300,000 passengers annually. From December 2004 through January 2006, Scenic Airlines began daily nonstop service between PMD and North Las Vegas Airport, resuming passenger service at the airport after eight years of scheduled air service abeyance. Since that time, it has served as a commercial airport for occasional charter operations.



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Lancaster General Plan 2030

Airport Locations

Figure 6-7

Although current activity is low, substantial growth is being planned for this facility. LAWA hopes that PMD can grow to serve the local market demand and some of the regional demand for both passenger and cargo air service. It has engaged in marketing the airport and is seeking a carrier to reinstate passenger service as quickly as possible. LAWA property adjacent to Plant 42 is also being marketed for the development of cargo and aircraft maintenance facilities. Currently two major airlines (Delta and United) are submitting proposals to provide airline service at Palmdale Regional Airport. At this time, specific details of the proposed operations are unknown.

LAWA is in the process of developing a new master plan for PMD. The plan will guide airport land use and development decisions through 2030 on both Plant 42 and on the adjacent LAWA property. Table 6-7, Palmdale Regional Airport Operations – FAA Aircraft Movements, summarizes the last five years of operations at PMD.

Table 6-7
Palmdale Regional Airport Operations – FAA Aircraft Movements

Type	2001	2002	2003	2004	2005	2006
Air Carrier	366	242	179	209	241	125
Air Taxi	404	246	252	353	1,120	287
General Aviation	10,554	8,474	8,127	8,288	12,570	11,202
Military	28,729	24,390	22,179	22,258	21,307	16,180
Total	**40,053**	**33,352**	**30,737**	**31,108**	**35,238**	**27,794**
Source: LAWA, 2006.						

Fox Field

Located approximately four miles northwest of downtown Lancaster, General William J. Fox Airfield (Fox Field) is the only other major commercial/civilian facility within City limits. The airport is bounded by Avenue F and G to the north and south and by Apollo Park and 60th Street West to the east and west, respectively. The principal facilities at the airport consist of a passenger terminal, a fixed based operation, and the U.S. Forest Service Air Tanker Base. Although it is owned and operated by Los Angeles County, it is used primarily by private planes. The area around Fox Field is planned for industrial and business park development under the Fox Field Industrial Corridor Specific Plan. Major runway expansions were completed before 2000, which will allow use of the airport for a greater variety of aircraft.

There are also a series of small landing strips and dirt runways in the desert portions of Lancaster. These are strips of land cleared by the property owners, and do not require approval by the FAA.

6.12 PLANNED REGIONAL IMPROVEMENTS

NORTH COUNTY COMBINED HIGHWAY CORRIDORS STUDY

The North County Combined Highway Corridors Study (NCCHCS), completed in 2004 by Metro, developed a multi-modal transportation plan for the northern portion of Los Angeles County.

The following projects were recommended by the NCCHCS and are relevant to the City of Lancaster.

- Widening existing SR-138 to four lanes from Pearblossom east to the San Bernardino County line.

- Construction of a limited access High Desert Corridor (HDC), a brand new freeway/expressway between I-5 and I-15. The east-west segment between SR-14 and I-15 would be an 8-lane freeway (including an High Occupancy Vehicle (HOV) lane in each direction) from SR-14 past the Palmdale Airport to 50th Street East along an alignment paralleling P-8 in Palmdale; a 6-lane freeway/expressway from 50th Street East to 240th Street East; and a 4- to 6-lane expressway from 240th Street East past the planned Southern California Logistics Airport to I-15 and beyond. Between I-5 and SR-14, the HDC would be a 6-lane freeway or expressway along the current SR-138 alignment. A north-south HDC expressway would begin at SR-14 and Avenue D, jog south to Avenue E at the Old Sierra Highway, head south along 90th Street East, jog southeast to intersect with the east-west HDC at 126th Street East, and continue south to the existing SR-138 near 150th Street East.

- Create three reversible HOV lanes along SR-14 (achieved by converting two existing HOV lanes and adding one new HOV lane) plus the existing 4 to 6 lanes in each direction between I-5 and Pearblossom.

- Create two reversible HOV lanes along SR-14 (achieved by converting programmed HOV lanes) plus the existing/committed 3 to 4 lanes between Pearblossom and Avenue P.

- Add a general-purpose lane between San Fernando Road and Sand Canyon.

- Add a truck lane from I-5 to Placerita Canyon.

- North of Avenue P, add one new lane to the two to three current lanes. The new lane would be designated for HOV use north to Avenue L and for general-purpose use from Avenue L to the Kern County line.

- Metrolink capacity would triple, with more departures and more cars in the peak hour.

- The plan includes a five-fold increase over the number of express buses that operate today.

- Three new express bus routes would be added between Palmdale/Lancaster and Victorville, and seven park-and-ride lots would be constructed.

Funding has not been secured for all of these projects. North County cities together with Metro and Caltrans are seeking funding from several sources.

SR-14 REVERSIBLE HOV LANE FEASIBILITY STUDY

The feasibility of adding reversible HOV lanes on SR-14, a concept initially conceived in the NCCHCS (see discussion above), was analyzed in detail in the SR-14 Reversible HOV Lane

Feasibility Study, a study conducted by Metro in 2006. The study concluded that several physical constraints and design challenges make the reversible HOV lane concept infeasible along SR-14. Physical constraints are posed by the corridor's topography and existing configuration of the freeway, whereby construction of the reversible HOV lanes would require extensive earthwork. Design challenges involve traffic operations safety during construction. The Metro Board approved the study's recommendation to "(1) delete the Reversible HOV lanes in its entirety from the Short Range Improvement Project of the NCCHCS; and (2) add a second non-reversible HOV lane in each direction from the interchange of I-5/SR-14 to Avenue P to the Long Range Improvement Projects of the NCCHCS".

REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM

The Regional Transportation Improvement Program (RTIP) is the SCAG's compilation of State, Federal, and local funded transportation projects. In addition to projects identified in the RTIP, the RTIP includes Federal Congestion Mitigation Air Quality (CMAQ) and Surface Transportation Program (STP) funds, other Federal funds and projects entirely funded out of local and private funds. The following projects that are included in the 2006 RTIP are partially or entirely within the Specific Plan area:

- SR-14/Avenue I Interchange Improvements. Widen Avenue I to three lanes in each direction, adding dual left turn lanes and widening a bridge structure.

- SR-14/Avenue K Interchange Improvements. Widen northbound off-ramp and 15th Street West and widen off-ramp to four lanes.

- 10th Street West gap closure from Avenue L to Avenue M. Widen street to three lanes in each direction.

- Avenue K gap closure from 60th Street West to SR-14. Widen street to two or three lanes each direction.

- Major Arterial Gap Closures. Avenue J from 36th Street to 32nd Street; 20th Street West from Lancaster Boulevard to Newgrove Street; 20th Street East from Avenue J-4 to Avenue J-8.

- Avenue M and SR-14 over-crossing improvements. Widen Avenue M from two to seven lanes from 10th Street West to 15th Street West.

- Avenue G from SR-14 to 25th Street West. Widen from two to six lanes; includes interchange improvements.

PROPOSED CALIFORNIA HIGH SPEED RAIL PROJECT

The California High-Speed Rail Authority is the State entity responsible for planning, constructing, and operating a high-speed train system serving California's major metropolitan areas. It has prepared a program Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) for a 700-mile high-speed train system serving Sacramento, the San Francisco Bay Area, the Central Valley, Los Angeles, the Inland Empire, Orange County and San Diego. Lancaster would benefit from the proposed stop at the Palmdale Regional Airport, which is along the Los Angeles to Fresno via Bakersfield High Speed Rail route.

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7.0 Air Quality

7.0 AIR QUALITY

This section evaluates air quality, as it exists in the City of Lancaster. A discussion of existing air quality conditions in the City of Lancaster are evaluated below, as well as standards and conditions set forth by several regulatory agencies, and different regional plans for attaining sufficient air quality standards.

The Antelope Valley Air Quality Management District (AVAQMD) has jurisdiction over the northern, desert portion of Los Angeles County. This region includes the incorporated cities of Lancaster and Palmdale, Air Force Plant 42, and the southern portion of Edwards Air Force Base. The Kern County-Los Angeles County boundary forms the northern boundary of the AVAQMD.

7.1 EXISTING CONDITIONS

MOJAVE DESERT AIR BASIN

The State of California is divided geographically into 15 air basins. The City of Lancaster is located within the Mojave Desert Air Basin (MDAB), which includes the desert portions of Los Angeles and San Bernardino Counties, the eastern desert portion of Kern County, and the northeastern desert portion of Riverside County. The MDAB primarily contains pollutants from other air basins, dust raised by construction, travel on unpaved roads, and paved roads with silty debris.

The MDAB consists of mountain ranges interspersed with long broad valleys that often contain dry lakes. Many of the lower mountains throughout the MDAB rise from 1,000 to 4,000 feet above the valley floor. Prevailing winds in the MDAB are out of the west and southwest. These prevailing winds result from the proximity of the MDAB to the coastal and central regions and the Sierra Nevada Mountains to the north. Additionally, air masses are pushed onshore in southern California by differential heating and are channeled through the MDAB. The MDAB is separated from the southern California coastal and central California Valley regions by mountains (highest elevation approximately 10,000 feet), whose passes form the main channels for these air masses. The Antelope Valley is bordered on the northwest by the Tehachapi Mountains, separated from the Sierra Nevada Mountains in the north by the Tehachapi Pass (3,800-foot elevation), and bordered to the south by the San Gabriel Mountains.

CLIMATE

During the summer a Pacific Subtropical High cell that is located off the coast inhibits cloud formation and encourages daytime solar heating in the MDAB. Desert moisture primarily arrives from infrequent warm, moist, and unstable air masses from the south. However, the Antelope Valley portion of the MDAB does not receive the extensive ocean breezes found in the South Coast Air Basin. Instead, an uplifting of wind masses occurs where warm moist air from Pacific Ocean storms is lifted upward by the San Gabriel Mountains and the Sierra Pelona Range. This uplifting causes heavier precipitation in the Los Angeles basin, and less precipitation with greater temperature variation throughout the year in the MDAB.

Summers are relatively hot and winters are relatively cold in the desert. The desert experiences a low average rainfall, with occasional summer thunderstorms, and larger storms occurring from late fall to spring. Annual precipitation varies from four to nine inches. The temperature in Lancaster ranges from two to 117 degrees Fahrenheit (°F), with an average temperature of 62°F. Milder temperatures with occasional storms or thundershowers occur in spring and fall.

WIND

One of the most important climatic factors is the direction and intensity of the prevailing winds. Prevailing winds in the MDAB are out of the west and southwest. These prevailing winds are due to the proximity of the MDAB to coastal and central regions and the blocking nature of the Sierra Nevada mountains to the north; air masses pushed onshore in southern California by differential heating are channeled through the MDAB. As previously stated, the MDAB is separated from the southern California coastal and central California Valley regions by mountains (highest elevation approximately 10,000 feet), whose passes form the main channels for these air masses.

Prevailing winds are usually sufficient to dissipate locally produced air pollution. However, these winds often transport air pollutants from the Los Angeles basin and San Joaquin Valley into the desert basin.

TEMPERATURE INVERSIONS

The southern California region often experiences temperature inversions in which pollutants are trapped and accumulate close to the ground. The inversion, a layer of warm, dry air overlaying cool, moist marine air, is a normal condition in the southland. The cool, damp, and hazy sea air capped by coastal clouds is heavier than the warm, clear air that acts as a lid through which the marine layer cannot rise. When the inversion layer is approximately 2,500 feet above sea level, the sea breezes carry the pollutants inland to escape over mountain slopes or passes. At a height of 1,200 feet, the inversion concentrates pollutants into a shallow layer. Smog in southern California is generally the result of these temperature inversions combining with coastal day winds and local mountains to contain the pollutants for long periods of time, allowing them to form secondary pollutants by reacting with sunlight.

GLOBAL CLIMATE CHANGE

Climate change is a shift in the average weather that a given region experiences. This is measured by changes in temperature, wind patterns, precipitation, and storms. Global climate change means changes in the climate of the earth as a whole. It describes changes in the variability or average state of the atmosphere over time scales ranging from decades to millions of years. These changes can be caused by processes internal to the Earth, external forces (e.g., variations in sunlight intensity) or, more recently, human activities.

Gasses that trap heat in the atmosphere are often called greenhouse gasses. The Earth's surface temperature would be about 61 degrees Fahrenheit colder than it is now if it were not for the natural heat trapping effect of greenhouse gasses. The accumulation of these gasses in the Earth's atmosphere is considered the cause of the observed temperature increase (Global Warming). Greenhouse gases consist of carbon dioxide (CO_2), methane, nitrous oxide (NO_X), and hydrofluorocarbons. These particular gases are important due to the residence time in the

atmosphere from ten years to more than 100 years. Some greenhouse gasses such as carbon dioxide occur naturally and are emitted to the atmosphere through natural processes as well as human activities. Other greenhouse gasses (e.g., fluorinated gases) are created and emitted solely through human activities.

California is a substantial contributor of global greenhouse gasses, emitting over 400 million tons of CO_2 a year. Methane is also an important greenhouse gas that potentially contributes to global climate change. Greenhouse gases are global in their effect, which is to increase the earth's ability to absorb heat in the atmosphere. Because primary greenhouse gases have a long lifetime in the atmosphere, accumulate over time, and are generally well-mixed, their impact on the atmosphere is mostly independent of the point of emission. Climate studies indicate that California is likely to see an increase of three to four degrees Fahrenheit over the next century.[1]

In 1988, the United Nations established the Intergovernmental Panel on Climate Change to evaluate the impacts of global warming and to develop strategies that nations could implement to curtail global climate change. In 1992, the United States joined other countries around the world in signing the United Nations' Framework Convention on Climate Change agreement with the goal of controlling greenhouse gas emissions, including methane. As a result, the Climate Change Action Plan was developed to address the reduction of greenhouse gases in the United States. The plan consists of more than 50 voluntary programs. Additionally, the Montreal Protocol was originally signed in 1987 and substantially amended in 1990 and 1992. The Montreal Protocol stipulates that the production and consumption of compounds that deplete ozone in the stratosphere (i.e., chlorofluorocarbons, halons, carbon tetrachloride, and methyl chloroform) were to be phased out by the year 2000.

Although not originally intended to reduce greenhouse gas emissions, California Code of Regulations Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. The latest amendments were made in October 2005. Energy efficient buildings require less electricity. Electricity production by fossil fuels results in greenhouse gas emissions. Therefore, increased energy efficiency results in decreased greenhouse gas emissions.

California Assembly Bill 1493 (Pavley) enacted on July 22, 2002, required the California Air Resources Board (CARB) to develop and adopt regulations that reduce greenhouse gases emitted by passenger vehicles and light duty trucks. Regulations adopted by CARB will apply to 2009 and later model year vehicles. CARB estimates that the regulation will reduce climate change emissions from light duty passenger vehicle fleet by an estimated 18 percent in 2020 and by 27 percent in 2030.

California Governor Arnold Schwarzenegger announced on June 1, 2005 through Executive Order S-3-05, Greenhouse gas emission reduction targets as follows: by 2010, reduce Greenhouse gas emissions to 2000 levels; by 2020, reduce Greenhouse gas emissions to 1990 levels; by 2050, reduce Greenhouse gas emissions to 80 percent below 1990 levels.

[1] Union of Concerned Scientists and the Ecological Society of America, *Confronting Climate Change in California*, 1999.

Assembly Bill 32 (Global Warming Solutions Act) (AB-32) was passed by the California Legislature on August 31, 2006. It requires the State's global warming emissions to be reduced to 1990 levels by 2020. The reduction would be accomplished through an enforceable statewide cap on global warming emissions that would be phased in starting in 2012. On or before June 30, 2007, CARB is required to publish a list of discrete greenhouse gas emissions that can be implemented. Emission reduction measures could include carbon sequestration projects and best management practices that are technologically feasible and cost-effective. It should be noted that AB-32 does not provide thresholds or methodologies for analyzing a project's impacts regarding global climate change. AB-32 primarily provides a timeframe for establishing plans, policies, and studies to address global climate change.

7.2 REGULATORY FRAMEWORK

The Antelope Valley portion of the MDAB is under the control of the Antelope Valley Air Quality Management District (AVAQMD) at the regional level, the California Air Resources Board (CARB) at the State level, and the U.S. Environmental Protection Agency (EPA) Region IX office at the Federal level. These agencies, primarily responsible for improving the air quality within the MDAB, are discussed below along with their individual responsibilities.

FEDERAL REGULATIONS/STANDARDS

The EPA is responsible for setting and enforcing the Federal ambient air quality standards for atmospheric pollutants. It regulates emission sources that are under the exclusive authority of the Federal government, such as aircraft, ships, and certain locomotives. The EPA also has jurisdiction over emissions sources outside State waters (outer continental shelf), and establishes various emissions standards for vehicles sold in states other than California.

As part of its enforcement responsibilities, the EPA requires each state with nonattainment areas to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the Federal standards. The SIP must integrate Federal, State, and local plan components and regulations to identify specific measures to reduce pollution, using a combination of performance standards and market-based programs within the timeframe identified in the SIP.

Pursuant to the Federal Clean Air Act (CAA) of 1970, the EPA established national ambient air quality standards (NAAQS). The NAAQS were established for six major pollutants, termed "criteria" pollutants. Criteria pollutants are defined as those pollutants for which the Federal and State governments have established ambient air quality standards, or criteria, for outdoor concentrations in order to protect public health.

The NAAQS are two-tiered: primary, to protect public health, and secondary, to prevent degradation of the environment (e.g., impairment of visibility, damage to vegetation and property). The six criteria pollutants are ozone (O_3), carbon monoxide (CO), respirable particulate matter (PM_{10}), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (Pb). The primary standards for these pollutants are shown in Table 7-1, National and California Ambient Air Quality Standards. The concentration standards were set by the EPA at a level that protects public health with an adequate margin of safety; therefore, these health effects would not occur unless the standards are exceeded by a large margin. In July 1997, the EPA adopted new standards for eight-hour O_3 and fine particulate matter ($PM_{2.5}$), as shown in Table 7-1.

Table 7-1
National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [1]	Federal Standards[2]	
		Concentration [3]	Primary [3, 4]	Secondary [3, 5]
Ozone (O_3)	1 Hour	0.09 ppm (180 μg/m)	NA[6]	NA[6]
	8 Hour	0.07 ppm	0.08 ppm (157 μg/m^3)	0.08 ppm (157 μg/m^3)
Particulate Matter (PM_{10})	24 Hour	50 μg/m^3	150 μg/m^3	150 μg/m^3
	Annual Arithmetic Mean	20 μg/m^3	50 μg/m^3	50 μg/m^3
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	No Separate State Standard	65 μg/m^3	65 μg/m^3
	Annual Arithmetic Mean	12 μg/m^3	15 μg/m^3	15 μg/m^3
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 μg/m^3)	9 ppm (10 μg/m^3)	9 ppm (10 μg/m^3)
	1 Hour	20 ppm (23 μg/m^3)	35 ppm (40 μg/m^3)	35 ppm (40 μg/m^3)
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	N/A	0.053 ppm (100 μg/m^3)	0.053 ppm (100 μg/m^3)
	1 Hour	0.25 ppm (470 μg/m^3)	N/A	N/A
Lead (Pb)	30 Days Average	1.5 μg/m^3	N/A	N/A
	Calendar Quarter	N/A	1.5 μg/m^3	1.5 μg/m^3
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	N/A	0.030 ppm (80 μg/m^3)	N/A
	24 Hour	0.04 ppm (105 μg/m^3)	0.14 ppm (365 μg/m^3)	N/A
	3 Hour	N/A	N/A	0.5 ppm (1300 μg/m^3)
	1 Hour	0.25 ppm (655 μg/m^3)	N/A	N/A
Visibility-Reducing Particles	8 Hour (10 am to 6 pm, PST)	Extinction Coefficient = 0.23 km@<70% RH	**No Federal Standards**	
Sulfates	24 Hour	25 μg/m3		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 μg/m^3)		

Source: California Air Resources Board, April 2006.

ppm = parts per million; μg/ m^3 = micrograms per cubic meter; mg/ m^3 = milligrams per cubic meter; km = kilometers; RH = relative humidity; PST = Pacific Standard Time; N/A = not applicable.

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, suspended particulate matter (PM_{10}), and visibility-reducing particles are values that are not to be exceeded. All other values are not to be equaled or exceeded. California ambient air quality standards (CAAQS) are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations. In 1990, the CARB identified vinyl chloride as a Toxic Air Contaminant and determined that there was not sufficient available scientific evidence to support the identification of a threshold exposure level. This action allows the implementation of health-protective control measures at levels below the 0.010-ppm ambient concentration specified in the 1978 standard.
2. Federal standards (other than for ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. EPA also may designate an area as *attainment/unclassifiable* if (1) monitored air quality data show that the area has not violated the ozone standard over a three-year period; or (2) there is not enough information to determine the air quality in the area. For PM_{10}, the 24-hour standard is attained when 99 percent of the daily concentrations, averaged over the three years, are equal to or less than the standard. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.
3. Concentration is expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25 degrees centigrade (°C) and a reference pressure of 760 millimeters (mm) of mercury. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of mercury (1,013.2 millibar); parts per million (ppm) in this table refers to ppm by volume (micromoles of pollutant per mole of gas).
4. Federal Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.
5. Federal Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
6. The Federal 1-hour ozone standard was revoked on June 5, 2005.

STATE REGULATIONS/STANDARDS

CARB, a department of the California Environmental Protection Agency (CalEPA), oversees air quality planning and control throughout California. Its responsibility lies with ensuring implementation of the 1989 amendments to the California Clean Air Act (CCAA), responding to the CAA requirements and regulating pollutant emissions from motor vehicles sold in California. It also sets fuel specifications to further reduce vehicular emissions.

The amendments to the CCAA establish California Ambient Air Quality Standards (CAAQS) and a legal mandate to achieve these standards by the earliest practicable date. These standards apply to the same criteria pollutants as does the CAA, but also include sulfate, visibility reducing particulates, and hydrogen sulfide; refer to Table 7-1.

ANTELOPE VALLEY AIR QUALITY MANAGEMENT DISTRICT

Air districts have the primary responsibility to control air pollution from all sources other than those directly emitted from motor vehicles, which are the responsibility of the CARB and the EPA. Air districts adopt and enforce rules and regulations to achieve State and Federal ambient air quality standards and enforce applicable State and Federal law.

As of January 1, 2002, the City of Lancaster, as well as other desert portions of Los Angeles County, is under jurisdiction of the Antelope Valley Air Quality Management District (AVAQMD). Prior to this date, the District was known as Antelope Valley Air Pollution Control District (AVAPCD). The AVAQMD has jurisdiction over the northern, desert portion of Los Angeles County. This region includes the incorporated cities of Lancaster and Palmdale, Air Force Plant 42, and the southern portion of Edwards Air Force Base. The Kern County-Los Angeles County boundary forms the northern boundary of the AVAQMD; the San Bernardino-Los Angeles County boundary forms the eastern boundary.

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

The Southern California Association of Governments (SCAG) is a council of governments for the counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura. SCAG is a regional planning agency and serves as a forum for regional issues relating to transportation, housing, growth, air quality, and watershed management. Regional planning responsibilities include: developing specific regional plans; coordinating planning activities among regional stakeholders; providing a forum for public debate of regional issues; developing consensus on key regional issues; and serving as a main source of regional data/information. SCAG also serves as the regional clearinghouse for projects requiring environmental documentation under Federal and State law. SCAG reviews proposed projects to analyze their impacts on SCAG's regional planning efforts.

Although SCAG is not an air quality management agency, it is responsible for several air quality planning issues. As the designated Metropolitan Planning Organization (MPO) for the southern California region, it is responsible, pursuant to Section 176(c) of the 1990 amendments to the Federal CAA, for providing current population, employment, travel, and congestion projections for regional air quality planning efforts. It is required to quantify and document the demographic and employment factors influencing expected transportation demand, including land use forecasts. Pursuant to California Health and Safety Code Section §40460(b), SCAG is also

responsible for preparing and approving the portions of the MDAB's air quality management plans relating to demographic projections and integrated regional land use, housing, employment, and transportation programs, measures, and strategies. SCAG's method of accomplishing these requirements is through the preparation of the Growth Management Chapter of the Regional Comprehensive Plan and Guide (RCPG).

7.3 LOCAL AMBIENT AIR QUALITY

CARB sets State air quality standards and monitors ambient air quality at approximately 250 air-monitoring stations across the State. Air quality monitoring stations usually measure pollutant concentrations 10 feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations. Ambient air pollutant concentrations in the Basin are measured at ten air quality-monitoring stations operated by the CARB and AVAQMD.

The Division Street monitoring station, located at 43301 Division Street is one of the stations in the MDAB and is located within the City of Lancaster. The Division Street monitoring station currently provides air quality data within the Lancaster area; refer to Table 7-2, Local Air Quality Levels. Emissions have been provided for carbon monoxide (CO), ozone (O_3), nitrogen oxides (NO_X), and particulate matter less than or equal to 10 and 2.5 microns in aerodynamic diameter (PM_{10}, and $PM_{2.5}$, respectively) for years 2002 through 2006.

STANDARDS AND CONDITIONS

The AVAQMD is the regional agency responsible for managing air quality in the Antelope Valley area, which includes the City of Lancaster. Measured levels of air pollutants are compared to State and Federal standards, which have been adopted to minimize the risks for those segments of the population susceptible to respiratory distress.

The following air quality information briefly describes the various types of pollutants monitored at the local stations.

Ozone

Ozone occurs in two layers of the atmosphere. The layer surrounding the earth's surface is the troposphere. The troposphere extends approximately 10 miles above ground level, where it meets the second layer, the stratosphere. The stratospheric (the "good" ozone layer) extends upward from about 10 to 30 miles and protects life on earth from the sun's harmful ultraviolet rays (UV-B).

"Bad" ozone is a photochemical pollutant, and needs VOCs, NO_X, and sunlight to form; therefore, VOCs and NO_X are ozone precursors. VOCs and NO_X are emitted from various sources throughout the City. To reduce ozone concentrations, it is necessary to control the emissions of these ozone precursors. Significant ozone formation generally requires an adequate amount of precursors in the atmosphere and several hours in a stable atmosphere with strong sunlight. High ozone concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins.

Table 7-2
Local Air Quality Levels

Pollutant	California Standard	Federal Standard	Year	Maximum Concentration[1,2]	Days State/Federal Standard was Exceeded
Carbon Monoxide (CO)	9.0 ppm (8 hour)	9.0 ppm (8 hour)	2002 2003 2004 2005 2006	2.24 1.88 1.72 1.54 1.18	0/0 0/0 0/0 0/0 0/0
Ozone (O_3) For 8 hour	0.07 ppm	0.08 ppm	2002 2003 2004 2005 2006	0.107 0.120 0.101 0.103 0.105	NA/38 NA/33 NA/24 NA/31 NA/16
Ozone (O_3) For 1 hour	0.09 ppm	NA	2002 2003 2004 2005 2006	0.157 0.156 0.121 0.127 0.132	46/ NA 50/ NA 37/ NA 42/ NA 22/NA
Nitrogen Dioxide (NO_2)	0.25 ppm (1 hour)	0.053 ppm annual average	2002 2003 2004 2005 2006	0.101 0.067 0.103 0.074 0.066	0/NA 0/NA 0/NA 0/NA 0/NA
Coarse Particulate Matter[3,4] (PM_{10})	50 µg/m^3 (24 hours)	150 µg/m^3 (24 hours)	2002 2003 2004 2005 2006	210.0 98.4 83.0 55.5 45.4	1/1 1/0 0/0 0/0 0/0
Fine Particulate Matter[4] ($PM_{2.5}$)	No Separate State Standard	65 µg/m^3 (24 hours)	2002 2003 2004 2005 2006	24.0 25.0 18.0 28.0 10.0	NA/0 NA/0 NA/0 NA/0 NA/0

ppm = parts per million; PM_{10} = particulate matter 10 microns in diameter or less; µg/m^3 = micrograms per cubic meter; $PM_{2.5}$ = particulate matter 2.5 microns in diameter or less; NA = not applicable

1. Maximum concentrations are measured over the same period as the California standard.
2. Lancaster-Division Street monitoring station is located at 43301 Division Street, Lancaster, CA 93535.
3. PM_{10} exceedances are based on State thresholds established prior to amendments adopted on June 20, 2002.
4. PM_{10} and $PM_{2.5}$ exceedances are derived from the number of samples exceeded, not days.

Source: California Air Resources Board, *Aerometric Data Analysis and Management (ADAM) Air Quality Data Statistics*, http://www.arb.ca.gov/adam/welcome.html.

While ozone in the upper atmosphere (stratosphere) protects the earth from harmful ultraviolet radiation, high concentrations of ground-level ozone (in the troposphere) can adversely affect the human respiratory system and other tissues. Many respiratory ailments, as well as cardiovascular disease, are aggravated by exposure to high ozone levels. High ozone concentrations can result in changes in lung function, aggravation of chronic cardiopulmonary disease symptoms, increased asthma attacks, and decreased physical performance levels during strenuous activities. Ozone also damages natural ecosystems (such as forests and foothill plant communities) and damages agricultural crops and some man-made materials (such as rubber, paint and plastics). Societal costs from ozone damage include increased healthcare costs, the loss of human and animal life, accelerated replacement of industrial equipment, and reduced crop yields.

The State ozone standard is 0.09 parts per million (ppm), averaged over one hour. The O_3 levels at the Lancaster-Division Street monitoring station ranged between 0.157 ppm in 2002 and 0.121 ppm in 2004. The 1-hour State standard was exceeded 197 days between 2002 and 2006. The 1-hour Federal ozone standard was revoked with implementation of the 8-hour ozone designation. The MDAB is designated as a nonattainment/severe area for State and Federal O_3 standards.

Carbon Monoxide (CO)

Carbon monoxide (CO) is an odorless, colorless toxic gas that is emitted by mobile and stationary sources as a result of incomplete combustion of hydrocarbons or other carbon-based fuels. In cities, automobile exhaust can cause as much as 95 percent of all CO emissions. At high concentrations, CO can reduce the oxygen-carrying capacity of the blood and cause headaches, dizziness, unconsciousness and death. The Lancaster portion of the MDAB is designated as an attainment area for State CO standards. State and Federal standards were not exceeded between 2002 and 2006. The MDAB is designated as an attainment area for State and Federal CO standards.

Particulate Matter

Particulate matter pollution consists of very small liquid and solid particles floating in the air, and is a mixture of materials that can include smoke, soot, dust, salt, acids, and metals. Particulate matter also forms when gases emitted from motor vehicles and industrial sources undergo chemical reactions in the atmosphere. Some particles are large or dark enough to be seen as soot or smoke; others are so small that they can be detected only with an electron microscope. PM_{10} particles are less than or equal to 10 microns in aerodynamic diameter; $PM_{2.5}$ particles are less than or equal to 2.5 microns in aerodynamic diameter, and are a subset (portion) of PM_{10}.

In the western United States, there are sources of PM_{10} in both urban and rural areas. PM_{10} and $PM_{2.5}$ are emitted from stationary and mobile sources, including diesel trucks and other motor vehicles, power plants, industrial processing, wood-burning stoves and fireplaces, wildfires, dust from roads, construction, landfills, agriculture, and fugitive windblown dust.

PM_{10} and $PM_{2.5}$ particles are small enough to be inhaled into, and lodge in, the deepest parts of the lung. Health problems begin as the body reacts to these foreign particles. Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases, heart and lung disease, coughing, bronchitis, and respiratory illnesses in children. Recent mortality studies have shown a statistically significant direct association

between mortality and daily concentrations of particulate matter in the air. Non-health-related effects include reduced visibility and soiling of buildings.

The State standard for PM_{10} is 50 micrograms per cubic meter ($\mu g/m^3$) averaged over 24 hours; this standard was exceeded two days between 2002 and 2006. The Federal standard for PM_{10} is 150 $\mu g/m^3$ averaged over 24 hours; this standard was exceeded once between 2002 and 2006. The MDAB is designated as a nonattainment area for State PM_{10} standards. Based upon a desire to set clean air goals throughout the State, the CARB created a new annual average standard for $PM_{2.5}$ at 12 $\mu g/m^3$. Currently, the CARB has issued a staff report that recommends that the MDAB be designated as nonattainment for State and Federal $PM_{2.5}$ standards.

Sulfur Dioxide (SO_2)

Sulfur dioxide is a colorless, pungent gas belonging to the family of sulfur oxide gases (SO_X), formed primarily by combustion of sulfur-containing fossil fuels (primarily coal and oil) metal smelting and other industrial processes. The major health concerns associated with exposure to high concentrations of SO_X are effects on breathing, respiratory illness, diminishment of pulmonary defenses, and aggravation of existing cardiovascular disease. Major subgroups of the population that are most sensitive to SO_X are individuals with cardiovascular disease or chronic lung disease (such as bronchitis or emphysema), as well as children and the elderly. Emissions of SO_X also can damage the foliage of trees and agricultural crops. Together, SO_X and NO_X are the major precursors to acid rain, which is associated with the acidification of lakes and streams, and the accelerated corrosion of buildings and public monuments. Sulfur oxides can react to form sulfates, which significantly reduce visibility.

Sulfur dioxide (SO_2) (often used interchangeably with sulfur oxides [SO_X]) did not exceed Federal or State standards between 2002 and 2006. The MDAB is designated as an attainment area for both State and Federal SO_2 standards.

Nitrogen Dioxide (NO_2)

Nitrogen oxides (NO_X) are a family of highly reactive gases that are a primary precursor to the formation of ground-level ozone, and react in the atmosphere to form acid rain. Nitrogen dioxide (NO_2), often used interchangeably with NO_X, is a reddish-brown gas that can cause breathing difficulties at high levels. Peak readings of NO_2 occur in areas that have a high concentration of combustion sources (e.g., motor vehicle engines, power plants, refineries, and other industrial operations).

NO_X can irritate and damage the lungs, and lower resistance to respiratory infections such as influenza. The health effects of short-term exposure are still unclear. However, continued or frequent exposure to NO_X concentrations that are typically much higher than those normally found in the ambient air, may increase acute respiratory illnesses in children and increase the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO_2 may aggravate eyes and mucus membranes and cause pulmonary dysfunction.

The Lancaster portion of the MDAB is designated as an attainment area for State NO_2 standards. State and Federal standards were not exceeded between 2002 and 2006. The MDAB is designated as an attainment area for State and Federal NO_2 standards.

Reactive Organic Gases and Volatile Organic Compounds

Hydrocarbons are organic gases that are formed solely of hydrogen and carbon. There are several subsets of organic gases including reactive organic gases (ROGs) and volatile organic compounds (VOCs). ROGs comprise all hydrocarbons except those exempted by the CARB. Therefore, ROGs are a set of organic gases based on State rules and regulations. VOCs are similar to ROGs in that they comprise all organic gases except those exempted by Federal law. VOCs are therefore a set of organic gases based on Federal rules and regulations. Both ROGs and VOCs are emitted from the incomplete combustion of hydrocarbons or other carbon-based fuels. The major sources of hydrocarbons are combustion engine exhaust, oil refineries, and oil-fueled power plants; other common sources are petroleum fuels, solvents, dry cleaning solutions and paint (via evaporation).

The health effects of hydrocarbons result from the formation of ozone and its related health effects. High levels of hydrocarbons in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. Carcinogenic forms of hydrocarbons are considered toxic air contaminants ("air toxics"). There are no separate health standards for VOCs, although some VOCs are also toxic; an example is benzene, which is both a VOC and a carcinogen.

ATTAINMENT STATUS

The EPA and CARB have designated portions of the MDAB as non-attainment for a variety of pollutants, and some of those designations have an associated classification. The MDAB has been designated in attainment for carbon monoxide (CO), nitrogen dioxide (NO_X), and sulfur dioxides (SO_X) for both State and Federal standards and in non-attainment for ozone (O_3). The MDAB is currently in non-attainment for PM_{10} by State standards and unclassified for Federal standards. Despite implementing many strict controls, the MDAB still fails to meet the Federal and State air quality standards for O_3. For the Federal standards, O_3 is designated non-attainment/severe for both State and Federal standards; refer to Table 7-3, Mojave Desert Air Basin Ambient Air Quality Classifications.

Table 7-3
Mojave Desert Air Basin Ambient Air Quality Classifications

Pollutant	State	Federal
Carbon Monoxide	Attainment	Attainment
Ozone (1 hour standard)	Non-Attainment/extreme	Non-Attainment/severe
Ozone (8 hour standard)	Unclassified	Unclassified
Nitrogen Oxides	Attainment/unclassified	Attainment/unclassified
Sulfur Dioxide	Attainment/unclassified	Attainment/unclassified
Particulate Matter <10 microns	Non-Attainment	Unclassified
Particulate Matter < 2.5 microns	Unclassified	Attainment /unclassified

Source: AVAQMD, *California Environmental Quality Act and Federal Conformity Guidelines*, May 2005.

7.4 PRIMARY SOURCES OF EMISSIONS

Air pollutants are generated by two types of emission categories within the City: Stationary Sources and Mobile Sources. These types of emission sources are described below.

STATIONARY SOURCES

Stationary source emissions refer to those that originate from a single place or object that does not move around. Typical stationary sources include power plants, mines, smokestacks, vents, incinerators, buildings, and other facilities using industrial combustion processes. Stationary point sources have one or more emission sources at a facility with an identified location and are usually associated with manufacturing and industrial projects. Examples include refinery boilers or combustion equipment that produce electricity or process heat.

Point Sources

The City of Lancaster contains several point sources of air pollutants. A variety of pollutants, including reactive hydrocarbons from activities such as spray painting, are generated by smaller commercial and industrial uses. These pollutant sources will increase in number as the study area develops. While each use might not represent a significant source of air pollution, the cumulative effects of development of the entire study area will be significant. Although the number and nature of future additional air pollutant point sources is presently unknown, each individual source would be required to comply with rules and regulations as they are established by the AVAQMD. These regulations require that sources of hazardous materials or criteria pollutants above threshold levels obtain permits prior to operation of the facility.

Agricultural processes also generate air pollutants and odors from activities such as tilling for soil preparation, spraying of crops with pesticides, weed burning, dust from harvesting fruits and vegetables, and animal movement. Agricultural use of pesticides may produce air quality impacts at downwind sensitive receptor locations if the pesticides become airborne during windy conditions. Sensitive receptors downwind may also be subjected to airborne dust particles that are not readily filtered by the human respiratory system. Use of agricultural machinery, such as plows and tractors, results in fugitive dust that further contributes to the particulate problem in the study area.

MOBILE SOURCES

Mobile sources of emissions refer to those moving objects that release pollution and include cars, trucks, busses, planes, trains, motorcycles, and gasoline-powered lawn mowers. Mobile source emissions may be classified as on-road or off-road sources. Increased traffic volumes within the City of Lancaster could contribute to regional incremental emissions of NO_x, VOC, CO, SO_x, and PM_{10}. The following is a listing of emissions that typically emanate from vehicular sources:

- Vehicle running exhaust (VOC, CO, NO_x, SO_x, and PM_{10});
- Vehicle tire wear particulates (PM_{10});
- Vehicle brake wear particulates (PM_{10});
- Vehicle variable starts (VOC, CO, NO_x);
- Vehicle hot soaks (VOC);

- Vehicle diurnal (VOC);
- Vehicle resting losses (VOC); and
- Vehicle evaporative running losses (VOC).

On-Road Sources

These sources are considered to be a combination of emissions from automobiles, trucks, and indirect sources. Indirect sources are those that by themselves may not emit air contaminants, however, they indirectly cause the generation of air pollutants by attracting vehicle trips or by consuming energy. Examples of these indirect sources include an office complex or commercial center that generates trips and consumes energy resources.

Off-Road Sources

Off-road sources include aircraft, ships, trains, and construction equipment.

7.5 SENSITIVE RECEPTORS

Sensitive populations are more susceptible to the effects of air pollution than are the general population. Sensitive populations (sensitive receptors) that are in proximity to localized sources of toxics and CO are of particular concern. Land uses considered sensitive receptors include residences, schools, playgrounds, childcare centers, athletic facilities, churches, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes.

REGIONAL PLANNING DOCUMENTS

The Lancaster area is subject to three comprehensive regional planning documents, which are described below.

Regional Mobility Plan (RMP)

This plan describes the traffic-related impacts of regional growth, based on population projections from the SCAG, and proposes a regional plan to improve traffic flow. The plan includes programs for streets, highways, and public transit.

Regional Housing Needs Assessment (RHNA)

This report assesses what amount and type of housing would be needed by individual cities and areas in southern California, based on SCAG population and housing projections.

Growth Management Plan (GMP)

This document incorporates the mobility goals of the RMP, the housing goals of the RHNA, and the air quality goals of AVAQMD's *Ozone Attainment Plan* into a comprehensive framework for municipal planning. A major thrust of the GMP is to achieve a jobs/housing balance within the various localities that make up southern California.

Together, these documents outline a coordinated strategy for all cities in the SCAG region to meet specific SCAG and local *Ozone Attainment Plan* goals relative to growth, housing, and transportation by the year 2020. These documents also identify specific goals for sub-regions in terms of population, housing, and employment by the year 2020. Lancaster is part of the section of the North Los Angeles County Subregion, which includes Palmdale and the unincorporated areas of the Antelope Valley. Table 7-4, Regional Growth, displays goals for this area.

Table 7-4
Regional Growth

Area of Study	2000	2006	Growth Rate (2000-2006)		2030	Growth Rate (2000-2030)	
			Change	Percent		Change	Percent
Los Angeles County	9,519,338	10,245,572	726,234	7.6	12,221,799	2,702,461	28.4
North Los Angeles County Subregion	512,391	614,502[1]	102,111	19.9	1,179,228	666,837	130.1
Lancaster City	118,718	138,392	19,674	16.6	259,696	140,978	118.8

1. Represents 2005 population from SCAG, City Projections, 2004. http://www.scag.ca.gov/forecast/index.htm

Source: State of California, Department of Finance, *E-5 Population and Housing Estimates for Cities, Counties and the State, 2001-2006, with 2000 Benchmark*. Sacramento, California, May 2006.

Local Governments

Local governments, such as the City of Lancaster, have the authority and responsibility to reduce air pollution through their police power and land use decision-making authority. Specifically, local governments are responsible for the mitigation of emissions resulting from land use decisions and for the implementation of transportation control measures as outlined in the Ozone Attainment Plan. The *Ozone Attainment Plan* assigns local governments responsibilities to assist the MDAB in meeting air quality goals and policies. In general, a first step toward implementation of a local government's responsibility is accomplished by identifying air quality goals, policies, and implementation measures in its General Plan. Through capital improvement programs, local governments can fund infrastructure that contributes to improved air quality, by requiring such improvements as bus turnouts, energy-efficient streetlights, and synchronized traffic signals. In accordance with CEQA requirements and the CEQA review process, local governments assess air quality impacts, require mitigation of potential air quality impacts by conditioning discretionary permits, and monitor and enforce implementation of such mitigation.

7.6 REFERENCES

Antelope Valley Air Quality Management District, *California Environmental Quality Act and Federal Conformity Guidelines*, May 2005.

California Air Resources Board Official Website, A*erometric Data Analysis and Management (ADAM) Air Quality Data Statistics*, www.arb.ca.gov/adam/welcome.html.

State of California, Department of Finance, *E-5 Population and Housing Estimates for Cities, Counties and the State, 2001-2006, with 2000 Benchmark*. Sacramento, California, May 2006.

United States Census 2000.

8.0 Noise

8.0 NOISE

8.1 INTRODUCTION

Noise is an unavoidable by-product of modern mechanized civilization, and has long been an accepted part of urban life. Noise, defined as unwanted sound, is principally caused by the operation of machinery for transportation (automobiles, trucks, trains, and aircraft) and machinery for production (industry and construction).

Noise affects the quality of our environment, both at home and work, as well as enjoyment of recreational activity. Excessive amounts of noise may have adverse affects on physical activity and psychological stability. The effect of noise on the individual and the community varies with its duration, its intensity, and the tolerance level of the individual.

The general background level of noise has risen as the Antelope Valley and City of Lancaster have grown. Along with this growth and increased level of noise comes the need for a better understanding of the causes, effects, and mitigation of noise within the manmade environment.

FUNDAMENTALS OF NOISE

Sound is technically described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. Noise is typically described as “unwanted sound,” and is a byproduct of transportation, industrial, and other activities within the community that permeates into the environment and causes disturbance.

Noise Evaluation

The sound we hear is a result of a sound source inducing vibration in the air. The vibration produces alternating bands of relatively dense and sparse particles of air that spread outward from the source. The result of the particle movement is a fluctuation in the normal atmospheric pressure, or sound waves. These waves radiate in all directions from the source and may be reflected and scattered, or possibly turn corners. When the vibration stops, the sound waves disappear instantly, and sound ceases. Sound may be described in terms of three variables: Amplitude (perceived as loudness), frequency (perceived as pitch), and time pattern.

The rate at which a sound source vibrates determines frequency. The units for frequency refer to the number of times that the acoustical pressure (amplitude) peaks for each sound per unit of time. The unit of time is usually one second and the term Hertz (Hz) is used to designate the number of cycles per second. A sound that has more cycles per second is higher pitched. Humans can identify sounds with frequencies from about 20 Hz to 20,000 Hz. Pure tones are relatively rare in real-life situations and most sounds consist instead of a complex mixture of many frequencies.

Major sources of noise within the Lancaster study area include the Antelope Valley Freeway and the arterial roadway system, aircraft operations related to Air Force Plant 42 (Palmdale Regional Airport), Fox Field, Edwards Air Force Base, and the Union Pacific Railroad line.

Noise Measurement

The standard unit of measurement of the loudness of sound is the decibel (dB). This unit expresses an exponential increase, where an increase of 10 decibels represents a tenfold increase in the sound generated. In order to describe "average noise levels," the measurements are then weighted and added over a specified time period to reflect the magnitude of the sound, as well as its duration, frequency, and time of occurrence.

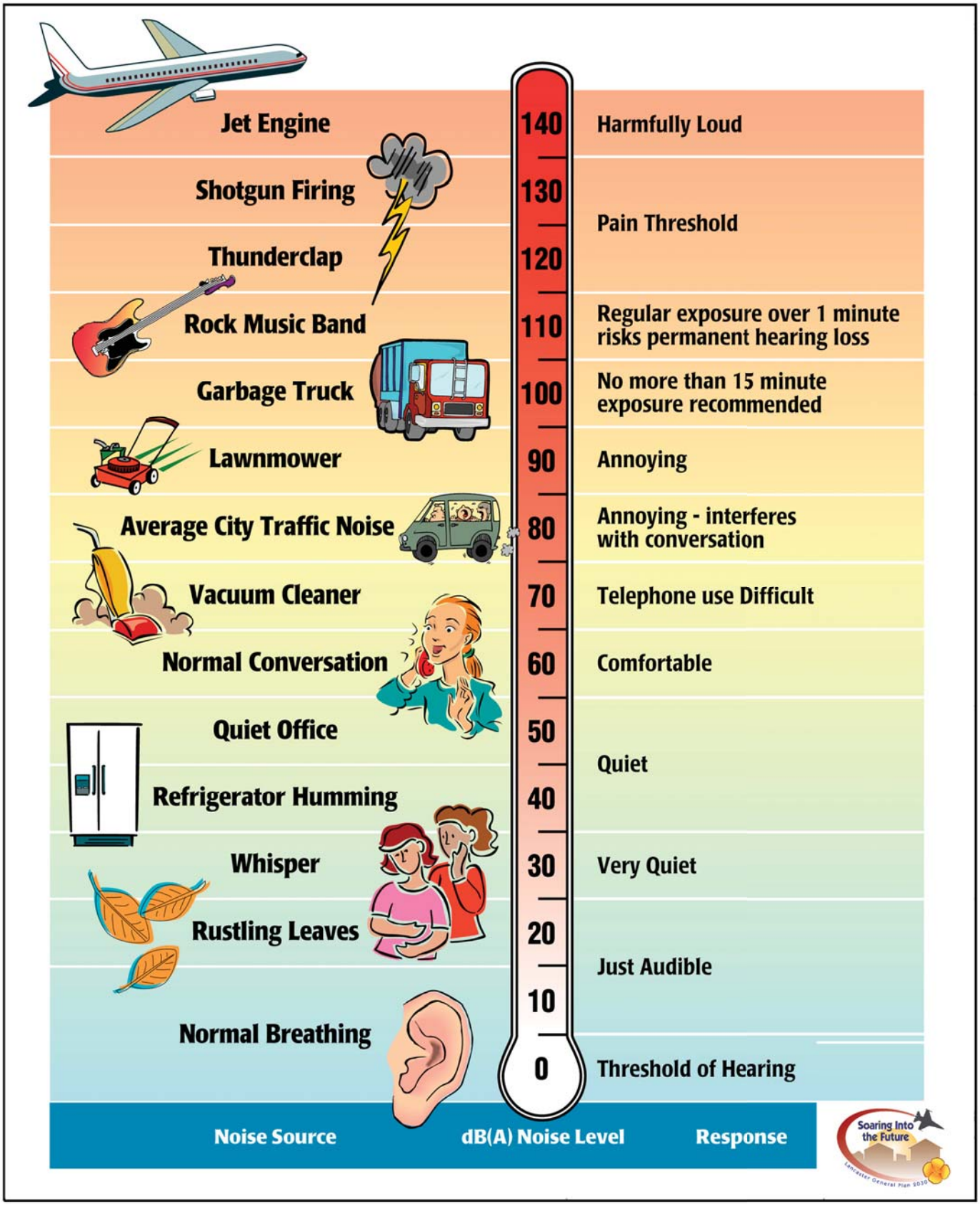
The sound pressure level is measured on a logarithmic scale. The 0 dB level is based on the lowest detectable sound pressure level that people can perceive (an audible sound that is not zero sound pressure level). The decibel scale has a value of 1.0 dB at the threshold of hearing and 140 dB at the threshold of pain. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. A 1.0-decibel increase is just audible, and a 10-decibel increase means the sound is perceived as being twice as loud as before. In most situations a 3 dB change in sound pressure level is considered a "just-detectable" difference and a 5 dB change (either louder or quieter) is readily noticeable.

Sound from a small localized source (approximating a "point" source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates or drops-off at a rate of 6 dB for each doubling of the distance (6 dB/DD). This decrease, due to the geometric spreading of the energy over an ever-increasing area, is referred to as the *inverse square law*. However, highway traffic noise is not a single, stationary point source of sound. The movement of the vehicles makes the source of the sound appear to emanate from a line (line source) rather than a point when viewed over some time interval. Since the change in surface area of a cylinder only increases by two times for each doubling of the radius instead of four times associated with spheres, the change in sound level is 3 dB per doubling of distance.

Noise levels are expressed as A-weighted decibels (dBA), which adjusts the actual sound level to reflect only those frequencies audible to the human ear. The human ear is most sensitive to frequencies around 4,000 Hz (about the highest note on a piano) and less sensitive to low frequencies below 100 Hz (such as a low rumble). Other examples of the decibel level of various noise sources include: the quiet rustle of leaves (10 dBA), a soft whisper (20 to 30 dBA), the hum of a small electric clock (40 dBA), ambient noise outdoors or in a kitchen (50 dBA), normal conversation at five feet (55 dBA), and a busy street at 50 feet (75 dBA). Examples of various sound levels are shown in Figure 8-1, Sound Levels and Human Response.

Noise Descriptors

Numerous methods have been developed to measure sound over a period of time. These methods include (1) the community noise equivalent level (CNEL); (2) equivalent sound level (Leq); (3) day/night average sound level (Ldn); and (4) single event noise exposure level (SENEL). These methods are described in Table 8-1, Noise Descriptors.



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Sound Levels and Human Response

Figure 8-1

Table 8-1
Noise Descriptors

Term	Definition
Decibel (dB)	The unit for measuring the volume of sound equal to 10 times the logarithm (base 10) of the ratio of the pressure of a measured sound to a reference pressure (20 micropascals).
A-Weighted Decibel (dBA)	A sound measurement scale that adjusts the pressure of individual frequencies according to human sensitivities. The scale accounts for the fact that the region of highest sensitivity for the human ear is between 2,000 and 4,000 cycles per second (hertz).
Equivalent Sound Level (L_{eq})	The sound level containing the same total energy as a time varying signal over a given time period. The L_{eq} is the value that expresses the time averaged total energy of a fluctuating sound level.
Maximum Sound Level (L_{max})	The highest individual sound level (dBA) occurring over a given time period.
Minimum Sound Level (L_{min})	The lowest individual sound level (dBA) occurring over a given time period.
Community Noise Equivalent Level (CNEL)	A rating of community noise exposure to all sources of sound that differentiates between daytime, evening, and nighttime noise exposure. These adjustments are +5 dBA for the evening, 7:00 PM to 10:00 PM, and +10 dBA for the night, 10:00 PM to 7:00 AM.
Day/Night Average (L_{dn})	The L_{dn} is a measure of the 24-hour average noise level at a given location. It was adopted by the U.S. Environmental Protection Agency (EPA) for developing criteria for the evaluation of community noise exposure. It is based on a measure of the average noise level over a given time period called the L_{eq}. The L_{dn} is calculated by averaging the Leq's for each hour of the day at a given location after penalizing the "sleeping hours" (defined as 10:00 PM to 7:00 AM), by 10 dBA to account for the increased sensitivity of people to noises that occur at night.
Single Event Noise Exposure Level (SENEL)	The Single Event Noise Exposure Level (SENEL) is the most appropriate noise level duration rating scale for a single noise occurrence. The SENEL, given in decibels, is the noise exposure level of a single event measured over the time interval between the initial and final times for which it exceeds the threshold noise level.
Exceedance Level (L_n)	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% (L_{01}, L_{10}, L_{50}, L_{90}, respectively) of the time during the measurement period.

Source: Cyril M. Harris, *Handbook of Noise Control*, 1979.

Vibration Characteristics

Vibration is a unique form of noise. It is unique because its energy is carried through structures and the earth, whereas, noise is simply carried through the air. Thus, vibration is generally felt rather than heard. Some vibration effects can be caused by noise (e.g., the rattling of windows from truck pass-bys). This phenomenon is related to the coupling of the acoustic energy at frequencies that are close to the resonant frequency of the material being vibrated. Typically, groundborne vibration generated by manmade activities attenuates rapidly as the distance from the source of the vibration increases. Vibration, which spreads through the ground rapidly, diminishes in amplitude with distance from the source. The ground motion caused by vibration is measured as particle velocity in inches per second and, in the United States is referenced as vibration decibels (VdB).

The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. Sources within buildings such as operation of mechanical equipment, movement of people, or the slamming of doors causes most perceptible indoor vibration. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration from traffic is barely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration velocity, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings.

HUMAN REACTION TO SOUND

An estimated 21 million people in the United States currently have some degree of hearing loss. In approximately 10 million of these cases, exposure to very loud, or sustained noise caused damage to the inner ear, which could be substantial even before a hearing loss was actually noticed. To prevent the spread of hearing loss, a desirable goal would be to minimize the number of noise sources that expose people to sound levels above 70 decibels. Although hearing impairment is one of the harmful effects of noise on people, there are several other effects noise can have on humans.

Physical and Psychological Responses

Noise can also cause a variety of temporary physical and psychological responses in humans. Temporary physical reactions to passing noises range from a startle reflex to constriction in peripheral blood vessels; the secretion of saliva and gastric fluids; and changes in heart rate, breathing patterns, the chemical composition of the blood and urine, dilation of the pupils of the eye, visual acuity, and equilibrium. The chronic recurrence of these physical reactions has been shown to aggravate headaches, fatigue, digestive disorders, heart disease, circulatory and equilibrium disorders. Noise is a contributing factor in stress-related ailments such as ulcers, high blood pressure, and anxiety.

Noise can mask important sounds and disrupt communication. This process can cause anything from a slight irritation to a serious safety hazard. Noise-induced sleep interference is one of the critical components of community annoyance. Sound level, frequency distribution, duration, repetition, and variability can make it difficult to fall asleep and may cause momentary shifts in the natural sleep pattern, or level of sleep. It can produce short-term adverse effects on

mood changes and job performance, with the possibility of more serious effects on health if it continues over long periods.

Noise can cause adverse effects on task performance and behavior at work, and non-occupational and social settings. These effects are the subject of some controversy, since the presence and degree of effects depends on a variety of intervening variables. Most research in this area has focused mainly on occupational settings, where noise levels must be sufficiently high for effects on performance to occur.

Noise has been implicated in the development or exacerbation of a variety of health problems, ranging from hypertension to psychosis. As with other categories, quantifying these effects is difficult due to the amount of variables that need to be considered in each situation. As a biological stressor, noise can influence the entire physiological system. The strongest evidence lies in the cardiovascular effects of noise exposure; research in this area is ongoing. Although evidence for the various effects of noise have differing levels of certainty, it is clear that noise can affect human health. Table 8-2, Noise Levels and Human Responses, summarizes the harmful effects of noise discussed above.

Table 8-2
Noise Levels and Human Responses

Health Effect	Noise Level[1]	Activity Area[2]
Hearing Loss	Leq ≤ 70 dB	All Areas
Outdoor Activity Interference and Annoyance	Ldn ≤ 55 dB	Outdoors in residential areas where people spend time
	Leq ≤ 55 dB	Outdoor areas where people spend a limited amount of time
Indoor Activity Interference and Annoyance	Ldn ≤ 45 dB	Indoor residential
	Leq ≤ 45 dB	Other indoor areas with human activities (e.g. schools)

Source: EPA, *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*, March 1974.

1. Refer to Table 8-1, Noise Descriptors, for a definition of Leq and Ldn.
2. "Area" refers to residential, industrial, commercial, and recreational areas, unless otherwise specified.

Community Response to Noise

Some people have a very low tolerance for noise, and approximately 10 percent of the population object to nearly any noise not of their own making. Even in the quietest manmade environment, some complaints will occur. Another 25 percent of the population will not complain even in very severe noise environments. Thus, a variety of reactions can be anticipated from people exposed to any given noise environment. Despite this, the population as a whole can be expected to exhibit the following responses to changes in noise levels: an increase or decrease of 1.0 dBA cannot be perceived except in carefully controlled laboratory experiments; a 3.0 dBA increase is just noticeable outside of the laboratory; an increase of 5.0 dBA is often necessary before any noticeable change in community response (i.e., complaints) occurs.

Table 8-3, Effects of Noise on People, details the effects of noise on individuals living in various noise environments and predicts the average community reaction to various sound levels in a residential setting. As shown, hearing loss may begin to occur at 75 Ldn, and the noise environment will be highly annoying to 37 percent of the population. Residents who live in noise environments of 70 Ldn are not likely to experience hearing loss; however, 25 percent will be highly annoyed, and noise will be viewed as one of the most important adverse aspects of the community environment. At 65 Ldn, hearing loss will not occur, and 15 percent of the population will be highly annoyed by the noise environment. As shown in Table 8-4, Highly Annoyed Persons and Registered Complaints as a Function of Ldn, at very low noise exposures, up to 13 percent of the population will display a high degree of annoyance, even though complaints might not be registered. At the other end of the spectrum, even in communities exposed to noise levels between 75 and 80 Ldn, only 15 to 20 percent of the population will register a complaint, despite the fact that more than half are highly annoyed by the noise environment.

Table 8-3
Effects of Noise on People[1]

Effects [2]	Hearing Loss	Speech Interference		Annoyance [3]	Average Community Reaction [4]	General Community Attitude Towards Area
Day-Night Average Sound Level in Decibels	Qualitative Description	Indoor: % Sentence Intelligibility	Outdoor: Distance (meters) for 95% Sentence Intelligibility	% of Population Highly Annoyed [5]		
75 and above	May Begin to Occur	98%	0.5	37%	Very Severe	Noise is likely to be the most important of all adverse aspects of the community environment.
70	Will Not Likely Occur	99%	0.9	25%	Severe	Noise is one of the important adverse aspects of the community environment.
65	Will Not Occur	100%	1.5	15%	Significant	Noise is one of the important adverse aspects of the community environment.
60	Will Not Occur	100%	2.0	9%	Moderate to Slight	Noise may be considered an adverse aspect of the community environment.
55 and below	Will Not Occur	100%	3.5	4%		Noise considered no more important than various other environmental factors.

Source: U.S.D.O.T., Guidelines *for Considering Noise in Land Use Planning and Control*, 1980.

1. Research implicates noise as a factor producing stress-related health effects such as heart disease, high-blood pressure and stroke, ulcers and other digestive disorders. The relationships between noise and these effects, however, have not as yet been quantified.
2. "Speech Interference" data are drawn from the following tables in EPA's "Levels Document"; Table 3, Figure D-1, Figure D-2, Figure D-3. All other data from National Academy of Science, *Guidelines for Preparing Environmental Impact Statements on Noise, Report of Working Group 69 on Evaluation of Environmental Impact of Noise*, 1977.
3. Depends on attitudes and other factors.
4. Attitudes or other non-acoustic factors can modify this. Noise at low levels can still be an important problem, particularly when it intrudes into a quiet environment.
5. The percentages of people reporting annoyance to lesser extents are higher in each case. An unknown small percentage of people will report being "highly annoyed" even in the quietest surroundings. One reason is the difficulty all people have in integrating annoyance over a very long time.

Table 8-4
Highly Annoyed Persons and Registered Complaints as a Function of Ldn

Noise Level (Ldn)	Percentage of Highly Annoyed	Percentage of Complaints
50	13	Less Than 1
55	17	1
60	23	2
65	33	5
70	44	10
75	54	15
80	62	Over 20

Source: U.S. EPA, *Public Health and Welfare Criteria for Noise*, July 27, 1973.

Community responses to noise may range from registering a complaint by telephone or letter initiating court action, depending upon each individual's susceptibility to noise and personal attitudes toward noise. Several factors are related to the level of community annoyance. These include:

- Fear associated with the aircraft activities (fear of a plane crash);
- Socioeconomic status and educational level of the residents;
- Resident's belief that they are being treated unfairly;
- Attitudes regarding the usefulness of the activity creating the noise; and
- Resident's belief that the noise source could be controlled.

Recent studies have shown that changes in long-term noise levels, measured in units of Ldn or CNEL, are noticeable and that people respond. About 10 percent of the people exposed to traffic noise of 60 Ldn will report being highly annoyed with the noise, and each increase of one Ldn is associated with approximately two percent more people being highly annoyed. When traffic noise exceeds 60 Ldn or aircraft noise exceeds 55 Ldn, people begin complaining. Group and legal actions to stop the noise generally occur when traffic noise levels approach 70 Ldn and aircraft noise levels approach 65 Ldn.

General Methods to Reduce Noise Impacts

There are several basic techniques available to minimize the adverse effects of noise on sensitive noise receivers. Classical engineering principles suggest controlling the noise source whenever feasible and protecting the noise receptors when noise source control mechanisms have been pre-empted by State and Federal governments.

Noise producers within local jurisdictions include industrial processes, electrical substations, wastewater treatment facilities, transportation system locations, swimming pool/spa pump motors, air conditioning units, drive-through speakers, siren usage, and local government controlled or sanctioned activities (City vehicles, public works projects). Regulatory mechanisms available to control these noise sources include: City Noise Ordinance, the application of "conditions of approval" on new developments, land use policy and approval practices as outlined in the General Plan, and the provision of noise information in permit applications for swimming pools, spas, and air conditioning systems.

In the event that source control mechanisms have been employed and noise impacts persist or are projected to occur, additional techniques should be considered. Acoustic site planning, architectural design, acoustic construction techniques, and the erection of noise barriers are all effective methods for reducing noise impacts.

Acoustic site planning involves the careful arrangement of land uses, lots, and buildings to minimize intrusive noise levels. The placement of noise compatible land uses between the roadway and more sensitive uses is an effective planning technique. The use of buildings as noise barriers, and their orientation away from the source of noise, can shield sensitive activities, entrances, and common open space areas. Clustered and planned unit developments can maximize the amount of open space available for landscaped buffers next to heavily traveled roadways and thereby allow aesthetic residential lot setbacks in place of continuous noise barriers.

Acoustic architectural design involves the incorporation of noise reduction strategies in the design and layout of individual structures. Building heights, room arrangements, window size and placement, balcony and courtyard design, and the provision of air conditioning all play an important role in shielding noise sensitive activities from intrusive sound levels.

Acoustic construction is the treatment of various parts of a building to reduce interior noise levels. Acoustic wall design, doors, ceilings and floors, as well as dense building materials, the use of acoustic windows (double glazed, double paned, thick, non-opening, or small with air-tight seals), and the inclusion of maximum air spaces in attics and walls are all available options.

Noise barriers are relatively easy to design and inexpensive. Consequently, they are often used indiscriminately in place of the techniques discussed above, resulting in developments where each road is bordered by six foot block walls, behind which residences are “protected” from excessive noise levels. Ideally, noise barriers would incorporate the placement of berms, walls, or a combination of the two in conjunction with appropriate landscaping to create an aesthetically pleasing environment. Where space is available (clustered developments), a meandering earth berm is both effective and pleasing. Where space is restricted, a wall is effective. In either case, thick coniferous landscaping could be specified to reduce the visual impact of the barrier.

8.2 LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

It is difficult to specify noise levels that are generally acceptable to everyone; what is annoying to one person may be unnoticed by another. Standards may be based on studies of the ability of people to sleep, talk, or work under various noise conditions. However, all such studies recognize that individual responses vary considerably. Standards usually address the needs of most of the general population.

This section describes the laws, ordinances, regulations and standards that are applicable to the study area. Regulatory requirements related to environmental noise are typically promulgated at the local level. However, Federal and State agencies provide standards and guidelines to the local jurisdictions.

FEDERAL GUIDELINES AND STANDARDS

The Federal Highway Administration (FHWA) has developed a series of maximum design noise levels for various activity categories that are expressed in terms of equivalent sound levels (Leq) and L_{10} values (refer to Table 8-1 for a definition of Leq and L_{10}). These design noise levels are commonly used on Federally funded road projects or projects for which Federal review or California Department of Transportation (Caltrans) review is anticipated.

The FHWA design noise levels represent maximum values and incorporate tradeoffs between desirable and feasible noise levels (recognizing that in many cases lower noise exposures would result in even greater community benefits). The design levels appear in Table 8-5, Design Noise Level/Activity Relationship, and are to be applied to:

- Undeveloped lands for which development is planned, designed, and programmed on the highway or other Federally funded construction project is publicly noticed;
- Activities and land uses in existence when the project is publicly noticed; and
- Those areas which have regular human use and in which a lowered noise level would be of benefit.

Table 8-5
Design Noise Level/Activity Relationship

Activity Category	Design Noise Leq(h)	Levels L_{10}(h)	Description of Activity Category
A	57 dBA (Exterior)	60 dBA (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 dBA (Exterior)	70 dBA (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 dBA (Exterior)	75 dBA (exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	-	-	Undeveloped lands.
E	52 dBA (Interior)	55 dBA (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

1. Either L_{10} or Leq (but not both) design noise levels may be used on a project.

Source: U.S. Department of Transportation, *Federal Highway Administration Planning, Environment, & Realty (HEP) Manual FHWA-HEP06-020*, April 2006.

The FHWA noise abatement criteria establish an exterior noise goal for residential areas of 67 Leq and an interior goal of 52 Leq. These criteria apply to private yard areas and assume that typical wood frame homes provide 10 dB (outdoor to indoor) noise reduction with windows open, and a 20 dB reduction with windows closed. Windows are assumed to be open, unless there is firm knowledge that they are, in fact, kept closed almost every day of the year (i.e., non-opening windows).

Table 8-6, Federal Exterior Noise Acceptability Criteria for Housing, and Table 8-7, HUD External Noise Exposure Standards for New Residential Construction, indicate Department of

Housing and Urban Development (HUD) policies used to determine eligibility for financial backing for new or rehabilitative residential construction in noise impacted areas. If the noise environment is determined to be normally unacceptable using Table 8-7, financial assistance from HUD would still be possible if noise insulation provides adequate exterior to interior noise reduction. Measures that reduce the external noise at a site are preferred, when feasible, over measures that only provide attenuation for interior spaces. HUD generally prohibits construction of new noise sensitive land uses in areas with day/night noise levels that exceed 75 dBA.

Table 8-6
Federal Exterior Noise Acceptability Criteria for Housing

Degree of Acceptability	Exterior Noise Exposure Ldn (dB)					
	55	60	65	70	75	80
Acceptable[1]						
Normally Unacceptable[2]						
Unacceptable[3]						

1. The noise exposure may be of some concern, but common building construction will make the indoor environment acceptable and the outdoor environment reasonably pleasant for recreation and play.
2. The noise exposure is significantly more severe; barriers may be necessary between the site and prominent noise sources to make the outdoor environment acceptable; special building constructions may be necessary to ensure that people indoors are sufficiently protected from outdoor noise.
3. The noise exposure at the site is so severe that the construction cost to make the indoor noise environment acceptable may be prohibitive, and the outdoor environment would still be unacceptable.

Source: Federal Register V.44 n.135, Thursday, July 12, 1979.

Table 8-7
HUD External Noise Exposure Standards for New Residential Construction

HUD Approval	Site Noise Exposure	Noise Level (Ldn)	Special Approval/Requirements
Standard	Acceptable	Not Exceeding 65 dB	None
Discouraged	Normally Acceptable	65 dB to 75 dB	Building sound attenuation of 5 dB for 65-70 dB noise level and 10 dB for 70-75 noise level. Special Environmental Clearance Approval of Regional Administration
Prohibited	Unacceptable	75 + dB	Approval of Assistant Secretary of Community Planning EIS required

Source: Federal Register v.44n.135, Thursday, July 12, 1979. Subsequent to original publication, it has been learned that a later Federal Register listing deleted HUD noise exposure standards for residential rehabilitation.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

The California Environmental Quality Act (CEQA) was enacted in 1970 and requires that all known environmental effects of a project be analyzed, including environmental noise impacts. Under CEQA, a project has a potentially significant impact if the project exposes people to noise levels in excess of standards established in the local general plan or noise ordinance. Additionally, under CEQA, a project has a potentially significant impact if the project substantially increases the ambient noise levels in the project vicinity above levels existing

without the project. If a project has a potentially significant impact, mitigation measures must be considered. If mitigation measures to reduce the impact to less than significant are not feasible because of economic, social, environmental, legal, or other conditions, the most feasible mitigation measures must be considered.

CALIFORNIA GOVERNMENT CODE

California Government Code Section 65302(f) mandates that the legislative body of each county and city adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines established by the State Department of Health Services, as shown in Table 8-8, Land Use Compatibility For Community Noise Environments.

Table 8-8
Land Use Compatibility For Community Noise Environments

Land Use Category	Community Noise Exposure (CNEL)			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential-Low Density, Single-Family, Duplex, Mobile Homes	50 - 60	55 - 70	70 – 75	75 – 85
Residential – Multiple Family	50 – 65	60 – 70	70 – 75	70 – 85
Transient Lodging – Motel, Hotels	50 – 65	60 – 70	70 – 80	80 – 85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 – 70	60 – 70	70 – 80	80 – 85
Auditoriums, Concert Halls, Amphitheaters	NA	50 – 70	NA	65 – 85
Sports Arenas, Outdoor Spectator Sports	NA	50 – 75	NA	70 – 85
Playgrounds, Neighborhood Parks	50 – 70	NA	67.5 – 77.5	72.5 – 85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 – 70	NA	70 – 80	80 – 85
Office Buildings, Business Commercial and Professional	50 – 70	67.5 – 77.5	75 – 85	NA
Industrial, Manufacturing, Utilities, Agriculture	50 – 75	70 – 80	75 – 85	NA

CNEL = community noise equivalent level; NA = not applicable

NORMALLY ACCEPTABLE: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
CONDITIONALLY ACCEPTABLE: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features have been included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.
NORMALLY UNACCEPTABLE: New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise-insulation features must be included in the design.
CLEARLY UNACCEPTABLE: New construction or development should generally not be undertaken.

Source: Office of Planning and Research, California, *General Plan Guidelines,* October 2003.

The guidelines rank noise land use compatibility in terms of “normally acceptable,” “conditionally acceptable,” “normally unacceptable”, and “clearly unacceptable” noise levels for various land use types. Single-family homes are “normally acceptable” in exterior noise environments up to 60 CNEL and “conditionally acceptable” up to 70 CNEL. Multiple-family residential uses are “normally acceptable” up to 65 CNEL and “conditionally acceptable” up to 70 CNEL. Schools, libraries, and churches are “normally acceptable” up to 70 CNEL, as are office buildings and businesses, commercial, and professional uses.

STATE GUIDELINES AND STANDARDS

Section 1092 of Title 25, Chapter 1, Subchapter 1, Article 4, of the California Administrative Code includes noise insulation standards which detail specific requirements for new multi-family structures (hotels, motels, apartments, condominiums, and other attached dwellings) located within the 60 CNEL contour adjacent to roads, railroads, rapid transit lines, airports or industrial areas. An acoustic analysis is required showing that these multi-family units have been designed to limit interior noise levels, with doors and windows closed, to 45 CNEL in any habitable room. Title 21 of the California Administration Code (Subchapter 6, Article 2, Section 5014) also specifies that noise levels in all habitable rooms shall not exceed 45 CNEL.

Each locality, in developing its Noise Element, must make a determination regarding how much noise is too much. A community's sensitivity to noise may be evaluated by starting with the general guidelines developed by the State of California, and then applying adjustment factors. These allow acceptability standards to be set which reflect the desires of the community and its assessment of the relative importance of noise pollution, and are below the known levels of health impairment.

LOCAL JURISDICTION

City of Lancaster Noise Standards

The City of Lancaster has adopted the California Office of Planning and Research land use compatibility chart for community noise (Table 8-8) as a planning guideline. As stated above, it identifies normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable noise levels for various land use types. Table 8-9, City of Lancaster Normalized CNEL Corrections, contains correction factors that can be used to modify the compatibility assessments.

As shown in Table 8-9, single-family and multi-family homes are "normally acceptable" in exterior noise environments up to 60 CNEL and "conditionally acceptable" up to 70 CNEL. Schools, libraries, hospitals, nursing homes, and churches are "normally acceptable" up to 70 CNEL. Industrial uses are "normally acceptable" up to 75 CNEL, as are office buildings for business, commercial, and professional uses.

A "conditionally acceptable" designation implies that new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements for each land use type is made and needed noise insulation features are incorporated in the design. By comparison, a "normally acceptable" designation indicates that conventional construction can occur with no special noise reduction requirements.

City of Lancaster Noise Environment

As a prerequisite to the formation of an effective noise control program, a community must be aware of the location and extent of local noise problems; namely, major noise source locations and the levels of exposure. An inventory of noise sources can be utilized to focus noise control and abatement efforts to achieve the most good. In some cases, the control of offending noise sources will be beyond the City's jurisdiction; however, by recognizing these limitations, more effective land use strategies can be developed. Table 8-10, Noise-Compatible Land Use

Objectives, identifies noise standards that are to be utilized for design purposes in new development, which promote noise compatible land use relationships.

Table 8-9
City of Lancaster Normalized CNEL Corrections

Type of Correction	Description	Measured CNEL Change (dBA)[1]
Seasonal Correction	Summer (or year-round operation)	0
	Winter only (or windows always closed)	-5
Correction for Outdoor Residual Noise Level	Quiet suburban or rural community (remote from large cities and from industrial activity and trucking).	+5
	Quiet suburban or rural community (not located near industrial activity).	+5
	Urban residential community (not immediately adjacent to heavily traveled roads and industrial areas).	0
	Noisy urban residential community (near relatively busy roads or industrial areas).	-5
	Very noisy urban residential community.	-10
Correction for Previous Exposure and Community Attitudes	No prior experience with the intruding noise.	+5
	Community has had some previous exposure to noise, but little effort is being made to control the noise. This correction may also be applied in a situation where the community has not been exposed to the noise previously, but the people are aware that bona fide efforts are being made to control the noise.	0
	Community has had some considerable previous exposure to the intruding noise and the noisemaker's relations with the community are good.	-5
	Community is aware that the operation causing noise is very necessary and will not continue indefinitely. This correction can be applied for an operation of limited duration and under emergency circumstances.	-10
Pure Tone or Impulse	No pure tone or impulsive in character.	0
	Pure tone or impulsive character present.	-5

Source: California Office of Noise Control, *Guidelines for the Preparation and Content of Noise Elements of the General Plan,* February 1976.

CNEL = community noise equivalent level; dBA = A-weighted decibel.

1. Corrections to be added to the measured CNEL to obtain normalized CNEL.

Table 8-10
Noise-Compatible Land Use Objectives

Land Use	Maximum Exterior CNEL	Maximum Interior CNEL
Rural, Single-, and Multiple-Family Residential Dwellings	65 dBA	45 dBA
Schools: Classrooms Playgrounds	 65 dBA 70 dBA	 45 dBA -
Libraries	-	50 dBA
Hospitals and Convalescent Facilities Living Areas Sleeping Areas	 - -	 50 dBA 40 dBA
Commercial and Industrial Office Areas	70 dBA -	- 50 dBA

CNEL = community noise equivalent level.

Source: *City of Lancaster General Plan EIR,* Noise Compatible Land Use Objectives.

Both stationary and mobile noise sources within Lancaster need to be considered. Stationary sources of noise include airports, industrial and construction activities, air conditioning and refrigeration units, whistles or bells (signaling breaks or shift changes), high level radio, stereo, or television usage, power tools, lawnmowers, appliances used in the home, and barking dogs. Noise associated with these sources may represent a single event noise occurrence, short-term, or long-term/continuous noise. As stated above, the City of Lancaster established maximum exterior and interior noise levels for land uses in the City; refer to Table 8-10.

Mobile noise sources are typically transportation-related and include aircraft, trains, automobiles, trucks, buses, and off-road vehicles. Vehicular traffic noise is subject to the noise standards identified in Table 8-10. Since mobile noise sources are often associated with traffic volumes, these impacts are many times categorized as long-term noise impacts.

Aircraft and Airport Noise

Noise exposure contours around airports are determined from the number and type of aircraft using the airport, the magnitude and duration of each fly over, flight paths, and the time of day when flights occur. The Airport Noise Standards contained in Title 4 of the *California Administrative Code* specify that airports shall not permit noise exposures of 65 CNEL or greater to extend into residential or school areas.

The State Aeronautics Act specifies 65 dB CNEL as the criterion which airports must meet to protect existing residential communities from unacceptable exterior exposures to aircraft noise. The exterior maximum of 65 CNEL is given as the level deemed acceptable to a reasonable person residing in urban residential areas where houses are of typical California construction and may have windows partially open. It has been selected with reference to speech interference, sleep interference, and community reaction.

There are three primary sources of air traffic affecting noise levels within the City of Lancaster including the General William J. Fox Airfield, Edwards Air Force Base, and Air Force Plant 42 (Palmdale Regional Airport). Refer to Figure 6-7 of the Transportation Section for the locations of local airports.

GENERAL WILLIAM J. FOX AIRFIELD

General William J. Fox Airfield is a regional general aviation facility serving the cities of Lancaster and Palmdale as well as unincorporated communities in northern Los Angeles County. The airport produces a minor amount of aircraft noise, and is currently the only general aviation facility in the Lancaster area. Despite being inside the city limits, development in the immediate vicinity of the airport is minimal. Additionally, all of the land within a mile of the airport boundary has been rezoned for industrial use.

The *Fox Field Master Plan* developed in 1984 indicated an operational level in excess of 60,000 aircraft movements annually at that time. According to the *2004 General William J. Fox Airfield Land Use Compatibility Plan,* the 2002-2003 annual aircraft movement total was 83,000, with a projected future count of 198,000 in 20 years or more. Approximately 64 percent of these operations are expected to be single engine piston aircraft.

No significant changes to the runway configuration are planned, although the *Airport Master Plan* of 1996 contemplates future establishment of approaches to both ends of the runway.

Since the Master Plan was developed in 1984, there has been an increase in small twin-engine commercial plane activities. An air charter service occasionally operates out of the airfield, but no continual commuter service is available at this time.

Runway use was also addressed in the *Master Plan Update Environmental Assessment/ Environmental Impact Report* (May 1995) for safe use of the field during noise sensitive evening hours. The majority of current operations occur during daylight hours; operations decrease significantly after dusk. During the noise sensitive hours of 7:00 PM to 7:00 AM, less than five percent of the daily operations occur, with only one or two flights after midnight.

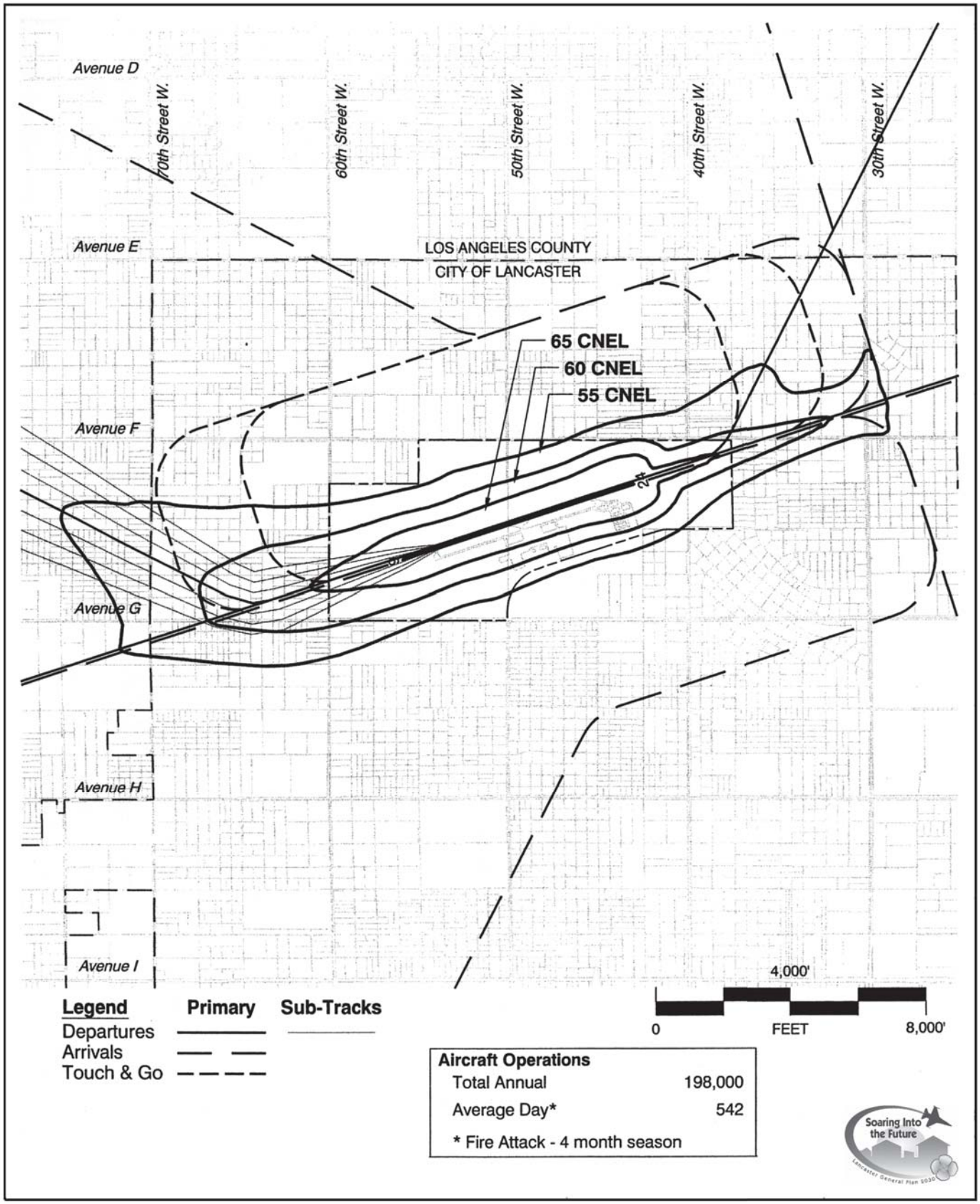
Private single and twin-engine aircrafts are based out of Fox Field. The mix of aircraft includes small jets, turboprops, and reciprocating engine aircraft. Projected noise contours at the airport for future years are depicted in Figure 8-2, Future Fox Field Noise Contours. These noise level contours represent conditions expected should the more extensive runway extension alternative presented in the *Master Plan EA/EIR* be developed. As shown in Figure 8-2, 60 dBA CNEL contours are only expected to extend past the east end and west end of the property line of the airfield facility.

AIR FORCE PLANT 42

Air Force Plant 42 is located within the incorporated boundary of Palmdale, approximately two miles east of State Route 14 (SR-14) and directly south of the City of Lancaster. Aircraft noise contours for Air Force Plant 42 are shown in Figure 8-3, Average Busy-Day CNEL Noise Contours for Air Force Plant 42, and are taken from the Department of the Air Force as part of their *Air Installation Compatible Use Zone (AICUZ) Study* completed in 2002. The contours represent composite noise resulting from aircraft operations.

The contours from the *2002 AICUZ Study* are significantly smaller (closer to Plant 42) than the previous contours presented in the previous *1990 AICUZ study*. The main reasons for these changes seem to be the type of aircraft presently used, modifications in their historical flight patterns, and level and frequency of flights over populated areas. The *2002 AICUZ Study* was reviewed at various stages by representatives from the Air Force (in addition to Plant 42 personnel), the cities of Lancaster and Palmdale, the County of Los Angeles, and the Los Angeles World Airports (formerly the Los Angeles City Department of Airports).

The existing noise contours for the Palmdale Regional Airport are within those of Plant 42. This is because these two facilities already share the same runways, and the Palmdale airport also has significantly fewer flights than Plant 42. However, if at some point the use of this airport were to become significantly increased, it is possible that the 65 CNEL contour would extend some distance off of the airport property itself. Although much of this additional noise would only affect the City of Palmdale, the land uses south of Avenue K within the Lancaster study area could eventually be adversely affected by expansion of the Palmdale Airport. To address these concerns, as well as concerns for the long term viability of Air Force Plant 42, in the early 1990s the City participated in a joint land use study that included the City of Palmdale in an effort to address noise and land use compatibility issues between the jurisdiction and Air Force Plant 42. Recommendations from the study were incorporated into the General Plan. In 1992 the City Council approved a general plan amendment and zone change to reduce allowed densities of development south of Avenue K-8 in order to improve land use compatibility with operations at Air Force Plant 42.



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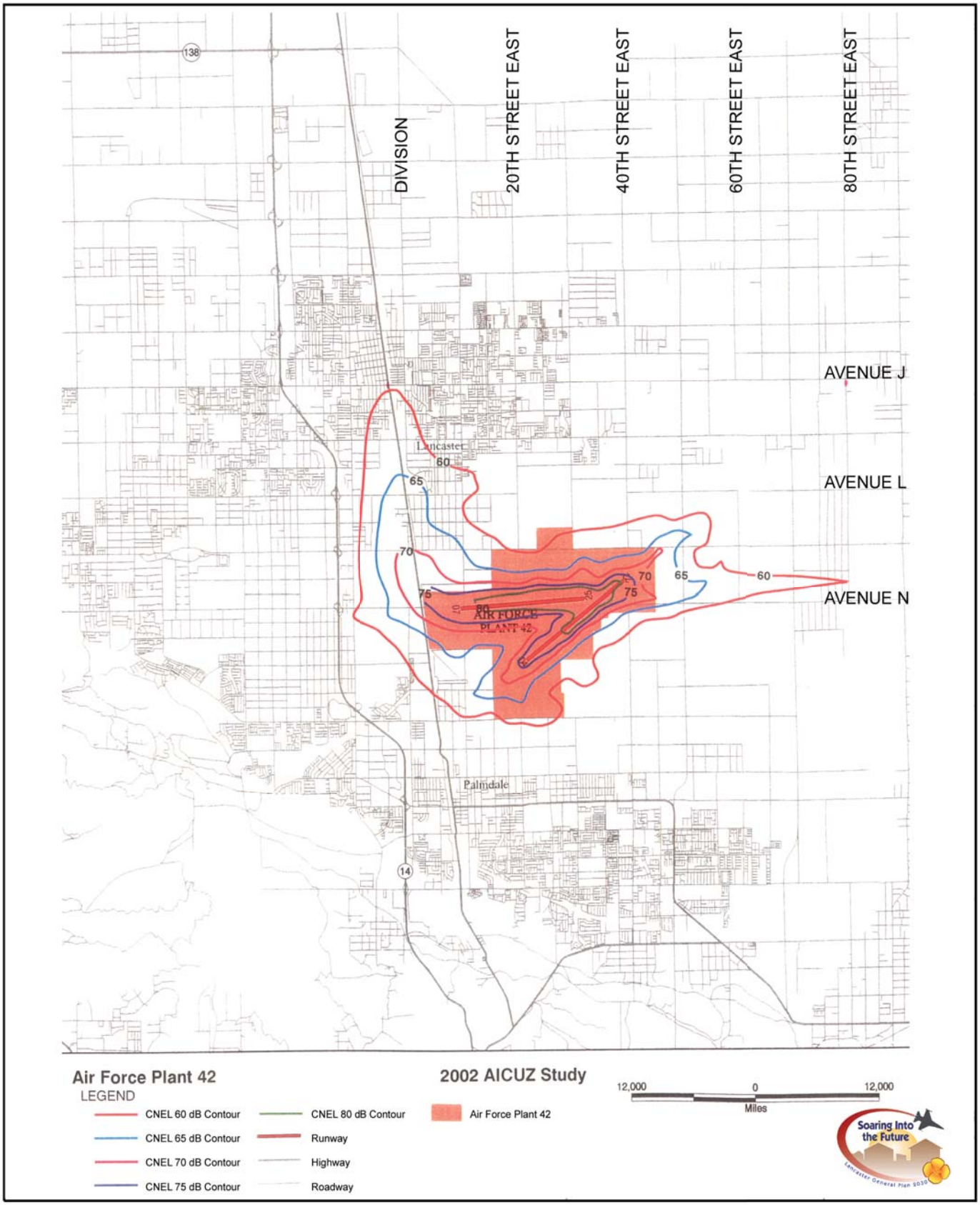
Lancaster General Plan 2030

Future Fox Field Noise Contours

Figure 8-2



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Lancaster General Plan 2030

Average Busy-Day CNEL Noise Contours for Air Force Plant 42

Figure 8-3

EDWARDS AIR FORCE BASE

Because of the arrangement of its Flight Test Range and the flight patterns of aircraft that utilize the facility, the 65 CNEL noise contour for Edwards Air Force Base (EAFB) does not extend off the base property. Therefore, this base is not required to provide an AICUZ Study. However, local and county planning agencies, with technical assistance from EAFB, have designated a Joint Land Use Study (JLUS) safety corridor approximately four miles in width, which extends west of the base's western boundary, along Avenue A. The lower half of this corridor, or the two miles within Avenue A to Avenue C, is within the City of Lancaster's Sphere of Influence. It should be noted that although the width of this zone is intended to encompass all potential flights through this corridor, it is not based on actual measured or predicted noise exposure levels at ground level. In August 1994 the Lancaster City Council adopted the recommendations contained in the Edwards Air Force Base Joint Land Use Study, which was prepared by an inter-agency team representing all local governmental agencies having land use authority adjacent to the base. This document, prepared under the direction of the City of Lancaster, contains land use restrictions/regulations, which are designed to ensure continuations of flight operations at the base.

Other Air Facilities

A helipad is located at the ground level of Antelope Valley Hospital adjacent to the emergency department. This pad is used sparingly for emergency transport of patients. There is also a helipad at the Los Angeles County Sheriffs Station on Lancaster Boulevard at Sierra Highway. This landing site is Federal Aviation Administration (FAA) approved for law enforcement and any public service helicopters that require emergency assistance. According to the Los Angeles County Sheriff's Department, most flights will take place during daytime hours.

Motor Vehicle Noise

Vehicular noise along major roadways was modeled to estimate existing noise levels from mobile traffic. The existing and future roadway noise levels were projected using the Federal Highway Administration (FHWA) Traffic Noise Prediction Model (RD-77-108), together with several roadway and site parameters. The FHWA model is based upon reference energy mean emission levels (REMELS) for automobiles, medium trucks (two axles) and heavy trucks (three or more axles), with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. To predict CNEL values, it is necessary to determine the hourly distribution of traffic for a typical day and adjust the traffic volume input data to yield an equivalent hourly traffic volume. The Calveno traffic noise emission curves are used as recommended by the California Department of Transportation (Caltrans) to more accurately calculate noise levels generated by California traffic.

Traffic volumes used in the FHWA model were obtained from Meyer Mohaddes Associates (January 3, 2007). These traffic inputs determine the projected impact of vehicular traffic noise and include the roadway cross-section (e.g., number of lanes), roadway width, average daily traffic (ADT), vehicle travel speed, percentages of automobile and truck traffic, roadway grade, angle of view, and site conditions (hard or soft). The model does not account for ambient noise levels (i.e., noise from adjacent land uses) or topographical differences between the roadway and adjacent land uses. Table 8-11, Existing Roadway Noise Levels, indicates the location of the 60-, 65-, and 70-CNEL noise contours associated with vehicular traffic along local roadways as modeled with the FHWA computer model.

Table 8-11
Existing Roadway Noise Levels

Roadway Section	ADT	CNEL at 100 feet from Roadway Centerline	Noise Contour (Distance [feet] From Roadway Centerline)		
			60 dBA	65 dBA	70 dBA
Avenue E					
30th Street West to 25th Street West	50	40.4	6	3	1
Avenue F					
70th Street West to 60th Street West	1,400	54.9	53	25	11
60th Street West to 30th Street West	1,200	54.2	48	22	10
30th Street West to 25th Street West	1,200	54.2	48	22	10
Avenue G					
100th Street West to 90th Street West	100	43.4	9	4	2
70th Street West to 60th Street West	900	53.0	40	18	9
60th Street West to 50th Street West	1,300	54.6	50	23	11
50th Street West to 30th Street West	1,700	55.7	60	28	13
30th Street West to SR-14 Freeway	2,000	59.5	103	33	10
SR-14 Freeway to 10th Street West	1,900	59.3	98	31	10
10th Street West to Sierra Highway	2,000	59.5	103	33	10
Sierra Highway to Division Street	2,600	60.6	134	42	13
Avenue H					
70th Street West to 60th Street West	500	50.4	27	12	6
60th Street West to 50th Street West	1,400	54.9	53	25	11
50th Street West to 30th Street West	1,700	55.7	60	28	13
30th Street West to SR-14 Freeway	2,800	57.9	84	39	18
SR-14 Freeway to 20th Street West	9,700	66.2	499	158	50
20th Street West to 15th Street West	9,600	63.3	192	89	41
15th Street West to 10th Street West	9,300	63.0	187	87	40
10th Street West to Sierra Highway	9,000	62.8	183	85	40
Sierra Highway to Division Street	8,800	65.8	452	143	45
Division Street to 10th Street East	5,800	60.9	137	64	29
Challenger Way (10th Street East) to 20th Street East	3,500	58.7	98	45	21
20th Street East to 30th Street East	2,700	57.6	82	38	18
30th Street East to 40th Street East	2,200	56.7	72	33	15
Avenue I					
70th Street West to 60th Street West	2,000	55.2	57	27	12
60th Street West to 50th Street West	5,900	59.9	118	55	25
50th Street West to 40th Street West	7,500	61.0	138	64	30
40th Street West to 30th Street West	8,700	64.7	351	111	35
30th Street West To 27th Street West	9,300	63.9	289	91	29
27th Street West to SR-14 Freeway	12,000	65.0	373	118	37
SR-14 to 20th Street West	24,100	67.9	748	237	75
20th Street West to 15th Street West	27,200	68.4	846	267	85
15th Street West to 10th Street West	27,700	68.5	861	272	86
10th Street West to Sierra Highway	26,200	68.3	815	258	82
Sierra Highway to Yucca Avenue	26,500	68.3	824	261	82
Yucca Avenue to Division Street	24,000	67.9	747	236	75
Division Street to 5th Street East	21,100	67.4	656	208	66

Table 8-11 [continued]
Existing Roadway Noise Levels

Roadway Section	ADT	CNEL at 100 feet from Roadway Centerline	Noise Contour (Distance [feet] From Roadway Centerline)		
			60 dBA	65 dBA	70 dBA
Avenue I [continued]					
5th Street East to 15th Street East	14,500	65.8	451	143	45
15th Street East to 20th Street East	12,600	66.3	508	161	51
20th Street East to 30th Street East	11,100	65.8	448	142	45
30th Street East to 40th Street East	7,300	61.9	160	74	34
Lancaster Boulevard					
35th Street West to 30th Street West	4,800	62.0	194	61	19
30th Street West to 25th Street West	7,400	63.9	299	94	30
25th Street West to Valley Central Way	9,500	65.0	384	121	38
Valley Central Way to 20th Street West	14,500	66.8	585	185	59
20th Street West to 15th Street West	19,700	67.0	613	194	61
15th Street West to 10th Street West	17,300	66.5	538	170	54
10th Street West to Sierra Highway	17,900	66.6	556	176	56
Sierra Highway to Yucca Avenue	12,500	64.1	308	98	31
Yucca Avenue to Division Street	2,500	58.1	78	25	8
Division Street to 5th Street East	8,100	63.3	252	80	25
5th Street East to Challenger Way (10th Street East)	8,900	63.7	277	88	28
Challenger Way (10th Street E) to 15th Street East	5,200	62.5	210	66	21
15th Street East to 20th Street East	6,000	63.1	242	77	24
20th Street East to 30th Street East	8,200	61.4	147	68	32
30th Street East to 40th Street East	6,600	60.4	127	59	27
40th Street East to 50th Street East	4,400	58.7	97	45	21
Avenue J					
70th Street West to 60th Street West	5,700	60.8	135	63	29
60th Street West to 50th Street West	6,400	61.3	146	68	31
50th Street West to 40th Street West	9,800	63.2	194	90	42
40th Street West to 35th Street West	11,700	63.8	218	101	47
35th Street West to 30th Street West	8,800	62.4	181	84	39
30th Street West to 25th Street West	14,500	66.7	586	185	59
25th Street West to Valley Central Way	19,900	67.0	619	196	62
Valley Central Way to SR-14 Freeway	29,100	67.3	682	216	68
SR-14 Freeway to 20th Street West	32,300	67.7	756	239	76
20th Street West to 15th Street West	25,900	66.8	606	192	61
15th Street West to 10th Street West	25,900	66.8	606	192	61
10th Street West to Sierra Highway	21,200	65.9	496	157	50
Sierra Highway to Division Street	31,600	67.7	741	234	74
Division Street to 5th Street East	30,300	68.7	941	298	94
5th Street East to Challenger Way (10th Street E)	25,600	69.1	1032	326	103
Challenger Way (10th Street E) to 15th Street East	23,200	68.7	937	296	94
15th Street East to 20th Street East	15,800	67.0	638	202	64
20th Street East to 30th Street East	9,700	64.9	392	124	39
30th Street East to 40th Street East	8,400	61.2	149	69	32
40th Street East to 50th Street East	7,100	60.4	133	62	29

Table 8-11 [continued]
Existing Roadway Noise Levels

Roadway Section	ADT	CNEL at 100 feet from Roadway Centerline	Noise Contour (Distance [feet] From Roadway Centerline)		
			60 dBA	65 dBA	70 dBA
Avenue J-8					
35th Street West to 30th Street West	8,800	62.2	206	65	21
30th Street West to 25th Street West	8,500	63.3	264	83	26
25th Street West to 15th Street West	13,200	65.2	411	130	41
15th Street West to 10th Street West	11,600	64.6	360	114	36
5th Street East to Challenger Way (10th Street E)	2,100	57.2	65	21	7
Challenger Way (10th Street E) to 15th Street East	3,700	59.6	115	36	11
15th Street East to 20th Street East	2,700	58.3	84	27	8
20th Street East to 25th Street East	2,400	57.8	75	24	7
Avenue K					
70th Street West to 60th Street West	1,500	53.7	47	22	10
60th Street West to 50th Street West	5,700	59.5	115	53	25
50th Street West to 45th Street West	7,100	60.4	133	62	29
42nd Street West to 40th Street West	9,900	65.0	400	126	40
40th Street West to 35th Street West	14,300	66.0	578	183	58
35th Street West to 30th Street West	21,000	68.2	847	268	85
30th Street West to 25th Street West	23,300	68.7	941	298	94
25th Street West to 20th Street West	26,000	68.0	809	256	81
20th Street West to 15th Street West	27,600	68.3	859	272	86
15th Street West to 10th Street West	28,800	68.5	895	283	90
10th Street West to Sierra Highway	28,300	67.2	663	210	66
Sierra Highway to Division Street	30,100	67.4	706	223	71
Division Street to 5th Street East	22,900	66.3	537	170	54
5th Street East to Challenger Way (10th Street E)	23,100	68.7	933	295	93
Challenger Way (10th Street E) to 15th Street East	22,200	65.3	285	132	61
15th Street East to 20th Street East	13,400	63.1	204	94	44
20th Street East to 25th Street East	10,600	62.0	174	81	38
25th Street East to 30th Street East	9,400	61.6	161	75	35
30th Street East to 35th Street East	7,700	60.8	141	65	30
35th Street East to 40th Street East	7,300	60.5	136	63	29
40th Street East to 50th Street East	5,100	59.0	107	50	23
Avenue K-8					
35th Street West to 30th Street West	3,500	59.4	109	34	11
30th Street West to 25th Street West	7,200	62.5	224	71	22
25th Street West to 20th Street West	7,900	62.9	246	78	25
20th Street West to 15th Street West	9,800	63.9	305	96	30
15th Street West to 10th Street West	9,500	63.7	296	93	30
Division Street to 5th Street East	1,700	56.3	53	17	5
5th Street East to Challenger Way (10th Street E)	900	53.5	28	9	3
30th Street East to 35th Street East	1,000	54.0	31	10	3
Avenue L					
70th Street West to 60th Street West	4,400	58.4	97	45	21
60th Street West to 50th Street West	11,500	62.5	184	85	40
42nd Street West to 35th Street West	22,700	67.4	706	223	71

Table 8-11 [continued]
Existing Roadway Noise Levels

Roadway Section	ADT	CNEL at 100 feet from Roadway Centerline	Noise Contour (Distance [feet] From Roadway Centerline)		
			60 dBA	65 dBA	70 dBA
Avenue L [continued]					
35th Street West to 30th Street West	24,800	67.8	771	244	77
30th Street West to 25th Street West	30,500	68.7	948	300	95
25th Street West to 20th Street West	29,100	68.5	905	286	91
20th Street West to 15th Street West	29,600	68.6	920	291	92
15th Street West to 10th Street West	33,200	70.1	1339	423	134
10th Street West to Sierra Highway	29,600	69.7	1196	378	120
Sierra Highway to Business Center Parkway	26,500	69.2	1071	339	107
Business Center Parkway to Challenger Way (10th Street E)	15,400	66.8	622	197	62
Challenger Way (10th Street E) to 20th Street East	6,800	63.3	275	87	27
20th Street East to 30th Street East	3,700	60.6	149	47	15
Avenue L-8					
70th Street West to 60th Street West	3,600	60.5	145	46	15
60th Street West to 55th Street West	4,800	61.8	194	61	19
40th Street West to 35th Street West	3,900	60.8	157	50	16
35th Street West to 30th Street West	3,300	60.1	133	42	13
Columbia Way (Avenue M)					
70th Street West to 60th Street West	5,500	59.3	112	52	24
57th Street West to 55th Street West	5,700	59.5	115	53	25
45th Street West to 40th Street West	9,600	61.7	163	76	35
40th Street West to 35th Street West	9,500	61.7	162	75	35
35th Street West to 30th Street West	10,000	65.0	403	128	40
30th Street to 20th Street West	11,200	65.5	452	143	45
20th Street West to SR-14 Freeway	8,500	64.3	343	109	34
SR-14 Freeway to 10th Street West	19,200	67.8	774	245	79
10th Street West to Sierra Highway	21,100	68.2	852	270	85
Sierra Highway to Business Center Parkway	23,400	68.6	946	299	95
Business Center Parkway to Challenger Way (10th Street E)	17,900	67.5	722	228	72
Avenue N					
45th Street West to 40th Street West	7,300	63.6	295	93	29
40th Street West to 30th Street West	9,100	64.5	367	116	37
70th Street West					
Avenue E to Avenue G	200	44.9	12	6	3
Avenue G to Avenue H	400	47.9	20	9	4
Avenue H to Avenue I	1,200	52.7	41	19	9
Avenue I to Avenue J	1,000	51.9	36	17	8
Avenue J to Avenue K	1,700	54.2	51	24	11
Avenue K to Avenue L	2,900	56.5	73	34	16
Avenue L to Avenue L-8	4,200	58.1	94	44	20
Avenue L-8 to Columbia Way (Avenue M)	2,100	55.1	59	27	13

Table 8-11 [continued]
Existing Roadway Noise Levels

Roadway Section	ADT	CNEL at 100 feet from Roadway Centerline	Noise Contour (Distance [feet] From Roadway Centerline)		
			60 dBA	65 dBA	70 dBA
60th Street West					
Avenue E to Avenue F	1,600	54.0	49	23	11
Avenue F to Avenue G	1,900	54.7	55	26	12
Avenue G to Avenue H	1,600	54.0	49	23	11
Avenue H to Avenue I	2,600	56.1	68	32	15
Avenue I to Avenue J	5,500	59.3	112	52	24
Avenue J to Avenue K	5,900	59.6	118	55	25
Avenue K to Avenue L	8,000	60.9	144	67	31
Avenue L to Avenue L-8	11,400	62.5	183	85	39
Avenue L-8 to Columbia Way (Avenue M)	8,900	61.4	155	72	33
50th Street West					
Avenue G to Avenue H	500	48.9	23	11	5
Avenue H to Avenue I	1,100	52.3	38	18	8
Avenue I to Avenue J	2,400	55.7	65	30	14
Avenue J to Avenue K	5,700	59.5	115	53	25
Avenue K to Avenue K-8	8,700	61.3	153	71	33
40th Street West					
Avenue I to Avenue J	1,700	54.2	51	24	11
Avenue J to Avenue K	6,700	60.2	128	60	28
Avenue K to Avenue L	11,800	62.6	187	87	40
Avenue L to Avenue L-8	2,500	55.9	66	31	14
Avenue L-8 to L-12	400	47.9	20	9	4
35th Street West					
Lancaster Boulevard to Avenue J	1,500	53.2	26	8	3
Avenue J to Avenue J-8	1,900	54.2	33	10	3
Avenue K-8 to Avenue L	1,900	56.8	59	19	6
Avenue L to Avenue L-8	1,800	56.5	56	18	6
Avenue L-8 to Columbia Way (Avenue M)	1,900	57.9	77	24	8
30th Street West					
Avenue E to Avenue F	100	45.1	4	1	0
Avenue F to Avenue G	300	49.9	12	4	1
Avenue G to Avenue H	500	52.1	20	6	2
Avenue H to Avenue I	2,700	59.4	109	34	11
Avenue I to Lancaster Boulevard	5,500	62.5	222	70	22
Lancaster Boulevard to Avenue J	9,600	64.8	387	122	39
Avenue J to Avenue J-8	9,400	64.7	379	120	38
Avenue J-8 to Avenue K	16,900	67.3	682	216	68
Avenue K to Avenue K-8	18,800	67.8	758	240	76
Avenue K-8 to Avenue L	13,100	66.2	528	167	53
Avenue L to Avenue L-8	15,000	66.8	605	191	61
Avenue L-8 to Columbia Way (Avenue M)	13,900	66.4	561	177	56
Columbia Way (Avenue M) to Avenue N	10,000	63.9	311	98	31

Table 8-11 [continued]
Existing Roadway Noise Levels

Roadway Section	ADT	CNEL at 100 feet from Roadway Centerline	Noise Contour (Distance [feet] From Roadway Centerline)		
			60 dBA	65 dBA	70 dBA
27th Street West					
Avenue I to Lancaster Boulevard	700	52.4	22	7	2
25th Street West					
Lancaster Boulevard to Avenue J	5,500	61.4	171	54	17
Avenue J to Avenue J-8	8,500	63.3	264	83	26
Avenue J-8 to Avenue K	6,000	61.7	186	59	19
Avenue K to Avenue K-8	4,500	60.5	140	44	14
Avenue K-8 to Avenue L	3,000	58.7	93	29	9
Valley Central Way					
Avenue I to Lancaster Boulevard	6,800	62.3	212	67	21
Lancaster Boulevard to Avenue J	11,500	64.6	358	113	36
SR-14 On Ramp					
Avenue J-6 to Avenue J-8	9,400	61.1	162	51	16
20th Street West					
Avenue H to Avenue I	6,200	62.9	250	79	25
Avenue I to Lancaster Boulevard	9,600	64.8	387	122	39
Lancaster Boulevard to Avenue J	19,600	66.8	609	193	61
Avenue J to Avenue J-8	32,700	68.9	1016	321	102
Avenue J-8 to Avenue J-12	20,800	67.0	647	205	65
Avenue J-12 to Avenue K	18,100	67.5	731	231	73
Avenue K to Avenue K-8	15,500	66.8	626	198	63
Avenue K-8 to Avenue L	14,200	66.5	574	181	57
Avenue L to Columbia Way (Avenue M)	8,000	64.0	323	102	37
17th Street West					
Avenue J-12 to Avenue K	5,400	58.6	93	29	9
Avenue K to Avenue K-8	5,600	58.7	97	31	10
15th Street West					
Avenue H to Avenue I	2,900	58.4	90	28	9
Avenue I to Lancaster Boulevard	6,300	61.9	196	62	20
Lancaster Boulevard to Avenue J	11,700	64.6	364	115	36
Avenue J to Avenue K	20,100	66.9	625	198	62
Avenue K-2 to Avenue K-8	1,200	54.7	37	12	4
Avenue K-8 to Avenue L	6,300	61.9	196	62	20
10th Street West					
Avenue G to Avenue H	500	52.0	20	6	2
Avenue H to Avenue I	8,200	64.2	331	105	33
Avenue I to Lancaster Boulevard	18,800	67.7	758	240	76
Lancaster Boulevard to Avenue J	23,900	68.7	965	305	97
Avenue J to Avenue J-8	28,900	67.2	677	214	68
Avenue J-8 to Avenue K	26,900	66.9	631	199	63
Avenue K to Commerce Center Dr	30,900	67.5	724	229	72
Commerce Center Dr to Avenue K-8	30,100	67.4	706	223	71

Table 8-11 [continued]
Existing Roadway Noise Levels

Roadway Section	ADT	CNEL at 100 feet from Roadway Centerline	Noise Contour (Distance [feet] From Roadway Centerline)		
			60 dBA	65 dBA	70 dBA
10th Street West [continued]					
Avenue K-8 to Avenue L	28,600	69.5	1155	365	116
Avenue L to Columbia Way (Avenue M)	25,800	69.1	1042	329	104
Gadsden Avenue					
Avenue K to Avenue K-8	2,900	55.9	50	16	5
Sierra Highway					
Avenue G to Avenue H	4,300	61.4	174	55	17
Avenue H to Avenue I	4,600	61.6	186	59	19
Avenue I to Lancaster Boulevard	6,000	62.8	242	77	24
Lancaster Boulevard to Avenue J	13,200	65.1	410	130	41
Avenue J to Avenue J-8	23,900	68.7	965	305	97
Avenue K to Avenue L	22,100	68.4	893	282	89
Avenue L to Columbia Way (Avenue M)	23,800	68.7	961	304	96
Yucca Avenue					
Avenue I to Lancaster Boulevard	1,900	54.1	33	10	3
Lancaster Boulevard to Milling Street	6,400	59.4	110	35	11
Division Street					
Avenue G to Avenue H	2,900	59.6	117	37	12
Avenue H to Avenue H-8	5,000	62.0	202	64	20
Avenue H-8 to Avenue I	5,200	62.2	210	66	21
Avenue I to Lancaster Boulevard	8,300	63.1	258	82	26
Lancaster Boulevard to Avenue J	13,700	65.3	426	135	43
Avenue J to Avenue K	16,40	66.0	510	161	51
Avenue K to Avenue K-8	14,100	65.4	438	139	44
Business Center Parkway					
Avenue K-8 to Avenue L	14,300	64.2	335	106	33
4th Street East					
Avenue L to Columbia Way (Avenue M)	6,600	59.5	114	36	11
5th Street East					
Avenue H-8 to Avenue I	3,500	58.1	82	26	8
Avenue I to Avenue J	4,300	59.0	101	32	10
Avenue J to Avenue J-8	1,800	55.2	42	13	4
Avenue J-8 to Avenue K	2,600	56.8	61	19	6
Avenue K to Avenue K-8	4,000	58.7	94	30	9
Challenger Way (10th Street E)					
Avenue H to Avenue I	3,800	60.8	153	48	15
Avenue I to Lancaster Boulevard	10,100	65.1	408	129	41
Lancaster Boulevard to Avenue J	8,400	64.3	339	107	34
Avenue J to Avenue J-8	18,400	67.7	743	235	74
Avenue J-8 to Avenue K	19,600	67.9	790	250	79
Avenue K to Avenue K-8	12,800	66.1	516	163	52
Avenue K-8 to Avenue L	14,400	66.6	582	184	58
Avenue L to Columbia Way (Avenue M)	5,700	62.6	230	73	23

Table 8-11 [continued]
Existing Roadway Noise Levels

Roadway Section	ADT	CNEL at 100 feet from Roadway Centerline	Noise Contour (Distance [feet] From Roadway Centerline)		
			60 dBA	65 dBA	70 dBA
15th Street East					
Avenue H-8 to Avenue I	2,100	57.1	65	21	7
Avenue I to Lancaster Boulevard	4,500	60.4	140	44	14
Lancaster Boulevard to Avenue J	5,800	61.5	180	57	18
Avenue J to Avenue J-8	6,200	61.8	193	61	19
Avenue J-8 to Avenue K	4,900	60.8	152	48	15
Avenue K to Avenue K-8	400	49.9	12	4	1
20th Street East					
Avenue H to Avenue I	800	54.0	32	10	3
Avenue I to Lancaster Boulevard	900	54.6	36	11	4
Lancaster Boulevard to Avenue J	8,200	64.2	331	105	33
Avenue J to Avenue J-8	13,300	66.3	537	170	54
Avenue J-8 to Avenue K	10,300	65.1	416	131	42
Avenue K to Avenue L	6,100	62.9	246	78	25
30th Street East					
Avenue H to Avenue I	3,300	60.2	133	42	13
Avenue I to Lancaster Boulevard	4,300	61.4	174	55	17
Lancaster Boulevard to Avenue J	5,100	62.1	206	65	21
Avenue J to Avenue K	3,200	60.1	129	41	13
Avenue K to Avenue L	4,000	61.0	161	51	16
35th Street East					
Avenue K to Avenue K-8	1,400	52.8	24	8	2
40th Street East					
Avenue H to Avenue I	300	49.8	12	4	1
Avenue I to Lancaster Boulevard	1,200	55.8	48	15	5
Lancaster Boulevard to Avenue J	3,000	59.8	121	38	12
Avenue J to Avenue K	3,500	60.5	141	45	14
Avenue K to Avenue L	900	54.6	36	11	14
50th Street East					
Lancaster Boulevard to Avenue J	3,700	60.7	149	47	15
Avenue J to Avenue K	3,800	60.8	153	48	15
Avenue K to Avenue L	6,100	62.9	246	78	25

ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level

Noise modeling is based upon traffic data provided by Meyer Mohaddes Associates, January 3, 2007.

As shown in Table 8-11, the existing noise levels adjacent to City roadways range from a low of 40.4 CNEL from 30th Street West to 25th Street West along Avenue E to a high of 70.1 CNEL from 15th Street West to 10th Street West along Avenue L. Existing noise levels may be considered higher than those predicted under future conditions, mainly because of higher average vehicle speeds along rural roadways. As existing roadways approach their capacity under future conditions, more congestion will naturally occur and the average vehicle speeds would decrease.

Sensitive receptors including schools, libraries, hospitals, and nursing homes are unacceptable in exterior environments, which exceed 70 CNEL, while residential uses are unacceptable in exterior environments in excess of 65 CNEL. The 70 CNEL maximum criteria developed by State Office of Noise Control serves as a general guideline for identifying community noise problems.

Under existing conditions, very few areas within the City experience ambient noise levels in excess of 70 CNEL. From the noise levels provided in Table 8-11, it can be seen that the 70 dBA CNEL level is only exceeded at one of the 284 roadway links analyzed. The 70-dBA contour along these three roadway links, located along Avenue L from 5th Street West to 10th Street West, extends to a maximum of 134 feet from the roadway centerline. Many of the City's downtown areas do, however, experience noise levels in excess of 65 CNEL adjacent to master planned roadway and freeway rights-of-way. Residences located within this area may experience unacceptable noise levels. It should be noted that these are modeled traffic noise levels, and are not based upon actual site measurements.

Office buildings, retail commercial areas, and industrial facilities are considered normally unacceptable in exterior noise environments that exceed 75 CNEL. As indicated by the noise contours provided in Table 8-11, it is unlikely that any areas of the City of Lancaster experience noise levels in excess of 75 CNEL as a result of motor vehicle noise.

Future Roadway Noise Levels

Ultimate noise contours can be used for general planning purposes and refined on a site-specific basis when detailed acoustic reports are prepared for new developments. Until that time, the setbacks required to insure an acceptable noise environment for various land uses can be determined using general planning guidelines to determine potential "worst case" noise levels.

Railroad Noise

The Mojave Mainline of the Union Pacific Transportation Company bisects the City of Lancaster from north to south, and runs parallel to Sierra Highway and the Antelope Valley Freeway. This line runs between Mojave and Palmdale, where it divides for destinations in San Bernardino and Los Angeles.

According to the *Goods Movement Truck and Rail Study* performed by the Southern California Association of Governments (SCAG) (performed in January 2003), Class I rail mileage has declined between 1970 and 1999 by approximately 10,000 miles. However, SCAG's *Goods Movement Program White Paper: A Survey of Regional Initiatives and a Discussion of Program Objectives* (January 2002), estimates that rail freight volume would increase from 91 million tons

in 1995 to 309 million tons in 2020. These growth projections reflect expected trends throughout the entire SCAG region.

Spur lines currently serve businesses between Avenues H and J. The number of spur lines is expected to increase in the near future. This increase would result from expansion of the City's industrial base; however, the number of new rail spurs and their location cannot be predicted at this time. Only freight trains utilize the Mojave Mainline, running at any time of the day or night as necessitated by market demand. These freight trains travel at a speed of up to 60 miles per hour, as the Lancaster area is relatively flat.

Metrolink was extended to downtown Lancaster to serve the Antelope Valley in January 1994. A new station was completed on Sierra Highway just south of Lancaster Boulevard and dedicated in March 1996. The trains operated by Metrolink are significantly quieter than Mojave Mainline trains and operate on a restricted time frame, from 4:30 AM to 10:00 PM.

Noise exposure contours along railway tracks are determined from the number and type of trains using the line, the magnitude and duration of each train pass, and the time of day when the train passes. Using the procedures developed by Wyle Laboratories, an analysis of the train operations was performed to determine existing noise levels. As the Lancaster area develops, train traffic is expected to increase, and, at the same time, average train speeds will decrease. Increases in the number of local rail spurs is not expected to significantly increase noise problems due to the slow speed used on the spurs.

Noise contours generated by the rail traffic are depicted in Table 8-12, Railroad Noise Contours. The 75 dBA CNEL contour extends approximately 225 feet from the railway centerline. The 70 dBA CNEL contour extends approximately 425 feet from the railway centerline, while 65 dBA CNEL and 60 dBA CNEL contour extends approximately 750 and 850 feet from the centerline, respectively.

Table 8-12
Railroad Noise Contours

Distance to Receptor (feet)	Noise Level (Ldn)
50	75
100	70
150	68
200	66

Source: Federal Railroad Administration, *Initial Noise Evaluation Model*, 1998.

Industrial Noise

Industrial noise sources are located in industrial zoned properties throughout the City. In general, industrial noise sources are not creating large-scale problems, but some localized noise problems related to industrial sources do exist. Several residential uses can be found within the industrial areas located east of the downtown area, east of the Union Pacific rail line, and are subject to high single event noise levels from nearby industrial sources.

AMBIENT NOISE MEASUREMENTS

Sensitive Noise Receptors

Sensitive populations are more susceptible to the effects of noise and air pollution than are the general population. Land uses considered sensitive by the State of California include schools, playgrounds, athletic facilities, hospitals, rest homes, rehabilitation centers, long-term care and mental care facilities. Some jurisdictions also consider day care centers, single-family dwellings, mobile home parks, churches, and libraries to be sensitive to noise and air pollutants. Generally, a sensitive receptor is identified as a location where human populations (especially children, senior citizens, and sick persons) are present, and where there is a reasonable expectation of continuous human exposure to air pollutants or noise. As a result, the sensitive receptors identified within the City of Lancaster would be the same for air quality as well as noise.

According to the City of Lancaster, there are very few noise complaints that are reported within the City. The majority of the calls include complaints about after hours construction activities, loud music, and motorcycles.

Land uses less sensitive to noise are business, commercial, and professional developments. Noise receptors categorized as being least sensitive to noise include industrial, manufacturing, utilities, agriculture, natural open space, undeveloped land, parking lots, motorcycle parks, rifle ranges, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals. These types of land uses often generate high noise levels. Moderately sensitive land uses typically include: multi-family dwellings, hotels, motels, dormitories, and outpatient clinics.

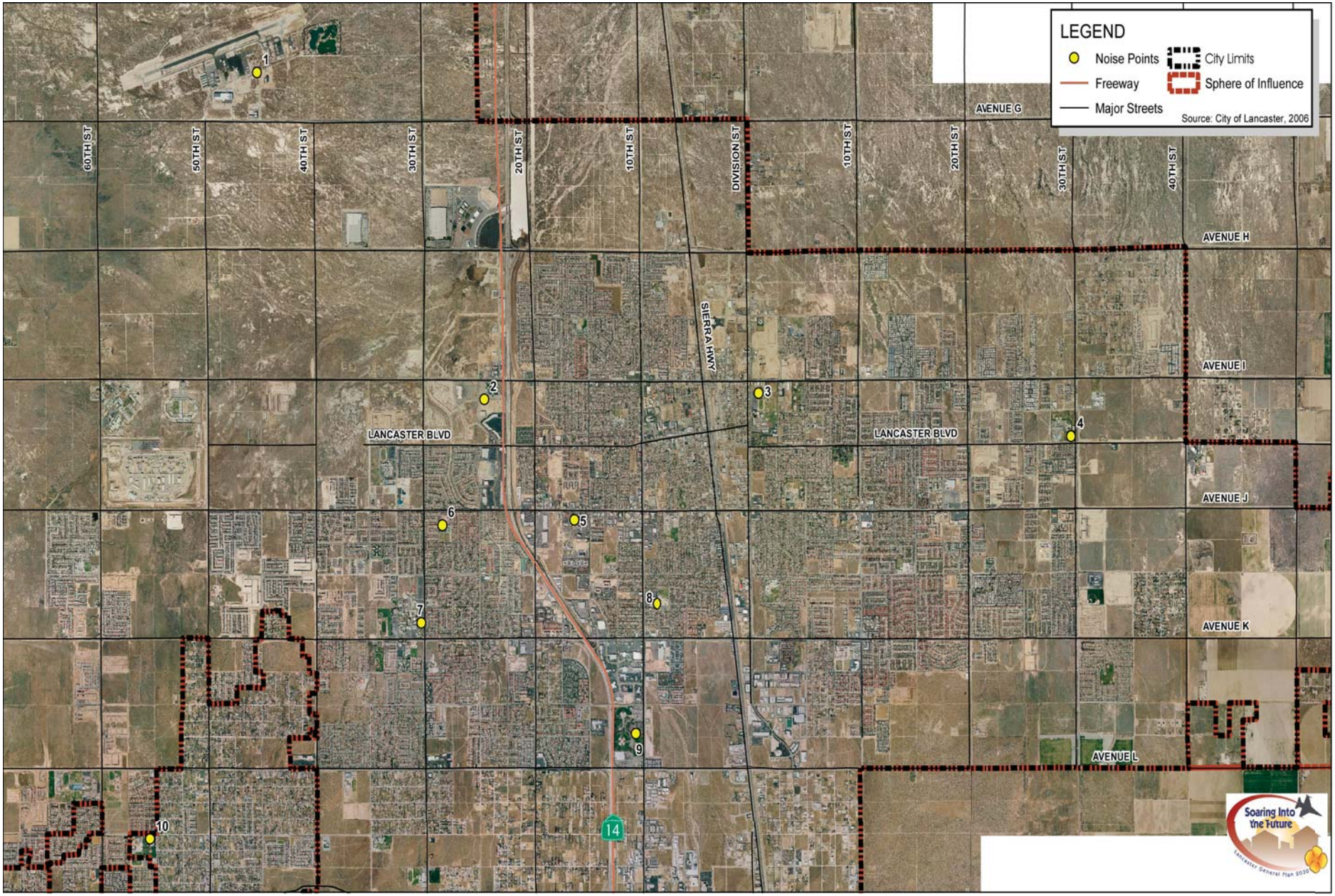
Current land uses located within the City of Lancaster that are sensitive to intrusive noise include residential uses, schools, hospitals, churches, and parks.

SENSITIVE NOISE RECEPTOR MEASUREMENT SITES

Noise levels were throughout the City of Lancaster at ten locations throughout the City of Lancaster as illustrated in Figure 8-4, Noise Measurement Locations. These locations were selected as a representative sample of the more urbanized portions of the City in order to identify ambient baseline levels. The noise measurements described in Table 8-13, Ambient Noise Measurements/Existing Noise Exposure Levels, were taken adjacent to major roadways in the City to determine peak noise levels at worst-case sensitive receptor locations.

Noise levels at the selected sensitive receptor sites were measured by RBF Consulting on August 31, 2006, using a Brüel & Kjær model 2250 sound level meter (SLM) equipped with Brüel & Kjær pre-polarized freefield microphone, which meets standards of the American National Standards Institute (ANSI) for general environmental noise measurement instrumentation. Each measurement was for 10 minutes, and the sound meter was calibrated before each measurement was taken.

- Measurement Site 1 was located at the General William J. Fox Airfield. The measurement was taken from the terminus of 45th Street West off of West Avenue G, a few hundred yards from the runway. Sources of peak noise included vehicles, trucks, and a helicopter. The noise level monitored at Site 1 was 54.9 dBA.



RBF CONSULTING

0 0.5 1 2 Miles

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Noise Measurement Locations

Figure 8-4

Table 8-13
Ambient Noise Measurements/Existing Noise Exposure Levels

Site No.	Location	Leq (dBA)	Time and Conditions
1	General William J. Fox Airfield	54.9	7:06 AM – 7:16 AM clear, sunny, and slight winds
2	Lancaster Municipal Stadium	57.3	7:29 AM – 7:39 AM clear, sunny, and slight winds
3	Antelope Valley High School	58.4	8:06 AM – 8:16 AM clear, sunny, and slight winds
4	Tierra Bonita Park	52.2	8:40 AM – 8:50 AM clear, sunny, and slight winds
5	Antelope Valley Hospital	53.2	9:14 AM – 9:24 AM clear, sunny, and slight winds
6	Amargosa Middle School	50.3	9:56 AM –10:06 AM clear, sunny, and slight winds
7	Antelope Valley College	56.5	10:15 AM – 10:25 AM clear, sunny, and slight winds
8	Lancaster Community Hospital	55.9	10:40 AM – 10:50 AM clear, sunny, and slight winds
9	Lancaster City Park	59.6	11:00 AM – 11:10 AM clear, sunny, and slight winds
10	George Lane County Park	50.5	11:27 AM – 11:37 AM clear, sunny, and slight winds
Leq = equivalent sound level; dBA = A-weighted decibel.			
Source: RBF Consulting, *Noise Monitoring Survey,* August 31, 2006.			

- Measurement Site 2 was located at the Lancaster Municipal Stadium, on Avenue I, between Valley Central Way and the Antelope Valley Freeway. The measurement was taken from a vacant lot on Mall Loop Road just behind the facility, approximately 100 feet from the parking lot and the stadium. The noise level at this site was 57.3 dBA, with most noise coming from traffic on nearby roadways.

- Measurement Site 3 was located at the Antelope Valley High School, on Division Street near Lancaster Boulevard. The measurement at Site 3 was taken in a parking lot behind the stadium, about 100 feet from Division Street centerline. Noise emanating from Lancaster Boulevard was minimal since the school is located at its eastern terminus and a drainage dip exists just west of the intersection, resulting in low vehicle speeds. The majority of the noise was generated by through traffic along Division Street. The noise level monitored at Site 3 during after-school hours was 58.4 dBA.

- Measurement Site 4 was at Tierra Bonita Park, located on the corner of 30th Street East and Lancaster Boulevard near a school. Site 4 was more specifically located approximately 200 yards off of the street, on a sidewalk within the park, near a parking lot and open grassy area. Most noise was generated by an air conditioner at the adjacent school, dog barking, and cars passing through the parking lot. The noise level monitored at Site 4 was 47.3 dBA.

- Measurement Site 5 was located at the Antelope Valley Hospital near the helipad, approximately 125 feet from the main hospital facility, and about 25 feet from a parking lot. The hospital was on the corner of Avenue J and 15th Street West. The noise level monitored at Site 5 was 53.2 dBA, with the majority of the noise coming from cars and distant sirens.

- Measurement Site 6 was taken from Amargosa Middle School on the corner of 27th Street West and Avenue J. The measurement was taken from the sidewalk directly across the street from the school. Most noise came from traffic on 27th Street West and bells sounding from the school. The noise level monitored at Site 6 was 50.3 dBA.

- Measurement Site 7 was located at Antelope Valley College, on Avenue K and 30th Street West. The measurement was taken from a grassy area, approximately 30 feet from a parking lot. The noise level monitored at Site 7 was 56.5 dBA, with most noise coming from traffic and people talking.

- Measurement Site 8 was taken from the Lancaster Community Hospital, which is located on 10th Street West and Avenue J-12. The measurement was taken near the backside of the facility, adjacent to Heaton Avenue and an elementary school. Vehicles, trucks, and ventilation equipment were the main sources of peak noise. The noise level monitored at Site 8 was 55.9 dBA.

- Measurement Site 9 was located at the Lancaster City Park, on 10th Street West near Avenue L and the Antelope Valley Freeway to the west. The measurement was taken from an open grassy area near a park and ride, with most noise emanating from the nearby freeway. The noise level monitored at Site 9 was 59.6 dBA.

- Measurement Site 10 was taken from the George Lane County Park, on Avenue L-8 and 55th Street West. The site was adjacent to a school, and the measurement was taken approximately 100 yards from the street. The noise level monitored at Site 10 was 50.5 dBA, with most noise coming from minor construction at the adjacent school, and children on the playground.

8.3 REFERENCES

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9.0 Public Services

9.0 PUBLIC SERVICES

9.1 FIRE PROTECTION AND EMERGENCY SERVICES

FIRE PROTECTION SERVICES

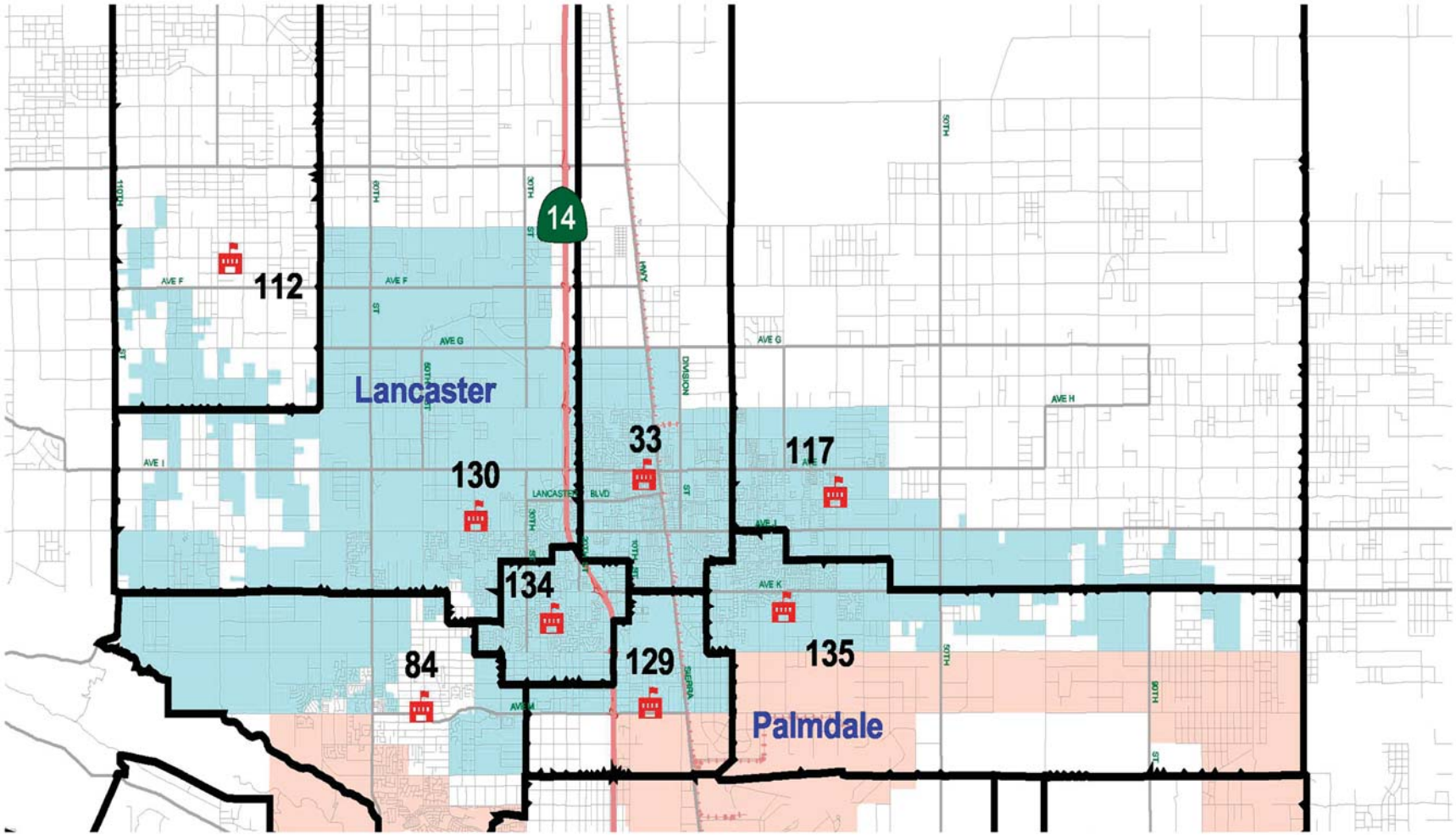
The Los Angeles County Fire Department (LACFD) provides fire protection services to the Antelope Valley, which includes the City of Lancaster and the surrounding unincorporated area. The LACFD was formed to provide wildland and structural fire protection. The City of Lancaster is a member of the consolidated Fire Protection District and maintains a contract with the County of Los Angeles to receive staff and fire protection services.

Figure 9.1-1, Fire Stations and Service Boundaries, identifies the locations of the eight fire stations within the City of Lancaster. All County Fire Department emergency units are dispatched as needed to an incident anywhere in the service territory based on distance and availability. Most incidents require multiple response units from two or more stations. The resources of each station determine the types of service it can provide. Staffing and equipment for the Lancaster stations and Station No. 84, located in Quartz Hill, are summarized in Table 9.1-1, Fire Stations and Service Areas.

Each LACFD Fire Station operates under a rotating shift system where one third of the station's staff is on duty for a twenty-four hour shift. The daily staffing of each shift is supervised by the duty Battalion Chief. Battalion 11 is stationed at Fire Station 33. A fire station's staffing will include, at a minimum, a fire captain, fire engineer (driver) and a firefighter. Many fire stations maintain additional staffing; Table 9.1-1, Fire Stations Within the Lancaster Study Area, lists staffing units and equipment for the stations that serve Lancaster. Fire Station 129 is the Division Headquarters. Division 5 includes both Battalion 11 (roughly Lancaster) and Battalion 17 (roughly Palmdale). Fire Station 129 is also where LACFD stations an air squad for use in the Antelope Valley. The helicopter is used for medical transports and fighting brush and large grass fires. Other specialty equipment stationed in the City of Lancaster is an Urban Search and Rescue unit stationed at Fire Station 134 and a Hazardous Materials Unit stationed at Fire Station 130. Although Fire Station 84 is located in Quartz Hill, 82 percent of its jurisdiction is within the City of Lancaster. Station 112 in Antelope Acres is the only station in Lancaster staffed entirely by "paid on-call" fire fighters known as Call Fire Fighters (CFF). Fire Station 130 responds with Fire Station 112. However, the incident is under the command of the captain responding from Fire Station 130.

Table 9.1-2, Number of Incidents, lists the total number of incidents reported within the City of Lancaster from 2003 to 2005. Calls are placed in three categories: fire, emergency response, and other. As shown in Table 9.1-2, approximately 96 percent of the incidents the Fire Departments respond to are non-fire related.

LACFD's goal is to have a fire station within 1.5 miles of all fully developed urban areas. The nationally recognized guideline is a five-minute response time in urban areas, which is usually achieved within a 1.5-mile distance. Figure 9.1-1 shows the service boundary of each fire station. It should be noted that these are the boundaries of the 1st-due area. Fire stations routinely respond outside their 1st-due areas since many incidents require multiple response units from two or more stations. LACFD has plans to expand fire protection service, including paramedic staffing, as the City's population grows.



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Fire Stations and Service Boundaries

Figure 9.1-1

Table 9.1-1
Fire Stations Within the Lancaster Study Area

Station Number and Address	Unit Staffing	Unit Equipment
Station No. 33 Battalion Headquarters 44947 Date Avenue	3-person engine with paramedic; 2-person paramedic squad; 2-person emergency support team; and 4-person quint.	1 Battalion Chief 1 Engine 1 Quint[1] 1 Paramedic squad
Station No. 112 CFF[2] 8812 West Avenue E-8	Temporary firefighters, which varies as needed.	"Paid Call" Fire Company 1 Engine
Station No. 117 CFF/ Engine 317 44851 30th Street East	3-person engine company with paramedic 1-person water tender.	1 Engine 1 CFF Engine 1 water tender
Station No. 129 Division Headquarters 42110 6th Street West	3-person engine company; 2-person paramedic squad; 2-person emergency support team; 3-person Air Squad; 1-person water tender; 1-person Helitendera; 5-person Hazardous Materials Squad; and 4-person Hazardous Materials Engine.	1 Engine 1 Paramedic Squad 1 EST
Station No. 130 44558 40th Street West	3 person engine company; 3-person USAR[3]; 5-person Hazardous Materials Task Force; and 1 Hazardous Materials Unit.	1 Engine 1 USAR Unit
Station No. 134 43225 North 25th Street West	3-person engine company; 2-person paramedic squad; and 1-person water tender.[4]	1 Engine 1 Paramedic squad
Station No. 135 1846 East Avenue K-4	3-person engine company; 2-person paramedic squad.	1 Engine 1 Paramedic squad
Station No. 84 5030 West Avenue L-14 (Quartz Hill)	3-person engine company; and 2-person paramedic squad.	1 Engine 1 Paramedic squad

Sources: Los Angeles County Fire Department, official website, www.lacofd.org/default.asp, accessed March 2006.
County of Los Angles Fire Department, written communication, David R. Leininger, Chief Forestry Division Prevention Services Bureau, September 11, 2006.

1 Quint – Combination of engine/ladder truck apparatus.
2 CFF – Call Fire Fighter Station.
3 USAR – Urban Search and Rescue.
4 Staffed during fire-prone weather.

Table 9.1-2
Number of Incidents

Incident Type	2003	2004	2005
Fire	552	548	624
EMS	11,014	10,954	11,494
Other	3,432	3,435	4,061
Total:	14,998	14,937	16,179
Source: County of Los Angles Fire Department, written communication, David R. Leininger, Chief Forestry Division Prevention Services Bureau, September 11, 2006.			
EMS = Emergency Medical Services.			

FIRE PROTECTION REQUIREMENTS

Fire protection services for the area appear to be adequate at this time with the City's current level of development. However, Lancaster has large amounts of undeveloped land, which will continue to receive a suburban or rural level of fire protection as appropriate until these areas become more urbanized. Increased demand for fire protection services will occur as residential development concentrated in the outlying areas of the City increases and the population increases.

Title 15, Buildings and Construction, of the *Lancaster Municipal Code* provides building requirements for new and existing land uses. These requirements are in place for safety purposes and particular land uses undergo annual safety inspections for compliance. Additionally, Chapter 15.76, Fire Protection Fees, of the *Lancaster Municipal Code* addresses impacts to fire protection and emergency medical services and facilities as a result of new development within the City. Specifically, the *Lancaster Municipal Code* requires any new residential, commercial, institutional or industrial development to pay fire protection fees to the Consolidated Fire Protection District of Los Angeles County prior to issuance of a building permit. The fire protection fee is used to finance needed improvements resulting from the specific development. The development impact fee is generally determined by the gross square footage of new residential and nonresidential development.

Local fire authorities in Lancaster set fire flow standards (such as gallons per minute (gpm)) and water duration flows. These requirements, among others, are based on various State building, fire, life and safety codes. Builders must meet established requirements and coordinate with the independent retail water agency, which supplies water to new developments.

Development within Lancaster is subject to compliance with all relevant LACFD general requirements, which address ingress and egress access for emergency response, access and fire and life safety requirements during construction, water mains, fire flows and fire hydrants, access roadways to Fire Department apparatus and maintenance of access roads and fire sprinkler systems. The LACFD establishes specific requirements based on the type of land use, including fire flow, fire hydrant location and spacing, access, street and driveway width and length specifications and identification of fire lanes. Developments are required to obtain approval from the LACFD as a Standard Condition of Approval from the City.

FIRE THREAT

The City of Lancaster and its study area contain various natural and man-made materials that are susceptible to damage or destruction by fire. Most of the desert scrub vegetation throughout the study area has a fairly low level of combustion due to the type and spacing of plants. Upland slopes in the western and southwestern portions of the study area are moderately susceptible to combustion. These areas support sage scrub and chaparral vegetation types that have actually evolved to require occasional burning. Plant communities that demonstrate this characteristic are called "fire periodic." Quartz Hill and its southern slopes represent a more than minor fire hazard due to this vegetation type.

Man-made structures within the study area can be threatened by fire depending on their use, construction and condition. Buildings that present a more than normal level of threat from fire are generally older wood frame structures, especially if abandoned or in a state of disrepair. Structures with these characteristics generally consist primarily of older single-family or multiple-family structures. Use of older single-family homes for commercial uses, especially commercial uses that utilize combustible materials (paints, solvents, fuels, etc.), is also a factor that increases fire risk. More specifically, fire risk is increased through building characteristics that include open stairwells, lack of firewalls or fire doors, no sprinkler systems in non-residential buildings, worn or substandard electrical wiring, flammable furniture and furnishings, older air conditioning, heating and ventilating systems. Unsafe practices, such as inappropriate storage of flammable materials, also increase the threat of fire.

While individual "fire prone" buildings represent a potential safety hazard, groupings of these buildings are a far more serious threat to public safety. This is because their burning has a greater potential to create a large, intense urban fire which would jeopardize nearby, normally safe, structures.

The most common type of urban structural fire occurs in single-family dwellings. These fires are primarily caused by unsafe practices, such as smoking in bed or falling asleep while smoking, kitchen fires from the ignition of cooking oil, or children playing with matches or fireworks and unattended candles.

Non-residential uses such as stores, offices and industries, also represent potential fire threats, especially when they store or utilize flammable or explosive materials. Facilities that handle hazardous, toxic, or explosive materials on a regular basis, such as paint stores and some of the local aerospace industries, could represent serious potential fire threats if accidents were to occur at these facilities. In addition, aircraft crashes or accidents such as an explosion of jet fuel during transport on a public road represent additional potential fire hazards.

Public facilities, such as churches, schools, theaters, restaurants, etc., are a special category of fire threatened structures. Due to the nature of their use, fires at these locations threaten large numbers of persons. In response, these types of facilities generally have more stringent fire safety requirements. However, even well designed structures can produce a considerable threat when unsafe practices, disrepair, or vandalism (arson) occur.

The interrelationship between urban and undeveloped areas is also important in determining overall fire danger. Since the desert plant communities have fairly low combustibility, it is unlikely that a major firestorm would proceed through the valley floor and threaten urbanized areas. Some increased risk may be found where urban or rural development is adjacent to

Joshua Tree Woodlands, or during times of high wind conditions where grass has grown and dried during the hot summer temperatures.

Extreme wind conditions and wildfires have resulted in the loss of life and property in the Lancaster study area. Generally, winds in the Antelope Valley are from the south and southwest with an average speed of 13 miles an hour. However, Santa Ana wind conditions are a reversal of the normal winds and occur in late summer and early fall. These warm, dry winds flow from the higher desert elevations and travel through mountain passes and canyons. As a result, wind velocities can reach 90 to 100 miles an hour in the mouths of canyons and dissipate as they spread across the valley floor. The Santa Ana winds generally coincide with dry periods, worsen already dry vegetation and make the Antelope Valley especially susceptible to fires. Once a fire has begun, these high winds aggravate existing fires, not only by spreading the fire quicker, but also by blowing hot embers to nearby locations and homes, causing spot fires.

Insurance Service Organization

The Insurance Service Organization (ISO) is a private insurance research group that periodically assesses the degree to which fire threatens geographic areas. This rating is based on the type of vegetation or structures present, climate, and the availability of fire protection services. The ISO uses a scale of I (best protection or lowest threat) to X (least protection or higher threat). Currently, the City of Lancaster has an ISO rating of IV-IX, which depends on the distance from the local fire stations. Areas within the City that are five miles from a fire station and within 1,000 feet of a fire hydrant, have what is considered “adequate” protection for suburban areas (ISO V or better). Beyond the five-mile radius, the City has an “unacceptable” ISO rating of IX. Some portions of the Lancaster study area, areas furthest to the east and west, are more than ten miles from a fire station and have the poorest ISO rating of X.

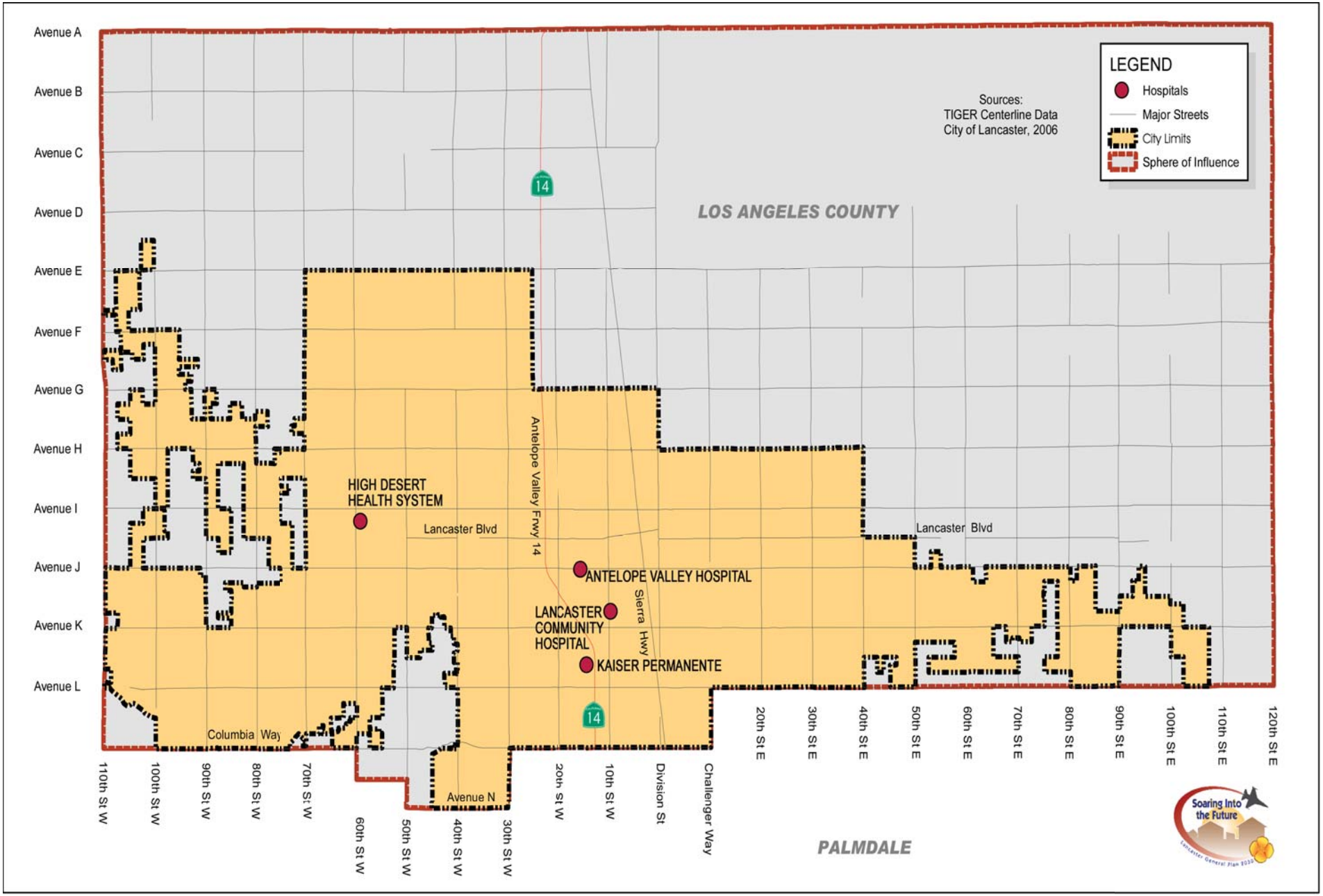
The ISO also uses the same scale to rate fire departments based on their ability to provide public protection. Currently, the LACFD has an ISO rating of III/IX, which is considered good for urban areas. The dual rating is similar to the ISO geographic ratings as the LACFD can provide adequate service within a five-mile radius of its stations and within 1,000 feet of a hydrant, but beyond that proximity protection quality is low. The LACFD desires a typical urban service level distance of 1.5 miles.

EMERGENCY SERVICES AND FACILITIES

In addition to the LACFD, emergency medical facilities and services in the Lancaster area are provided by a combination of public and private sources.

Hospitals and Other Inpatient Medical Facilities

There are currently two hospitals that provide comprehensive medical service to the Lancaster study area: Lancaster Community Hospital and Antelope Valley Hospital; refer to Figure 9.1-2, Hospital Locations. Both of these hospitals also provide emergency services.



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Hospital Locations

Figure 9.1-2

LANCASTER COMMUNITY HOSPITAL

Lancaster Community Hospital, located on 10th Street West north of Avenue K, provides services to approximately 466,000 people within the cities of Lancaster, Palmdale and other high desert communities in the area. The hospital is a privately owned facility that operates 117 licensed acute care beds. The facility includes a variety of comprehensive services and a wide range of surgical procedures. Centers of emphasis include Surgery, Cancer, Cardiology, Emergency Medicine, Acute Rehabilitation Unit, outpatient rehabilitation services, and a wound care clinic.

The hospital has plans to expand its services and facilities as the community grows. Emergency and Urgent Care has been significantly expanded by the addition of a new Heart Catheterization Lab. A future expansion is also planned to house pediatrics and obstetrics and gynecology (OB/GYN). Development of a hospice program is currently being planned, and the hospital is also expanding and renovating its medical office buildings. In a partnership with UCLA, the Lancaster Community Hospital will be developing a certified oncology-cancer therapy facility. Lancaster Community Hospital, in association with Universal Health Services, anticipates the opening of a new hospital in Palmdale in late 2007. Although the facility is located in the City of Palmdale, it will serve the expanding population of Lancaster by providing a 35-bed emergency room and other medical services.

ANTELOPE VALLEY HOSPITAL

Antelope Valley Hospital, located at 1600 West Avenue J, is a not-for-profit, district-owned medical facility. The hospital is the only full-service acute care hospital in the Antelope Valley region, and provides services beyond what is available at the Lancaster Community Hospital. The hospital currently contains 379 beds, which includes a 27-bed emergency room, and is staffed with over 2,000 employees. It is a full service facility with a wide range of services, including an Intensive Care Unit (ICU), Cardiac Care Unit (CCU), a Neonatal Intensive Care Unit and a Continuing Care Nursery Unit. A new MRI and mammography wing was completed in 1997 and an emergency room expansion to bring total capacity to 27 beds was completed in 1998. The facility also provides adult and adolescent mental health services and provides the only obstetrical services in the Lancaster service area. Antelope Valley Hospital is the largest hospital in northern Los Angeles County and serves as a regional paramedic base for Los Angeles and Kern Counties.

The hospital is working on a Master Plan for 2010, which includes additional expansions to the ICU beds, Imaging Center and Cath labs. The most recent hospital expansions include an 88,000 square foot (s.f.), four-story Imaging Center, added to the hospital as a free standing building in 2001. In late 2006, the addition of a 75,000 s.f. Woman and Infant Pavilion will provide women's services not previously offered through the hospital.

There are no low-cost, County funded delivery facilities in the Antelope Valley. However, the County does provide prenatal and postpartum care for women through a joint agreement with Antelope Valley Hospital. Outside the Antelope Valley, the closest facility for obstetrics is Olive View Hospital, approximately 55 miles away.

OTHER MEDICAL FACILITIES

High Desert Health System. High Desert Health System (formerly High Desert Hospital) is located at 44600 North 60th Street West in Lancaster. The facility was converted from the High Desert Hospital, providing only outpatient services in July of 2003. This facility operates as a Personal Health Clinic, which provides internal medicine, urgent care, same day surgery, psychiatry, orthopedic surgery and other outpatient services. The clinic operates a radiology department, pharmacy, specialty clinics (i.e., women's clinic, diabetes, etc.), a Suspected Child Abuse program for North Los Angeles County (SCAN), a HIV/AIDS clinic (AV Hope Center) and has social workers on staff. The clinic runs four satellite clinics from the main facility, one of which is located in east Lancaster. The clinic has acquired land for a more centrally located facility at the old fairgrounds.

Kaiser Permanente. Kaiser Permanente Medical Offices are located at 43112 North 15th Street West. These facilities offer specialized care within various departments. In addition to internal medicine, care is offered through the departments of optometry, gynecology (OB/GYN), radiology, cardiology, orthopedics, dermatology, neurology and pediatrics. In addition the facility offers a pharmacy, eye exams and other support services.

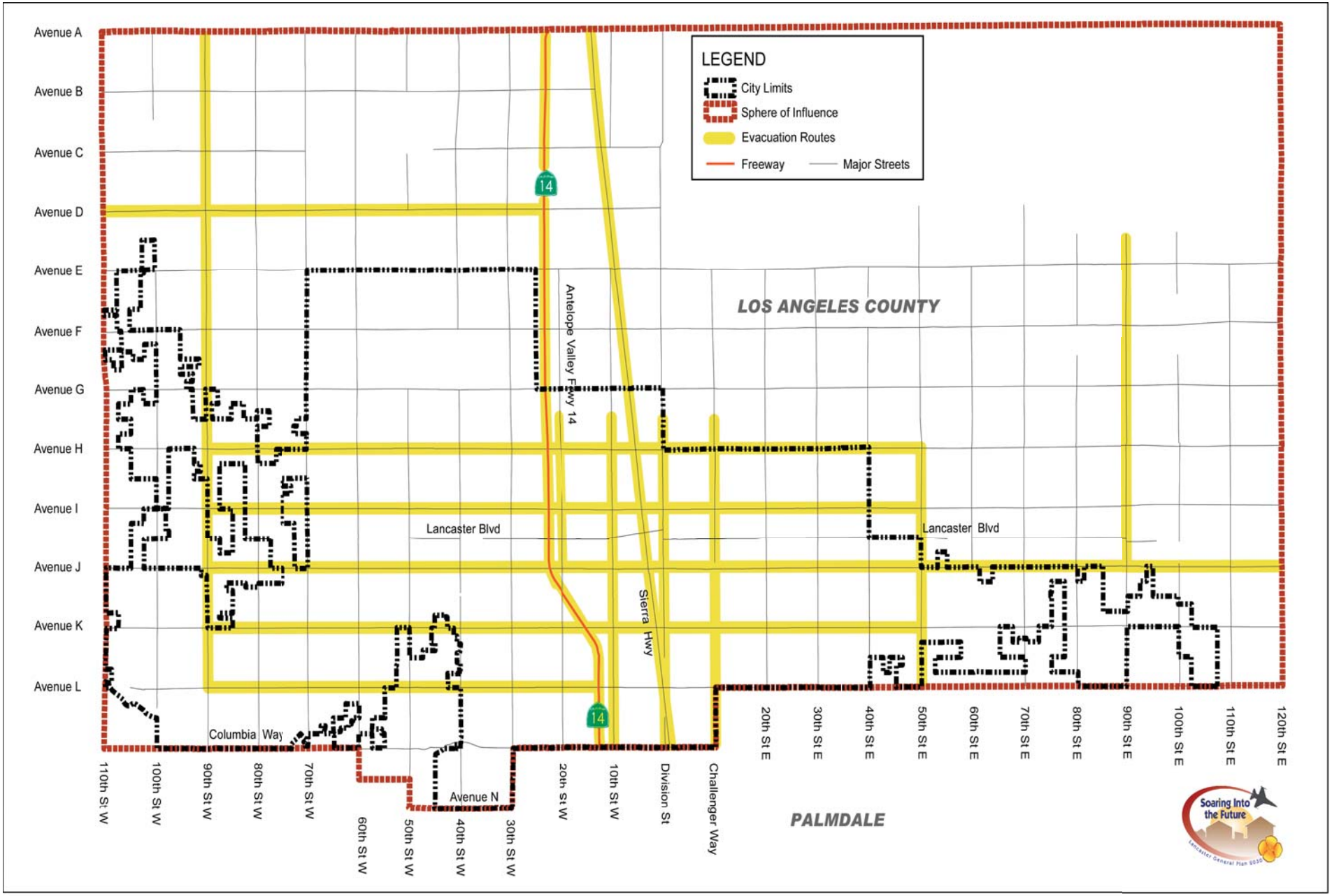
Paramedic Services. LACFD currently provides paramedic services to the Lancaster area. Ten paramedics are on duty in Lancaster and two paramedics are on duty at the Quartz Hill Station at all times. A paramedic squad is staffed by two personnel, which are firefighters with a paramedic certification. The air squad maintains two paramedic squads, and two Engines are staffed by one paramedic. In addition to City designated paramedics, ten regional paramedics are available to Lancaster when necessary from surrounding stations.

Ambulance Service. Presently, the American Medical Response Ambulance Service (AMR) is contracted with LACFD and provides all medical transport services to the City of Lancaster. Emergency (911) calls are screened by the Fire Department and ambulance vehicles are routed as necessary. Under the County contract, AMR responds to all medical emergencies and transports the injured to local hospitals. AMR bills for the service although the County provides a portion of the cost if the individual cannot afford to pay.

Airborne Evacuation. The Los Angeles County Sheriff Department (LACSD) maintains a local helicopter for aerial surveillance stationed at Fire Station No. 129, which can also be used for transport in a medical emergency. Emergency transport is also available by helicopters stationed at hospitals in the Los Angeles area. Response times vary from 20 to 40 minutes, except during inclement weather. In addition, LACFD has an air ambulance service, which is routinely available if the emergency warrants. The air ambulance is staffed with two paramedics.

EVACUATION ROUTES

The possibility of a disaster of great magnitude necessitates careful planning of evacuation routes. The unpredictability of the impact of any disaster on existing streets and highways makes definite evacuation route designation impossible until a disaster actually occurs and damage is assessed. Figure 9.1-3, Evacuation Routes, depicts evacuation routes, assuming that major streets and freeways are functional.



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Evacuation Routes

Figure 9.1-3

In the event an evacuation is deemed necessary, LACFD would transfer the evacuation process over to LACSD. Although the routes to be used for an evacuation would depend upon the location of the incident, generally the routes would include major arterials and regional routes.

All of the major north-south arterials in the City between 50th Street West and 10th Street East are designated as local emergency evacuation routes. In addition, all of the major east-west arterials between Avenues H and L are also designated as local evacuation routes. The regional evacuation routes for the Lancaster area include State Route 14 (SR-14), Sierra Highway, and State Route 138 (SR-138). SR-14 provides an evacuation route north into Kern County and south into the Los Angeles basin. However, the southern route is restricted in terms of the peak vehicular volume it can accommodate. Since Palmdale residents would also use this route, it would become completely congested during a major emergency. The southern portion of SR-138 eventually connects with Interstate 15 (I-15) to the east, but also passes through Palmdale, and thus would also be used by Palmdale residents in the event of a disaster. The northern portion of SR-138 turns west along Avenue D and proceeds to Interstate 5 (I-5). While this provides an alternate regional access point, it is presently a narrow, two-lane road. Although evacuation may use both lanes for outbound traffic, the narrow road width would severely restrict the volume of traffic that could evacuate along this route.

Without additional peripheral or through freeway facilities, regional evacuation routes for the Lancaster area are constrained. In a large-scale evacuation, all major arterials would become congested. As a result, a significant percentage of traffic would leave the City via surface streets, which would then also become congested during the height of an evacuation.

DISASTER PREPAREDNESS

The City of Lancaster maintains a local Emergency Operations Center (EOC) at City Hall to coordinate City services during local emergencies. During a disaster, this centralized command center houses personnel from LACFD, LACSD, City staff and other appropriate agencies. Mass care shelters have already been designated in conjunction with the Red Cross and local school districts. During a regional disaster, such as a major earthquake, the EOC at the Lancaster Sheriff's Station would coordinate activities and make requests for aid through the County EOC in downtown Los Angeles. The procedural response to anticipated emergencies (such as flood, fire, earthquake, hazardous material spills, etc.) are outlined in the *Multi-Hazard Functional Plan*.

HAZARDOUS MATERIALS

A hazardous material is defined as any injurious substance, including pesticides, herbicides, toxic metals and chemicals, volatile chemicals, explosives, and nuclear fuels and materials. The use of hazardous materials is commonplace in modern industrial and agricultural activities. Because these materials are increasingly used in urban and rural settings, and because they represent such a serious potential threat to human health and safety, strict laws and regulations have been developed to control their use, storage, disposal and transport.

Hazardous materials that exhibit physical danger can be classified into eight categories: 1) explosives, 2) compressed gases, 3) flammable liquids, 4) flammable solids, 5) oxidizers, 6) toxic material, 7) radioactive material, and 8) corrosive material. Explosives produce rapid chemical reactions that cause damage due to blast and flash fire. Compressed gases are a single gas or mixture of gases in a container, which are subject to certain pressures and

temperatures in order to prevent combustion or explosion. Flammables are dangerous because of their low ignition temperature and rapid burning characteristics. Some flammable materials cannot be extinguished and must be allowed to burn out naturally. Oxidizers are chemicals, other than blasting agents or explosives that initiate or promote combustion in other materials. Oxidizers have the potential to self-ignite, or cause fire through the release of oxygen or other gases. Irritants cause inflammation or destruction of living tissue and, based on the degree of exposure and type of material involved, effects can range from mild to severe. Toxins include various poisons that are harmful or fatal if swallowed, inhaled, or ingested through the skin. Radioactive material is a material that explodes, violently reacts, and produces flammable, toxic or other hazardous gases. It may also develop enough heat to self-ignite or ignite a nearby combustible. Corrosiveness is when a chemical causes visible destruction, or irreversible lacerations of a material. Because of their widespread use, many types of hazardous materials are transported through, used, or stored, to some degree, within the City of Lancaster.

Los Angeles County Certified Unified Program

The accidental release of any harmful material is a potentially serious incident. In an effort to minimize the occurrence of such hazards, the State of California passed a law requiring each county in California to develop a method to deal with the management of hazardous waste. In response, Los Angeles County sought to develop plans and policies regarding hazardous waste. On November 30, 1989, the California Department of Health Services approved the *Hazardous Waste Management Plan* (CoHWMP) for the County of Los Angeles. The purpose of the CoHWMP was to provide a more effective framework for managing the County's hazardous waste, consistent with State law and requirements of the State Department of Health Services.

Since then, the County has consolidated its plans and programs related to hazardous waste and materials management into one Certified Unified Program. The Los Angeles County Fire Department is the Certified Unified Program Agency (CUPA) for nearly the entire unincorporated and incorporated County. The CUPA programs consist of six hazardous materials and hazardous waste programs designed to consolidate, coordinate, and consistently administer permits, inspection activities, and enforcement activities throughout the County of Los Angeles.

Specifically, the Hazardous Materials Management Program (within the CUPA programs) ensures compliance with statutory provisions and regulations relating to hazardous materials inventories and emergency plans, which address emergency responses to hazardous materials releases or threatened releases and to avoidance of accidents involving certain hazardous materials.

City of Lancaster Hazardous Waste Ordinance

To comply with State and County legislation, Lancaster passed a hazardous waste ordinance in order to establish procedures, standards, and criteria for the regulation of hazardous waste facilities within the City's jurisdiction. The City has also developed the *Multi-Hazard Functional Plan*, which addresses hazardous material accidents based on State guidelines as developed by the State Office of Emergency Services (OES).

The major emphasis of the hazardous waste ordinance is to protect the public health, safety, and welfare of the residents of Lancaster against all types of perilous releases from any type of hazardous waste facility, and also to allow the City greater local control by regulating hazardous

waste facilities through the conditional use process. Review at the local level would allow the community greater protection from hazardous waste facility projects being sited and located under County guidelines, which may not adequately address unique or specific circumstances within the City. The ordinance amended the light manufacturing and restricted heavy manufacturing zones by specifically prohibiting "Hazardous Waste Facilities" and "Specified Hazardous Waste Facilities" as uses within these industrial designations, and designated general geographic areas within the City where the site criteria may be met.

The conditional use permit provision of the City's Zoning Ordinance allows the City to review each application separately and place conditions on individual projects to ensure that the project is compatible with the *General Plan* and the Zoning Ordinance, and that it does not adversely affect neighboring land uses. A new section, Hazardous Waste Facilities, was added to the Zoning Ordinance in 1990, which established procedures, standards, and criteria for applicants to follow. The permit process requires a detailed application, proper environmental assessment, and public hearings before both the Planning Commission and City Council. This ordinance will ensure that site development occurs in an orderly, safe, and environmentally sound manner. The requirements of this Ordinance are consistent with State law, as well as the regulations contained in the CoHWMP.

CITY OF LANCASTER HAZARDOUS WASTE MANAGEMENT PLAN

The City of Lancaster prepared a *Hazardous Waste Management Plan* (HWMP) (February 1, 2001) for operations that generate hazardous waste, or potentially hazardous waste, for the City. Procedures and policies outlined in the plan are designed to meet the needs of the generating activities and to facilitate compliance with all applicable Federal, State, and local laws governing hazardous waste management. The primary objective of the HWMP is to describe the process for identification, handling, tracking, collection, accumulation, and recycling/ treatment/disposal of hazardous waste generated at the City of Lancaster's Maintenance Yard. The Plan currently is in the process of being revised and updated.

CITY OF LANCASTER HAZARDOUS WASTE CONTINGENCY PLAN

The CUPA program requires certain businesses that handle hazardous materials to prepare a Contingency Plan as a form of disclosure. Any private or public business which handles, transports or disposes of hazardous materials is required to complete a form notifying LACFD that the business involves hazardous materials, and to abide by regulations which are provided to them. The City of Lancaster completed a Contingency Plan in June 1, 1998 for the use and operation of its maintenance yard, which handles hazardous materials.

REPORTED REGULATORY SITES

GeoTracker

The Geographic Environmental Information Management System (GEIMS) is a data warehouse that tracks regulatory data about underground fuel tanks, fuel pipelines, and public drinking water supplies using GeoTracker. GeoTracker and GEIMS were developed pursuant to a mandate by the California State Legislature (AB 592, SB 1189) to investigate the feasibility of establishing a Statewide GIS for leaking underground fuel tank (LUFT) sites.

GeoTracker contains well, tank, and pipeline data for California. A search of GeoTracker conducted by RBF Consulting revealed a total of 251 sites within the City. As of June 19, 2008, three landfills have not received case closure letters. Additionally, approximately 195 tanks have been reported in the GeoTracker database. Of these tanks, 118 have reported leaks. Of the 118 tanks with reported leaks, 38 have not been granted case closure.

EnviroStor

The DTSC's EnviroStor database is an online search and Geographic Information System (GIS) tool for identifying sites that have known contamination or sites for which there may be reasons to investigate further. It also identifies facilities that are authorized to treat, store, dispose of, or transfer hazardous waste. The EnviroStor database includes lists of the following site types: Federal Superfund sites (National Priority List); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides site name, site type, status, address, any restricted use (recorded deed restrictions), past use(s) that caused contamination, potential contaminants of concern, potential environmental media affected, site history, planned and completed activities. As of June 19, 2008, one listed property (Butler Oil Company located at 3301 East Avenue I) is reported in the City of Lancaster within the EnviroStor database.

Transport of Hazardous Materials

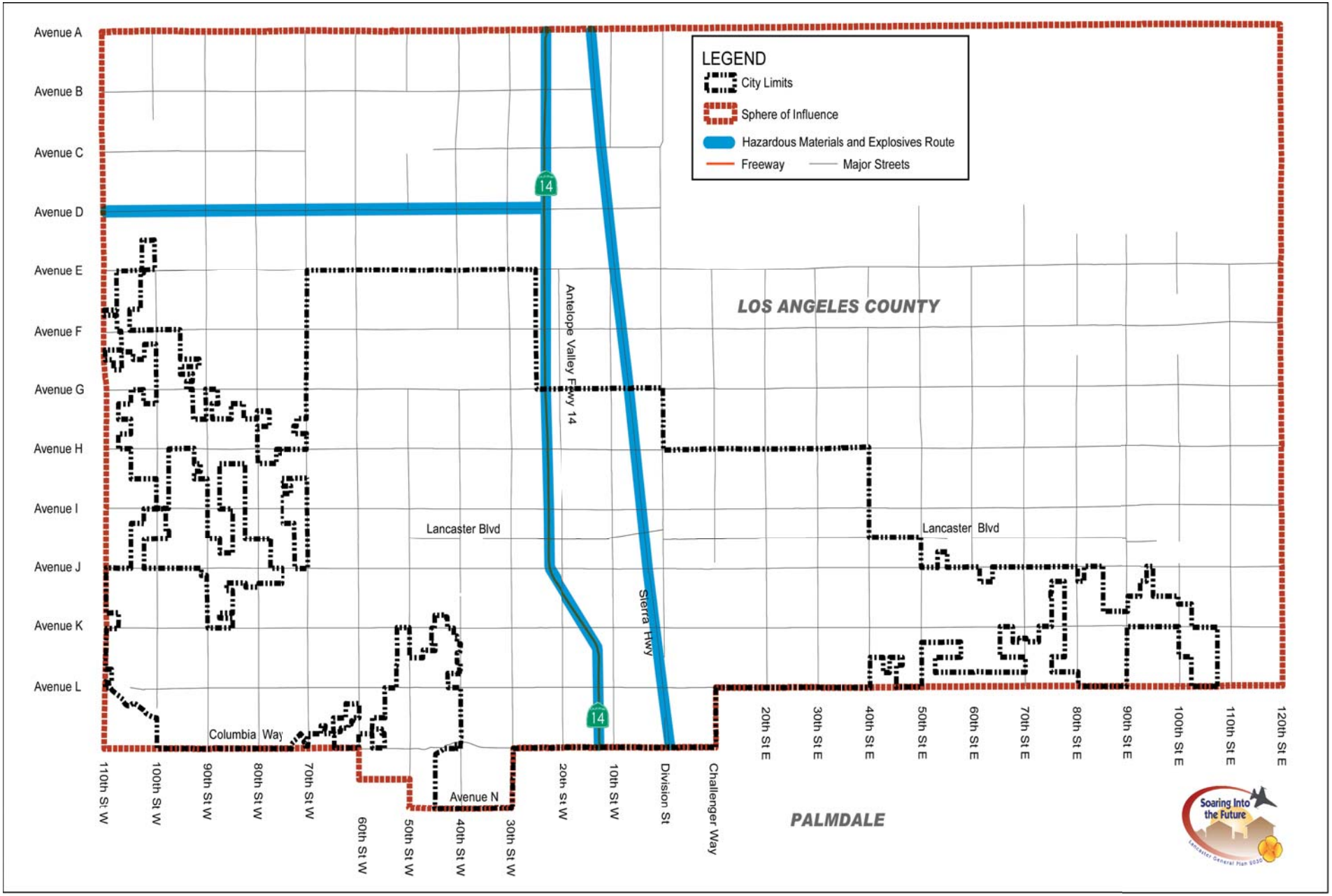
It is illegal to transport more than 15 gallons or 125 pounds of hazardous waste in a personal vehicle. The transport of hazardous materials by truck or rail is regulated by the United States Department of Transportation through National Safety Standards. The Federal safety standards are also included in the California Administrative Code, Environmental Health Division. The California Health Department regulates industrial hazardous waste haulers only.

Road Transport

The major transportation arteries within the study area are SR-14 and SR-138, as shown on Figure 9.1-4, Hazardous Materials Transportation Routes. According to the California Code of Regulations Title 13, Division 2, Chapter 6, Article 1, Explosive Routes and Stopping Places, SR-14 and SR-138 are designated by the Highway Patrol for explosive transport.

Rail Transport

A variety of hazardous materials are also handled and transported by Union Pacific Railroad (UPRR), which is controlled by State and Federal regulations. According to the City's *Multi-Hazard Functional Plan*, hundreds of thousands of tons of hazardous materials are shipped by rail through the City each year. The railroad line is oriented in a north/south direction, parallel to Sierra Highway, and roughly bisects the City; refer to Figure 9.1-4. Transportation accidents involving hazardous materials could occur on any of the routes, potentially resulting in explosions, physical contact by emergency response personnel, environmental degradation and exposure to the public via airborne exposure.



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Hazardous Materials Transportation Routes

Figure 9.1-4

Airborne Dispersal

Both SR-14 and SR-138 carry extremely hazardous materials, including toxic, explosive rocket fuel. The UPRR line also carries dangerous materials, such as anhydrous ammonia and liquid chlorine. If an accident were to occur, liquid materials could spill from ruptured tanker train cars or trucks. Some of these materials would volatilize upon spilling into plumes of toxic gas. Since prevailing winds blow generally to the east, there would be a "drift zone" immediately east of SR-14 and the UPRR rail line.

Currently, there are no notification guidelines or regulations that prohibit houses and public buildings from locating within "drift zones" along hazardous material transport routes. This is due to the possibility that routes may change over time, and, as a result, liability concerns with building owners may arise. In addition, interstate routes are usually the only routes that must comply with hazardous material regulations.

The lands east of SR-14 and the UPRR rail line include residential or public uses where large numbers of people could congregate. These uses would need time for warning and evacuation in the event of a major hazardous material spill, especially along the UPRR rail line. The Federal Department of Transportation suggests evacuation up to a half mile away from train car accidents involving the most serious types of hazardous materials.

In general, higher wind velocities, which the Antelope Valley experiences quite frequently, can quickly transport an airborne plume a considerable distance downwind, although its horizontal dispersal would be proportionally less. Conversely, low wind velocities disperse a plume more slowly and not as far downwind, but the horizontal dispersal would be proportionally greater.

Similar conditions exist along SR-14, although its potential drift zone is probably smaller than the railroad corridor. This is because the relative volume of materials carried by each tanker truck is significantly less than the volume carried by rail cars.

Avenue D also has a potential hazardous material drift zone west of the Antelope Valley Freeway. This is the extension of SR-138, which is also used to transport hazardous materials. Although the prevailing winds would initially disperse airborne materials directly east along the roadway, the risk of explosion would be greater along the freeway. This is due to the type of materials carried and the potential for vehicular accidents or fires.

Storage and Use of Hazardous Materials

With growth in residential development, the potential for growth in hazardous materials storage and transportation also increases. Regulations and enforcement of safety measures for the storage and use of hazardous materials is the responsibility of many agencies, including local fire agencies. Federal, State, and local fire codes act as a guideline for local enforcement.

The Environmental Protection Agency (EPA) ensures that containers of hazardous materials are properly labeled with instructions for use. The California EPA, Department of Toxic Substance Control oversees pollution prevention cleanup of contaminants, response to emergency issues, safe handling of hazardous waste, environmental law and enforcement, and environmental health and safety. The California Department of Industrial Relations, Cal-OSHA Division, regulates the proper use of hazardous materials. The United States Department of Agriculture, California Department of Food and Agriculture, and the Department of Industrial Relations

regulate pest control operations, pesticide dealers, and pesticide users to ensure that hazardous agricultural chemicals are properly used.

The Los Angeles County Forest or Fire Warden Hazardous Materials Program maintains records on major hazardous waste generators within the Antelope Valley. The term "major" refers to those handlers that deal with 500 gallons of liquid material, 5,000 pounds of solid material, or 2,000 cubic feet of a gaseous material. It should be noted that, while many of the major handlers are located in the industrial lands south of downtown Lancaster, numerous firms throughout the City presently produce, transport, or utilize hazardous materials of lesser quantities on a daily basis. It is expected that small handlers will continue to be distributed throughout the City, and will likely become more widespread as the City develops.

Disposal of Hazardous Wastes

Currently, there are no active landfills operating in Los Angeles County that accept hazardous wastes. Hazardous wastes generated within the County, which are disposed of off-site, are transported to Kettleman Hills Landfill in Kern County, or out of state. Kettleman Hills is only partially open, thus most of the hazardous waste goes out of state. The Kettleman Hills facility is considered to be an active "Class One" landfill, capable of handling all types of urban wastes, including toxic and hazardous materials (except explosives and radioactive materials).

Illegal Dumping

Much of the desert area is subject to infrequent, illegal dumping of household waste, commercial waste, and other hazardous materials. Dumping occurs on remote properties as well as down storm drains and into sewers. In general, because of the extensive laws governing industrial wastes, local industrial wastes are disposed of properly. However, illegally dumped industrial and domestic wastes are occasionally found in the desert area. While it is believed that the majority of this illegal dumping is from sources in the Los Angeles Basin, there are undoubtedly local sources as well.

Response to Hazardous Materials Emergencies

The City of Lancaster has an adequate hazardous materials emergency response organization outlined in the *Multi-Hazard Functional Plan*. This plan addresses the City's planned response to extraordinary emergency situations. The plan outlines those individuals and agencies assigned emergency responsibility. Hazardous materials planning is multi-jurisdictional, and while Fire Station 130 is equipped with a Hazardous Materials Task Force, the majority of the response resources would come from the following agencies outside of the Antelope Valley:

- The LACFD's Hazardous Materials Response Team provides assistance for substance identification, tactical and technical decisions, notification to other agencies, and the establishment of a command post.

- The Los Angeles County Sheriff's Department provides security, evacuation, and investigation activities, as well as the coordination of notification, evidence collection, and prosecution actions along with other agencies, in response to a hazardous materials situation.

- The Los Angeles County Department of Health Services provides an advisory staff to identify, assess, and control illegal disposal of hazardous waste and referral to appropriate agencies.

- The American Red Cross would coordinate the establishment of mass care shelters and feeding sites.

A hazardous material incident in conjunction with a major earthquake would preclude immediate response by some or all of these agencies due to damaged roads and more immediate emergencies.

AIRCRAFT OPERATIONS

There are three Federal Aviation Administration (FAA) recognized facilities located in and around the City of Lancaster. Two of the facilities are military: Edwards Air Force Base and Air Force Plant 42. The civilian Palmdale Regional Airport shares the site and runways of Air Force Plant 42. The third, Fox Field Airport, is a civilian facility.

Edwards Air Force Base is located approximately 20 miles northeast of the City of Lancaster, but the Base boundaries extend to within two miles of the City limits. Much of the flight activity associated with the base occurs to the north and northeast, outside of the Lancaster General Plan study area. The Edwards Air Force Base Joint Land Use Study addresses land uses associated with Edwards Air Force Base by function and jurisdiction. In regards to Lancaster, land use concerns occur in the West Flight Corridor and Southeast Buffer Area. The West Flight Corridor is not located within or directly adjacent to the City of Lancaster. However, at its closest point, the West Flight Corridor is just under a distance of one mile in the vicinity of 105th Street West. Approximately 24 square miles does fall within Lancaster's sphere of influence. Currently, the General Plan designation for the area is generally compatible with the corridor.

The Southeast Buffer Area abuts the City of Lancaster for a distance of approximately 4.5 miles; however, the Buffer Area is not within the City limits. Approximately 35.5 square miles of the Buffer Area are within Lancaster's sphere of influence. Currently, the General Plan designation for the area is generally compatible with most of the Buffer Area. However, approximately 0.3 square miles is currently designated for urban residential uses located within the County.

Land uses in the vicinity of Air Force Plant 42 and the Palmdale Regional Airport that are located within the City of Lancaster include mainly single-family residential, with some vacant land closer to Air Force Plant 42. Land northwest of Air Force Plant 42 in the vicinity of Sierra Highway is generally comprised of small scale industrial uses intermixed with single-family residential uses.

The Air Force Plant 42 Air Installation Compatible Use Zone (AICUZ) Study (2002) addresses the health, safety and general welfare in the areas surrounding Air Force Plant 42. The study is an update of the 1990 Production Flight Test Installation, Air Force Plant 42 Air Installation Compatible Use Zone Study. The 2002 AICUZ study documents aircraft operations and provides noise contours and compatible use guidelines for land areas surrounding the installation based on a combination of the November 2001 operations and the anticipated future aircraft and maintenance runup operations. The purpose of the AICUZ program is to promote compatible land development in areas subject to aircraft noise and accident potential. The

AICUZ study is to be used in the planning process of affected jurisdictions to prevent incompatible land uses.

Air Force AICUZ guidelines establish land use recommendations for the clear zones (CZ), accident potential zones (APZ) I and II and for the four noise zones. The AICUZ Study defines a CZ as an obstruction-free surface on the ground symmetrically centered on the extended runway centerline beginning at the end of the runway and extending outward 3,000 feet. APZ I begins at the outer end of the CZ and is 5,000 feet long and 3,000 feet wide. APZ II begins at the outer end of APZ I and is 7,000 feet long and 3,000 feet wide. The noise contours represent composite noise resulting from aircraft operations and flight tracks. The AICUZ Study shows the CZ, APZ and noise contours for Air Force Plant 42. In addition, the Overflight Zone established by the 1990 Joint Land Use Committee, developed a general zone where aircraft maneuver to enter and leave the traffic pattern. Proposals concerning development within the AICUZ require coordination between the City of Lancaster and the Department of Defense.

General William J. Fox Airfield is comprised of 1,039 acres located approximately four miles northwest of downtown Lancaster within the City of Lancaster. The land surrounding the airport is zoned for industrial development as part of the Fox Field Industrial Corridor Specific Plan, with a considerable amount of new commercial and industrial development located immediately south of the airport.

In 2004, the Los Angeles County Airport Land Use Commission (ALUC) adopted the General William J. Fox Airfield Land Use Compatibility Plan (Compatibility Plan), which establishes land use compatibility policies applicable to future development in the vicinity of the airport. The policies are designed to ensure that future land uses in the surrounding area will be compatible with potential long-range aircraft activity at the airport. The Compatibility Plan defines the airport and surrounding area by zone. The zones include Zone A – Runway Protection Zone, Zone B1 – Inner Approach/Departure Zone, Zone B2 – Adjacent to Runway, Zone C – Extended Approach/Departure Zone, Zone D – Primary Traffic Patterns and Zone E – Other Airport Environs. Prohibited uses and other development conditions are identified for each zone. The Compatibility Plan identifies noise contours for the airport and establishes noise compatibility criteria. In addition to noise, overflight factors are identified along with safety and airspace protection factors. Specific policies are identified addressing noise, safety and airspace protection to ensure that land uses within each zone are compatible with airport functions.

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9.2 CRIME AND PREVENTION SERVICES

PROTECTION SERVICES

Police protection, crime prevention and traffic enforcement services for the Antelope Valley, which includes the cities of Lancaster, Palmdale and unincorporated areas of Los Angeles County, are provided on a contractual basis through the Los Angeles County Sheriff's Department (LACSD). The Antelope Valley is located in the Los Angeles County Sheriff's Department Field Operations Region I, which includes Altadena, Crescenta Valley, East Los Angeles, Malibu/Lost Hills, Santa Clarita Valley, Palmdale, Lancaster, and portions of unincorporated Los Angeles County. Two patrol stations are located within the Antelope Valley. These include the Palmdale station located at 750 East Avenue Q in the City of Palmdale and the Lancaster station located at 501 West Lancaster Boulevard in downtown Lancaster.

The Palmdale Station provides police service for the contract City of Palmdale as well as 700 square miles of unincorporated area from Wrightwood ski area to Lake Hughes. The Palmdale Station also provides services to the City of Lancaster if needed.

The Lancaster Station functions as the base station within the Antelope Valley. The City of Lancaster receives comprehensive services through the contract with the Los Angeles County Sheriff's Department, which includes patrol and traffic law enforcement, detective services and support services. Cost and quality of service were both considered in the decision to contract with the County. Based on its present population and historical levels of crime, it was determined to be the most cost-effective and responsible solution to provide law enforcement from within the City of Lancaster. To provide flexibility, the contract with the Los Angeles County Sheriff's Department allows for annual renegotiation.

The Lancaster Station serves a population of over 190,000 residents within an area of approximately 600 square miles, which represents approximately 15 percent of Los Angeles County. This encompasses the City of Lancaster and the communities of Lake Los Angeles, Quartz Hill and Antelope Acres.

Existing personnel at the Lancaster Station includes 205 sworn officers and 61 civilian personnel. Officers are comprised of the Station Captain, seven Lieutenants, 24 Sergeants, 148 Deputies, and 25 Investigators. Station Detectives (21) within this staff handle the largest caseload in Los Angeles County, an average of 30 cases per month. Civilian employees consist of law enforcement technicians, community service assistants and additional Station staff. Additional assistance is provided through 266 public safety employees who serve the Station, 50 Sheriff Reserve Deputies and 136 Sheriff volunteers. The Station is assigned 104 vehicles, which includes patrol cars, unmarked patrol cars, jeeps, rescue vehicles, Community Services Officer vehicles, and a mobile command post. A helicopter with advanced equipment, which includes satellite Global Positioning Systems (GPS) and a Forward Looking Infrared (FLIR) device, is assigned to the Lancaster Station.

Special patrols include the Lancaster Community Appreciation Project (LAN-CAP) Team, who address crime and code violations on residential rental properties. This patrol consists of eight Deputies and one Sergeant. LAN-CAP was established to foster proactive working relationships with a number of LACSD units and associated agencies, which allow LAN-CAP to develop task forces to target specific problem areas within the City, as well as to write and serve

search warrants, as needed. LAN-CAP handles all three phases of the Crime Free Multi-Housing Plan:

- Phase I involves landlord/manager training to target local and global problems, and to foster positive relationships with the rental communities.
- Phase II educates participants on the inspection process of Crime Prevention through Environmental Design. Participants are then routinely inspected.
- Phase III is where LAN-CAP creates an environment for open communication and awareness by meeting and educating the local rental community.

As a result, communities benefit by reducing long-term tenant problems, allowing coordinated responses to crime/quality of life issues, and by advertising participation in the program with signs and logos. In the 18 months since its inception, the eight-deputy LAN-CAP team has generated 3,066 total arrests; 937 felony arrests; 2,129 misdemeanor arrests; 441 vehicles impounded or stored; and 61 search warrants successfully served.

LAN-CAP uses an in-house Deputy District Attorney for vertical prosecutions and works with Housing Authority Investigators on Section 8 tenants. Section 8 Housing and Urban Development compliance checks have been conducted at 180 locations, which are based on received complaints.

The Target Oriented Policing patrol handles quality of life issues, transient and serial crimes. The patrol works together with Neighborhood Watch groups and community organizations, addressing problems and issues that often are overlooked by typical law enforcement. The current staff of four has an average arrest rate of 1,630 arrests per year. One of the goals of the patrol has been to target the presence of criminal transients in Lancaster, and if possible, arrest these individuals. In recent months, in addition to conducting plain-clothes operations targeting auto theft, burglary, and robbery suppression, the patrol has also been enforcing animal nuisance laws.

The team has also focused on establishing effective school safety programs with the staffs and students at all local schools, helping them prepare for the possibility of an emergency (such as an earthquake, gas leak, or act of violence). The School Deputy Program employs 16 Deputies, one team leader and one Sergeant to handle law enforcement and truancy issues within the school districts.

The Sheriff's Department deploys its officers in three main shifts: early morning, from 10:00 PM to 6:00 AM, day shift from 6:00 AM to 2:00 PM and evening shift from 2:00 PM to 10:00 PM. Refer to Table 9.2-1, Deployment Schedule, for a summary of units and shifts. There are also interim shifts, deployed at different times throughout the day and night.

SERVICE RATIO

Officer-to-population ratios are an indication of how many law enforcement officers there are to service a given population. The Los Angeles County Sheriff's Department recommends a staffing level of one officer per 1,000 people. In 2006, the Lancaster Station served approximately 190,000 individuals with 205 sworn personnel providing police protection services. This results in an officer to population ratio of approximately one officer to every 931 people, which is slightly better then the desired 1:1,000 ratio.

Table 9.2-1
Deployment Schedule

Units/Shift	Early Morning (10:00 PM-6:00 AM)	Day Shift (6:00 AM-2:00 PM)	Evening (2:00 PM-10:00 PM)
Field Supervisor	1	1	1
Crime Cars	5	8	13
Traffic Cars	2	4	4
Traffic Motor Units	0	4[1]	
Community Service Assistants	0	5	1
Totals	**8**	**22**	**19**

Source: Los Angeles County Sheriff's Department, Lancaster Station, Power Point Presentation, "Behind the Scenes," May 2006.

[1] Scheduled resources overlap multiple shifts to provide additional coverage and services with the exception of Traffic Motor Units where four is the peak amount between 6:00 AM and 10:00 PM.

This ratio does not include the number of Reserve Deputies that supplement existing staff in the areas of search and rescue, posse and specialist positions. These volunteers are part-time, highly trained law enforcement officers that enjoy the excitement and satisfaction of providing a community service. The Los Angeles County Sheriff's Department provides the Lancaster Station with search and rescue services throughout the Antelope Valley on an as needed basis.

RESPONSE TIMES

One standard used to measure adequate police protection services is the time it takes for a law enforcement unit to respond to a request for service. This is commonly known as the response time. Response times are classified depending on the type of call (emergency, priority, routine). Response times depend on traffic, distance from the site of the call, and the availability of officers. Responses are handled by the nearest available patrol car located within the patrol area. According to the Los Angeles County Sheriff's Department, the average response times from the Lancaster Station to the surrounding service area are four to six minutes for emergency calls, 11 to 13 minutes for priority calls and 41 minutes for routine calls.

TRAFFIC AND ACCIDENT INVESTIGATION

The number of traffic accident investigations has been steadily increasing from approximately 2,200 total collisions in 2001 to over 2,800 collisions in 2005. Table 9.2-2, Traffic and Accident Investigations (2005), provides the number of traffic and accident investigations for 2005. It is important to note that the population in the service area has also increased since 2001 which may contribute to the overall increase in investigations.

Additionally, during this same period (2001-2005), traffic citations have decreased from over 17,000 in 2001 to approximately 16,000 in 2005.

Table 9.2-2
Traffic and Accident Investigations (2005)

Type of Accident	Bike Collisions	Fatalities	Injuries	DUI collisions	DUI arrests	Total Collisions
Number Investigated	31	26	970	98	233	2,863

Source: Los Angeles County Sheriff's Department, Lancaster Station, Power Point Presentation, "Behind the Scenes," May 2006.

CRIME

The overall crime rate in California and in Lancaster peaked in 1993 and proceeded to drop significantly through 2000. Crime rates remained relatively steady from 2001 to 2005 with a small peak in 2002. Generally, the City has struggled with high crime rates for both violent (Part I) and non-violent (Part II) crimes. Part I crimes include criminal homicide, forcible rape, arson, etc. Part II crimes include forgery, vandalism, drunk driving, narcotics, etc.

Table 9.2-3, Lancaster Station Crime Characteristics, provides the Part I and Part II crimes and arrests for the Lancaster Station from 1996 to 2005 and also a comparison of total crimes in Region 1. These figures do not include non-criminal incidents, which can consist of 30 to 40 percent of total reported incidents. Therefore, the numbers in Table 9.2-3 do not adequately represent the number of incidents the Lancaster Station responds to on an annual basis, but provides an adequate representation of actual crimes that are committed and in the area. As shown in Table 9.2-3, crime incidents decreased from 1997 through 2000. In 2001 reported crimes increased and then fell slightly in 2002. Crime rates have increased most dramatically in the last three years. Part I crimes decreased and increased similarly to total Reported Crimes. However, Part II crimes did not start increasing until 2002. Over the last decade the Lancaster Station has experienced a 42.6 percent increase in crime incidents, while Region 1 experienced an approximate 2.2 percent decrease over the last decade.

When compared to the State and national averages, 2005 data revealed that violent crime (Part I) rates are higher in Lancaster then both the State and national averages; however, property crime (Part II) rates in Lancaster are comparative to that of the State and national averages.

SPECIAL PROGRAMS

Special programs and crime prevention services sponsored by the Los Angeles County Sheriff's Department and offered through the Lancaster Station include, but are not limited to, the Neighborhood Watch program, the Business Watch program, V.O.I.C.E. (Volunteers Organized to Improve Community Environment) Program, S.A.V.E. (Seniors Against Victimizing Elders), VIDA Program (deals with at-risk youth), Operation High Desert Storm, Pharmacy Alert, County Crime Prevention Task Force, and Safe Streets Now. Lancaster provides a School Deputy Program in which Deputies speak at elementary, junior high and high schools in the area and work with students. The Law Enforcement Explorer program provides a means for young men and women to experience the career of a law enforcement officer and potentially pursue a career if qualified. Additional volunteer programs are available to allow residents to become involved in their local law enforcement.

Table 9.2-3
Lancaster Station Crime Characteristics

Year	Part I Crimes	Part II Crimes	Total Reported Crimes[1]	% Change	Total Arrests	Total Region 1 Crimes[2]
1996[3]	6,013	6,161	12,174	N/A	4,729	80,643
1997	7,573	7,445	15,174	24.6	N/A	77,488
1998	6,236	7,780	14,016	-7.6	7,552	106,441
1999	4,895	7,011	11,906	-15.1	7,298	101,565
2000	5,089	6,011	11,100	-6.8	6,429	63,783
2001	5,485	6,350	11,835	6.6	6,714	67,085
2002	5,989	5,843	11,832	-0.03	6,588	66,609
2003	6,298	6,294	12,592	6.4	7,034	67,275
2004	6,364	9,017	15,381	18.1	10,296	70,166
2005	6,799	10,568	17,367	12.9	11,177	78,869

Source: Los Angeles County Sheriff's Department, "Year in Review," 1996-2005.
Los Angeles County Sheriff's Department, official website, www.lasd.org (accessed September 2006).

N/A = data not available.

1 Total reported crimes do not include noncriminal incidents.

2 Region 1 includes the Santa Clarita Valley Station, Palmdale Station, Temple Station, Malibu/Lost Hills Station, East Los Angeles Station, Crescent Valley Station, Altadena Station and Lancaster Station.

3 1996 data represents reported crime for the City of Lancaster only. At this time, the Antelope Station reported data by individual City (Lancaster and Palmdale) and unincorporated County area. The data from 1997 to 2005 represents reported crime for the Lancaster Station, which includes the City of Lancaster and portions of the County.

FUTURE PROGRAMS

Despite adequate staffing and dedicated officers, certain crimes continue to rise. The impact of growth is reflected in some crime rates. In order to reduce crime within the City the Lancaster Station plans to focus on five target areas, which include gang activities, illicit drug production, illicit drug sales, problem parolees and probationers and problem rental properties. The Lancaster Station has increased staff since 2004 and plans to continue this trend along with other crime reducing measures such as establishing new policies and using technology to increase security and monitor areas within the City. Specifically, programs instituted since 2005 include a Park Safety Patrol Program, Park Surveillance Camera pilot program at selected City parks, an aggressive false alarm program that has reduced citywide false alarms, a Graffiti Tracker Program to reduce incidents of graffiti, and the Lancaster Reward Program, which offers rewards for information leading to the arrest and conviction of anyone who has committed a robbery or burglary in the City. According to the Los Angeles County Sheriff's Department, plans are currently underway to add additional service units in the 2006-2007 Fiscal Year in order to maintain and improve service levels.

City Code Enforcement Division

The City of Lancaster's Housing & Neighborhood Revitalization Department maintains three divisions. The Code Enforcement Division is dedicated to making Lancaster's neighborhoods a desirable place to live, work and play by ensuring resident compliance to City code.

The City of Lancaster's Housing Code requires homeowners and landlords to maintain all housing (single family residences, apartments, condominiums, etc. regardless of when built), within the City limits in a safe and clean condition. The Housing Code also applies to abandoned commercial structures. A team of eight inspectors works with residents to make them aware of City Codes and assist them in resolving existing code violations. The Code Enforcement Division is a first line of defense against deterring crime within neighborhoods and the City as a whole. In this regard, the Division works in conjunction with the Los Angeles County Sheriff's Department to reduce crime and provide a safe environment for residents.

The relationship between the Division and Sheriff's Department is currently being re-established as both departments increase staff to address this issue. Currently, the Sheriff Deputies maintain a higher legal authority to impose laws while code enforcement officers work as informants and an aid to residents and problematic areas. In 2007 additional Sheriff Deputies will be hired to assist with code enforcement and the Department of Housing & Neighborhood Revitalization plans to hire an additional three officers by March; another officer will be hired at a later date, to monitor mobile homes.

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9.3 SCHOOL FACILITIES

INTRODUCTION

The Lancaster study area (study area) is served by four school districts: Lancaster School District, Westside Union School District, Eastside Union School District, and Antelope Valley Union High School District. These districts provide educational services for students in kindergarten through 12th grade. Table 9.3-1, School District Characteristics, provides enrollment, capacity and other information for the four school districts and higher education that serve the City of Lancaster. The locations of the school districts and individual schools are depicted in Figure 9.3-1, School Districts and School Sites.

Table 9.3-1
School District Characteristics

School District	Student/ Teacher Ratio (2006)	Number of Schools	Capacity (2006)	Enrollment		District Growth % (1996-2006)
				1996	2006	
Lancaster Elementary School District	22.3	18	14,080	13,485	16,561	22.8
Westside Union Elementary School District	19.6	10	6,312	6,183	8,527	37.9
Eastside Union School District	21	5	1,755	2,277	3,259	43.1
Antelope Valley Union High School District	24.5	12	24,287[2]	15,112	24,707	63.5
Additional Educational Facilities						
Antelope Valley College[1]	N/A	1	20,000	9,059	12,559	39.6
Lancaster University Center	40-60	1	N/A	N/A	900	N/A

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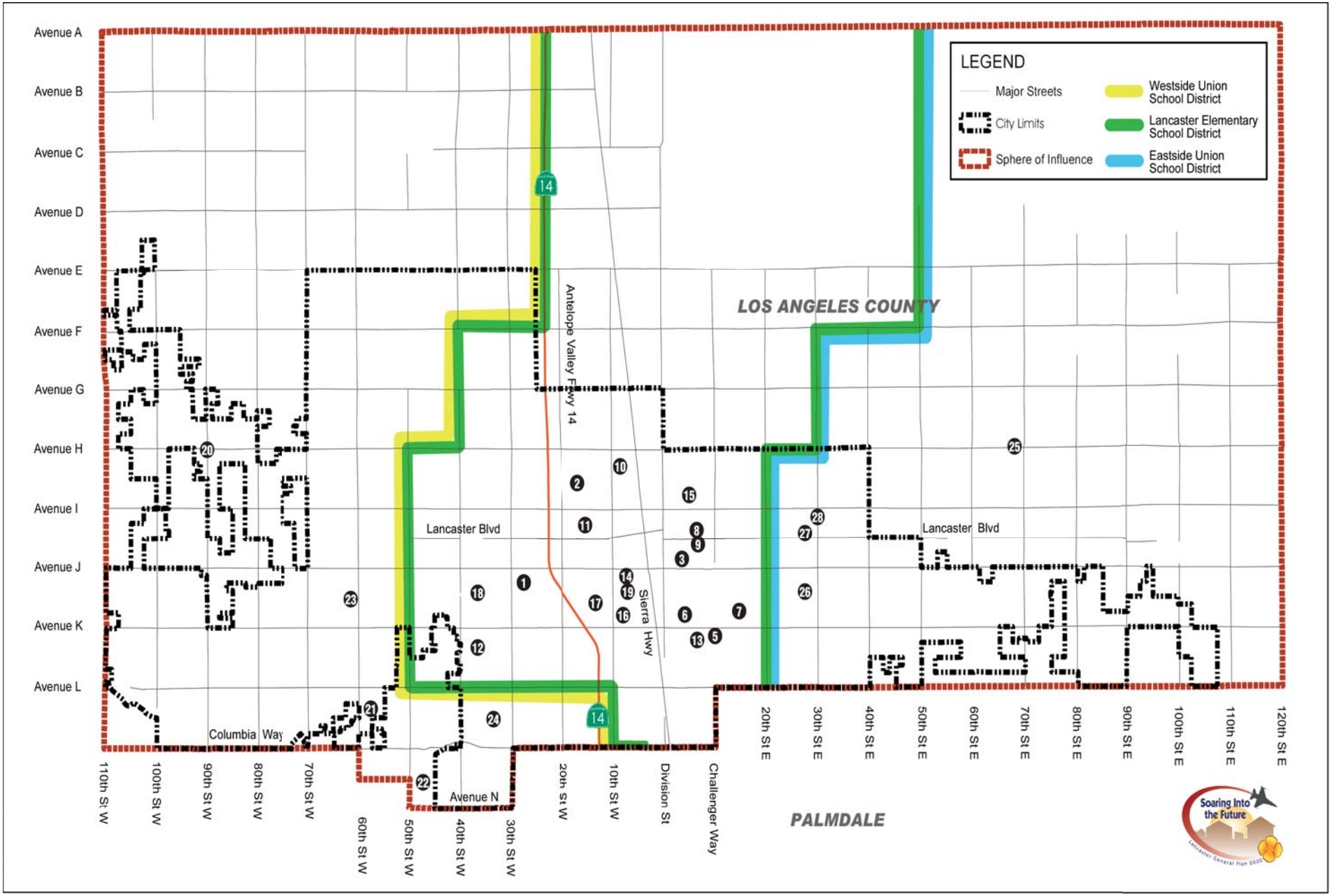
[1] Data is from 2005.
[2] Data includes comprehensives; continuation and community day schools capacities.



RBF CONSULTING

Lancaster General Plan 2030

School Districts and School Sites

Figure 9.3-1

According to the 2000 Census and the State of California Department of Finance, the average annual population increase for the City of Lancaster from 2000 to 2006 was approximately 2.8 percent compared to the Los Angeles County average annual population increase of 1.3 percent. As a result, schools continue to face overcrowding problems. School demographics have also changed in the last decade, and particularly within the last three years (2003-2006). Similar to the City's population, Lancaster schools have experienced an increase in minority populations, as well as an increase in single-family households.

Overall, Lancaster schools have experienced an increase in demand for programs that deal with behavioral and family life issues, after school programs to keep kids engaged in positive activities, heightened security on school grounds, and an overall need for well trained and adequately compensated teachers to provide a positive learning environment despite behavioral and social challenges in the classrooms.

School districts are under the jurisdiction of State government; therefore, communication and cooperation between the school districts and City government is essential to fulfill the needs of students in the community. The City has little authority over school funding and the use of funds. School facility funds come from State funding, State bonds, and local developer fees. General Obligation Bonds have to be put on the ballot and passed with a majority vote. The required 75 percent majority vote can be difficult to achieve and can make it near impossible for a school district to provide adequate facilities and resources.

The State of California has traditionally been responsible for the funding of local public schools. To assist in providing facilities to serve students generated by new development projects, the State passed Assembly Bill 2926 (AB 2926) in 1986. This bill allowed school districts to collect impact fees from developers of new residential and commercial/industrial building space. Development impact fees were also referenced in the 1987 Leroy Greene Lease-Purchase Act, which required school districts to contribute a matching share of project costs for construction, modernization or reconstruction.

Senate Bill 50 (SB 50) and Proposition 1A, both of which passed in 1998, provided a comprehensive school facilities financing and reform program, in part by authorizing a $9.2 billion school facilities bond issue, school construction cost containment provisions and an eight-year suspension of the Mira, Hart and Murrieta court cases. Specifically, the bond funds are to provide $2.9 billion for new construction and $2.1 billion for reconstruction/modernization needs. The provisions of SB 50 prohibit local agencies from denying either legislative or adjudicative land use approvals on the basis that school facilities are inadequate, and reinstates the school facility fee cap for legislative actions (e.g., general plan amendments, specific plan adoption, zoning plan amendments) as was allowed under the Mira, Hart and Murrieta court cases. According to Government Code Section 65996, the development fees authorized by SB 50 are deemed to be "full and complete school facilities mitigation." These provisions are in effect until 2006 and will remain in place as long as subsequent state bonds are approved and available.

SB 50 establishes three levels of Developer Fees that may be imposed upon new development by the governing board of a school district depending upon certain conditions within a district. These three levels are described below:

Level 1: Level 1 fees are the base statutory fees. These amounts are the maximum that can be legally imposed upon new development projects by a school district unless the district qualifies for a higher level of funding.

Level 2: Level 2 fees allow the school district to impose developer fees above the statutory levels, up to 50 percent of certain costs under designated circumstances. The State would match the 50 percent funding if funds are available. Under Level 2, the governing board of a school district may require a developer to finance up to 50 percent of new school construction costs. However, in order to qualify for Level 2 funding the district must satisfy at least one of the following four requirements until January 1, 2000, or satisfy at least two of the four requirements after January 1, 2000:

- Impose a Multi Track Year Round Education (MTYRE) with:
  - At least 30 percent of K-6 enrollment in the high school attendance area on MTYRE for unified and elementary school districts; or
  - At least 30 percent of high school district enrollment on MTYRE; or
  - At least 40 percent of K-12 enrollment on MTYRE within boundaries of the high school attendance area for which the district is applying for funding.
- Place a local bond measure on the ballot in the last four years which received at least 50 percent plus 1 of the votes.
- District has issued debt or incurred obligations for capital outlay equal to a specified (under Government Code 65995.5(b)(3)(C)) percentage of its local bonding capacity.
- At least 20 percent of teaching stations within the district are portable classrooms.

Level 3: Level 3 fees apply if the State runs out of bond funds after 2006, allowing the school district to impose 100 percent of the cost of the school facility or mitigation minus any local dedicated school moneys.

In order to accommodate students from new development projects, school districts may alternatively finance new schools through special school construction funding resolutions and/or agreements between developers, the affected school districts and occasionally, other local governmental agencies. These special resolutions and agreements often allow school districts to realize school mitigation funds in excess of the developer fees allowed under SB 50.

As of January 25, 2006, the statutory maximum Level I school fees that may be levied by a school district on new development and Facility Program Grants has increased to $2.24 per assessable square foot of residential construction, and to $0.42 per square foot of enclosed and covered space for commercial/industrial development.

Education facilities and resources within Lancaster include joint-use programs, private and public education and additional private education programs. Antelope Valley College, located in the City of Lancaster, is the local community college facility and Lancaster University Center, located on Division Street, is a satellite campus of California State University of Fresno and California State University of Bakersfield.

SCHOOL DISTRICTS

Lancaster Unified School District

The Lancaster Unified School District (LUSD) covers an area of approximately 88 square miles and serves students from kindergarten through 8th grade (K-8). In addition, LUSD operates preschool programs for children with disabilities from ages three to four. The majority of students served by LUSD live within the area bounded by Avenue H to the north, 20th Street East to the east, Avenue L to the south, and 50th Street West to the west; refer to Figure 9.3-1. A smaller percentage of students served by LUSD live in parts of unincorporated Los Angeles County. LUSD operates five middle schools (6th-8th grades) and 12 elementary schools (K-5th grade). Additionally, LUSD operates an alternative education and special education school for kindergarten through 8th graders. Schools are listed and described in Table 9.3-2, Lancaster Unified School District Facilities, and their numbered locations are shown on Figure 9.3-1.

Table 9.3-2
Lancaster Unified School District Facilities

School	Facility Type	Enrollment	Capacity	Map Reference Number
Amargosa Creek	Year round	1,372	1,250	1
Desert View	Traditional	993	850	2
El Dorado	Year round	916	850	3
Endeavor	Traditional/Temporary Site	481	Temporary facility	4
Jack Northrop	Traditional	893	850	5
Joshua	Traditional	1,072	850	6
Lincoln	Year round	N/A	N/A	7
Linda Verde	Year round	816	750	8
Linda Verde Center Special Education	Year round	40	50	9
Mariposa *(Special Education)*	Traditional	785	750	10
Monte Vista	Traditional	908	850	11
Nancy Cory	Traditional	833	750	12
New Vista	Year round	1,259	1,250	13
Park View	Traditional	1,213	1,250	14
Piute	Year round	1,226	1,250	15
Sierra	Traditional	949	850	16
Sunnydale	Year round	781	750	17
West Wind	Year round	886	750	18
Crossroads *(Alternative Education)*	Traditional	108	180	19
Sources: Lancaster Unified School District, Stephen J. Gocke, Superintendent, written correspondence, June 2006.				
N/A = data not available.				

As of May 2006, enrollment for LUSD consisted of 16,561 students. This enrollment represents a 22.8 percent increase since 1996, or an average annual increase of approximately 2.1 percent.

LUSD has taken a number of steps to address continued enrollment growth, which includes the conversion of traditional classes to year round schedule, enlarging class sizes, and constructing temporary classrooms. Currently nine of the 19 schools in the LUSD operate year round. Despite these efforts, schools remain overcrowded and, as indicated in Table 9.3-2, with nearly all schools within the district surpassing their originally designed capacity. The LUSD has a total of 290 permanent classrooms at this baseline capacity and 270 relocatable classrooms. Any continued growth in LUSD will require new facilities to accommodate the student population.

Generation rates are the most common method used by a school district to project future enrollment. LUSD calculates these rates using single-family and multi-family housing unit construction from the previous five years, over the increase in student enrollment experienced during that same period. This ratio is then applied to the anticipated future residential development for the district in the next five years to project 5-year enrollment. Generation rates are derived based on elementary school and middle school student projections. Student generation rates for elementary students are 0.336 students per single-family unit and 0.280 students per multi-family unit. Student generation rates for middle school students are 0.077 students per single-family unit and 0.080 students per multi-family unit.

According to the LUSD's *School Facilities Needs Analysis and Determination of Permissible Alternative School Facility Fees*, LUSD's enrollment for the 2010/2011 school year is estimated to increase by approximately 827 students. To accommodate new district growth, in addition to Level I developer fees for commercial development established by the State Allocation Board, new residential development within the LUSD jurisdiction is qualified to pay a higher Level II developer fee of $2.75 per square foot or Level III fee of $5.49 per square foot, as permitted by SB 50.

As of 2006, LUSD is constructing a new middle school at 45th Street West and Avenue K. Additionally, two elementary school sites at 22nd Street West and Avenue K-4, and 20th Street East and Kettering, are being submitted to the State for approval. New facilities are often pending facility hardship funding.

Westside Union School District

Westside Union School District (Westside) serves an area of 346 square miles in western Lancaster, west Palmdale, and unincorporated parts of Los Angeles County. Included in this area are the unincorporated communities of Antelope Acres, Del Sur, and Quartz Hill; refer to Figure 9.3-1. As of 2006, Westside is responsible for the maintenance of schools and landscapes, major renovation of aging facilities, and construction of new facilities. Westside serves students from kindergarten through 8th grade. The District operates six elementary schools (kindergarten through 6th grade), three senior elementary schools (kindergarten through 8th grade) and two middle schools (6th grade through 8th grade). Five of the 11 schools in the Westside District are located within the City of Lancaster and Quartz Hill area. Table 9.3-3, Westside Union School District Facilities, provides facility and enrollment information for the schools within the Westside Union School District.

Enrollment in Westside schools has increased with population growth. Total enrollment for the Westside school district was 6,183 students at the end of 1996, and increased to 8,527 students for the 2005-2006 school year. This represents an approximately 37.9 percent increase over the last decade (an average annual increase of 3.79 percent). All the Westside schools in

Lancaster are on a single track/year round schedule.[1] Capacities listed in Table 9.3-3 reflect Westside's desired capacity for each facility. Total capacity includes special day class students apportioned between the elementary and junior high school levels, as well as thirty-two relocatable classrooms purchased by the District.

Table 9.3-3
Westside Union School District Facilities

Schools[1]	Facility Type	Enrollment	Capacity	Map Reference Number
Quartz Hill Elementary	Single track/ year round	968	750	22
Sundown Elementary	Single track/ year round	1,035	750	23
Valley View Elementary	Single track/ year round	872	750	24
Del Sur School (K-8th)	Single track/ year round	876	1,200	20
Joe Walker Middle	Single track/ year round	903	1,200	21

Source: Westside Union School District, Janet McMahon, district staff, personal communications, January 8, 2007.
Westside Union School District, Robert Able, Assistant Principal, communications, January 8, 2007.

1 Schools listed include those schools that are located in Lancaster or Quartz Hill.

Westside has been adding portable classrooms since 1994 to accommodate growth; however, portable classrooms are intended to be a temporary solution until funds are available to provide permanent structures. As shown in Table 9.3-3, student enrollment exceeds the existing desired capacity at the elementary schools.

Generation rates for Westside are determined using historic single-family attached and detached housing unit development over the increase in enrollment during that same period. This ratio is applied to anticipated future development within the district. In order to anticipate future enrollment, Westside currently uses a generation rate of 0.628 students per single-family detached residential unit and a generation rate of 0.735 students per attached residential unit.

Generation rates applied to anticipated new development within the district result in an anticipated five-year enrollment increase of approximately 4,765 elementary and middle school students.[2] However, this projected enrollment is calculated at a district level and does not reflect the direct impact to Westside schools serving Lancaster.

In order to provide adequate facilities and resources for future growth, Westside completed an annual Facilities Needs Analysis to determine future demand and costs. Based on the *Westside Union School District School Facilities Needs Analysis*, an Alternative 2 Fee (Level II fee) for new residential construction in the district is $2.57 per square foot during periods when State funds for new construction is available and an Alternative 3 School Facility Fee (Level III fee) of $5.13 per square foot that may be imposed on new residential development when State funds are not available.[3]

[1] Schools start mid-August with a four-week holiday break half-way through the school year.

[2] Housing unit projections were provided in the Westside Union School District School Facilities Needs Analysis in January of 2006 except for the Cities Planning Departments (Palmdale and Lancaster).

[3] *Ibid.*

According to the Westside Facility Needs Analysis, it is estimated that the Westside District will need approximately 4.0 new elementary school facilities and approximately 1.5 new middle school facilities. Currently, Sundown and Del Sur both have plans to add new classrooms to existing facilities for the 2006/2007 school year. Additionally, Westside is currently working with the City of Lancaster to find one new school site within the City.

Eastside Union School District

The Eastside Union School District (Eastside) serves students living in eastern Lancaster and Palmdale. The jurisdiction includes 247 square miles, which generally extends east of 20th Street East. Eastside currently maintains four elementary and middle schools (K-8), which operate on a traditional education schedule; refer to Table 9.3-4, Eastside Union School District Facilities.

Enrollment for Eastside has increased by approximately 2.2 percent annually over the last decade to approximately 3,259 students in the 2005/2006 school year.

In 1997, Tierra Bonita split into two campuses, Tierra Bonita North and Tierra Bonita South, in order to evenly distribute students. In July of 2006, Tierra Bonita North transferred to a new facility, Columbia Elementary, which was completed at the start of the 2006-2007 school year. Eastside currently has a total of 82 permanent classrooms and 47 relocatable classrooms, which have been leased to accommodate for increases in enrollment in all four facilities. Additional issues of overcrowding will be addressed by funding new portable classrooms, restrooms, furniture and teachers.

Table 9.3-4
Eastside Union School District Facilities

Schools*	Facility Type	Enrollment	Capacity	Map Reference Number
Eastside Elementary	Traditional	821	1,200	25
Tierra Bonita South	Traditional	575	700	26
Columbia Elementary[1]	Traditional	603	779	27
Gifford C. Cole Middle School	Traditional	996	1,280	28

Source: Eastside Union School District, N. Rajakumar, Assistant Superintendent of Business Services, written correspondence, September 2006.

[1] Students transferred from Tierra Bonita North to Columbia Elementary, located at Avenue J-4 and 27th Street East for the 2006/2007 School year.

Generation rates for Eastside are calculated using historic single-family attached and detached housing unit development over the increase in student enrollment during that period. This ratio is then applied to anticipate future development for the district. Eastside currently uses a generation rate of 0.45 students per single-family residential unit anticipated to be constructed in the next five years.[4] Based on the projected housing construction and other factors, total projected students from new residential development would be approximately 312 students.

[4] Approximately 700 single-family units are projected to be constructed in the district within the next five years.

Overall, Eastside estimates enrollment will increase to approximately 4,782 in five years. This represents an approximately 46.7 percent increase or 9.3 percent annual growth rate for Eastside over the next five years. If existing capacities remain, the growth would result in approximately 1,815 unhoused students.

At this time the Eastside District has no available land suitable for school purposes nor does the District have surplus local funds to finance the construction or reconstruction of school facilities needed to accommodate the enrollment growth. In response, Eastside is qualified for a higher Alternative Fee pursuant to SB-50. Eastside has established a maximum Alternative 2 School Facility Fee (Level II) of $2.52 per square foot that may be imposed on new development during periods when State funds for new construction are available, and a maximum Alternative 3 School Facility Fee (Level III) of $5.04 to be imposed when State Funds are not available.

The Alternative School Facility Fees will be used to fund facilities to accommodate projected unhoused students. At this time there is no new development occurring at the Eastside District.

Antelope Valley Union High School District

The Antelope Valley Union High School District (AVUHSD) provides education services for students grades nine through 12 within 1,100 square miles of the Antelope Valley, including Lancaster and Quartz Hill; refer to Figure 9.3-1. There are seven comprehensive high schools in the AVUHSD and four that serve the Lancaster study area: Antelope Valley High School, Eastside High School, Quartz Hill High School, and Lancaster High School. Table 9.3-5, Antelope Valley Union High School District Facilities, provides current enrollment and capacity information for each of these facilities. Other schools in the AVUHSD include Palmdale High School, Highland High School and Littlerock High School, which serve Palmdale and other areas outside of the Lancaster study area.

Table 9.3-5
Antelope Valley Union High School District Facilities

Schools[1]	Facility Type	Enrollment	Capacity	Map Reference Number
Lancaster High	Comprehensive/Traditional	3,391	3,209	29
Eastside High	Comprehensive/Traditional	1,424	1,500	30
Antelope Valley High	Comprehensive/Traditional	2,208	2,855	31
Quartz Hill High	Comprehensive/Traditional	3,689	3,374	32
Adult Education	Adult School/ Traditional	1,460	N/A	33
Desert Winds	Continuation/ Traditional	636	600	34
Phoenix North	Community Day School/ Traditional	82	125	35

Source: Antelope Valley Union High School District, written communication, Mat Havens, September 2006.

N/A = Not applicable in this situation.

[1] Schools represented in this table are only those within Lancaster and therefore enrollment and capacity totals will not directly correspond with totals indicated in Table 9.3-1.

In addition to the comprehensive high schools, AVUHSD also operates three alternative programs, which consist of a continuation and alternative high school and one Adult/ Independent Study program. These programs are held at Desert Winds Continuation High School, Phoenix Community High School and the Antelope Valley Adult/Independent Study program, which is held at three sites throughout Lancaster.

From 1996 to 2006, the total enrollment of the AVUHSD increased by approximately 6.3 percent annually to a total enrollment of 24,707 students district-wide in 2006. Future growth is projected by the AVUHSD based on feeder school enrollment and new housing development projections. To date, new growth has been accommodated with 36 to 67 temporary facilities at each of the four high schools in Lancaster. It is the intention of the AVUHSD to utilize portable facilities as a temporary solution to district growth until adequate funding is made available for construction of permanent facilities. The AVUHSD prefers that individual schools do not exceed a capacity of 2,500 students at each facility, as it does not provide an ideal learning environment.

AVUHSD uses a generation rate of 0.339 students per single-family unit developed and 0.155 students for each multi-family unit developed. According to projections, the proposed enrollment in the district in five years is estimated to be 30,146 high school students. Based on the 2006 capacity of approximately 24,287 students, growth into 2010 has the potential to result in approximately 5,859 unhoused students.[5]

Based on calculations conducted in the *AVUHSD School Facilities Needs Analysis*, the district is eligible to collect a maximum Level II fee of $1.57 per square foot of new residential development and a Level III fee of $3.14 per square foot of residential development. AVUHSD receives a percentage of the three other school districts' fees because it overlaps with the other districts serving Lancaster.

AVUHSD is currently in the process of completing the Eastside High School in Lancaster and two additional high schools are in the planning stages. One new facility is planned in southeast Palmdale and another is anticipated to be located in southwest Palmdale or southwest Lancaster.

AVUSD maintains an agreement with Eastside School District, which includes the use of the Eastside Pool in return for the use of the gyms at Lancaster, Antelope Valley, and Quartz Hills high schools. Additionally, AVUHSD provides after school programs, career paths, home study and regional occupational programs.

OTHER EDUCATIONAL PROGRAMS AND FACILITIES

Cooperative Programs

The Department of Parks, Recreation, and Arts coordinates with local school districts in Lancaster to provide the maximum amount of recreational area and programs for citizens. The Joint Power Agreements (JPAs) allows the City to utilize school recreational resources in exchange for maintenance costs. A number of existing schools are located adjacent to City parks. City recreational programs are held at local schools after school hours. Gymnasiums

[5] Projected unhoused students are calculated by subtracting the 2006 capacity of the district (24,287) from the 2010 projected enrollment (30,146).

are available at the New Vista Middle School (7,000 square feet), Piute Middle School (7,950 square feet), Park View Middle School (7,950 square feet), and Amargosa Middle School (7,500 square feet). In all, there are approximately 30,400 square feet of gymnasium space available to the public during specified hours. Two of the high schools in the study area (Antelope Valley and Quartz Hill) have athletic stadiums available to the public. Eastside currently has a joint-use agreement at the Tierra Bonita School, which involves the joint use of the Multipurpose Room at Tierra Bonita South and the Tierra Bonita Park.

Educational Programs

Educational programs are provided through the Los Angeles County Office of Education (LACOE) to assist children with disabilities, with juvenile offenses, at risk of dropping out of school, or who have special needs. Programs include Alternative Education, Juvenile Court and Community Schools, and Special Education.

ALTERNATIVE SCHOOLS

The Division of Alternative Education (DAE) schools are community-based programs for at-risk youth, juvenile offenders, truants, dropouts, teen parents or those with specialized interests or talents.

DAE operates Community Schools and Independent Study Strategies (ISS). Community Schools include an interventional program that targets students who are failing, have poor school attendance, have been expelled or are referred from local school districts. Unlike traditional public schools, Community Schools incorporate community services and resources, such as social services, parent training and education, and partnerships with business, industry, and higher education.

ISS is available for students who cannot return to local schools or access other alternative education options provided by local school districts because of work or family obligations. Students meet at least one hour per week to work with a teacher for tutoring, counseling, and one-on-one instruction. They work at home at their own pace on an individualized learning plan tailored to their learning needs, deficiencies, and career goals. ISS also offers work-based learning experiences and summer employment opportunities. ISS serves all at-risk students.

JUVENILE COURT AND COMMUNITY SCHOOLS

A fully accredited court school system serves delinquent, abused and neglected youth in residential facilities. These facilities are located at camps separate from public schools. The Challenger Memorial Youth Center, within the Lancaster study area, serves the regional area and is discussed in Section 9.5, Public Facilities.

SPECIAL EDUCATION

The LACOE supports school districts through its Division of Special Education (DSE) to ensure that students with disabilities get the best education possible. Programs are generally held on public school campuses and serve students with disabilities from birth though age 22. Two types of services are available for students, depending on the severity of their disabilities. One service is provided through instruction in special day classes located at public school campuses. A second service allows the individual to receive instruction at home or in a specialized physical

care facility. The opportunity to participate in curricular and extra curricular activities with their regular education peers, where possible, is promoted.

In less significant instances, students attend regular public education classes and designated instructional services are provided to help them receive full benefits from their schooling experience.

Private Education

There are approximately 20 private schools located throughout Lancaster, which include the Sacred Heart Elementary School, the Lancaster Christian School, the Lilliput Academy, and Lancaster Montessori School. Private schools are established and controlled privately, and primarily supported through tuition and donations. Early childhood program/daycare and elementary or secondary schools are currently the two most common types of private schools in Lancaster. There are also smaller private institutions classified as special education facilities and one alternative high school, which serve grades five through 12.

Approximately seven early childhood program/daycare facilities serve pre-kindergarten and kindergarten aged children. Typically, elementary or secondary private schools serve students K-8th and K-12th at approximately ten locations in Lancaster. Typically, private institutions serve a small population of students compared to public schools. Institutions consist of both religious affiliation or associate (religions vary) and non-sectarian.

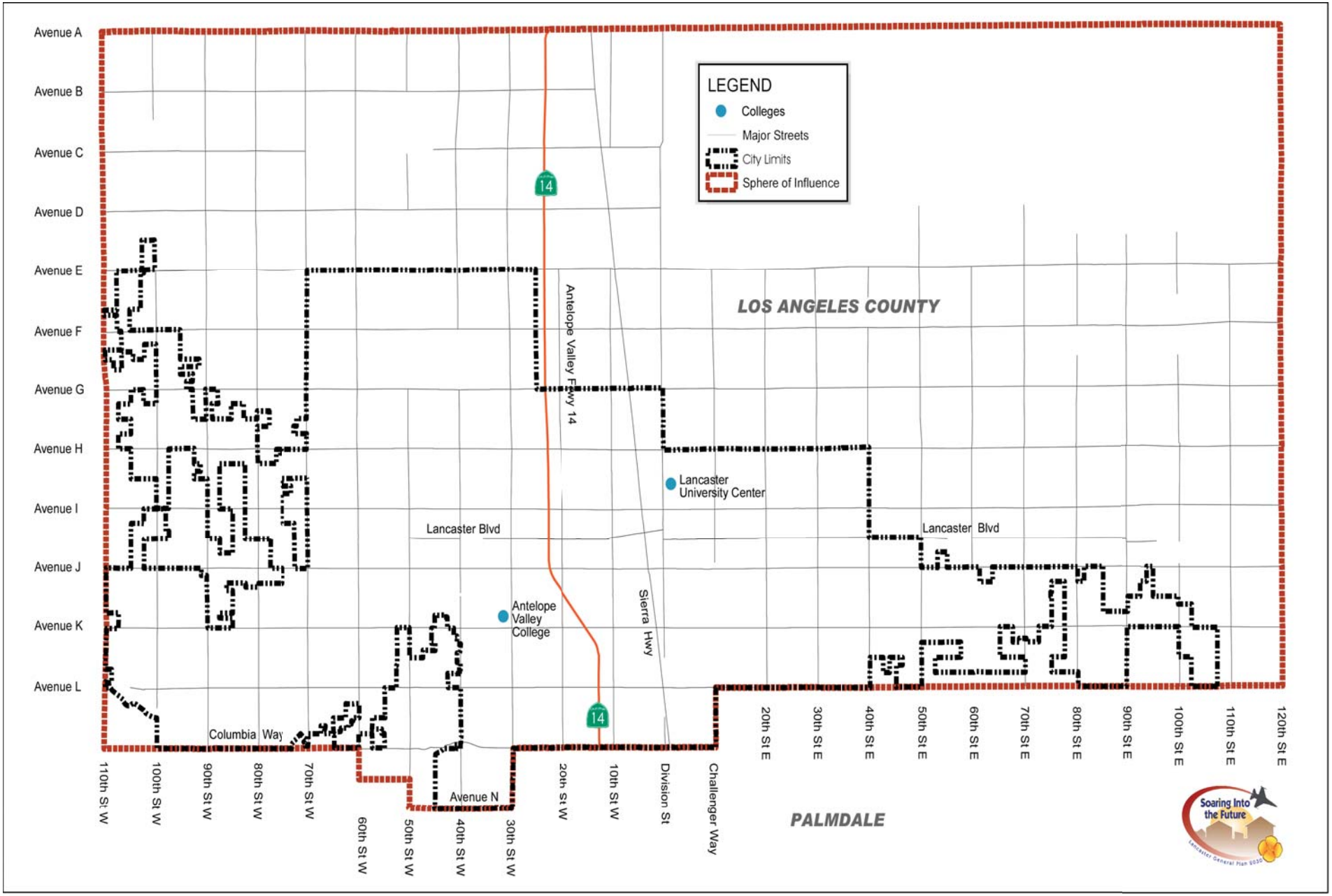
Continued Education

Currently, there are no four-year educational institutions within the Antelope Valley. The closest state universities are in Los Angeles (CSULA), San Bernardino (CSUSB), and Northridge (CSUN). CSULA is approximately 75 miles from Lancaster and CSUN is approximately 56 miles from Lancaster via SR-14, while CSUSB is approximately 70 miles from Lancaster. The closest University of California (UC) is in Los Angeles (UCLA), 70 miles from downtown Lancaster via SR-14.

Antelope Valley Community College is a public, two-year college located within Lancaster. The Lancaster University Center, a branch campus of California State University Bakersfield (CSUB) and California State University Fresno (CSUF), is also located within Lancaster; refer to Figure 9.3-2, College Facilities.

Antelope Valley College

The Antelope Valley College (AVC), located on the northwest corner of Avenue K and 30th Street West, is one of the two public higher education institutions in the area. AVC is a two-year community college that occupies a 125-acre campus with 31 buildings and has an original service capacity of 10,000 students. It first opened in 1929 on the present Antelope Valley High School site, and in 1961 moved to its current location. AVC provides 1,782 courses, which lead to associate degrees in 67 fields and certificate programs in 57 areas. AVC offers a full range of support services for students, fine and performing arts programs for the community, and intercollegiate athletic competition.



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College Facilities

Figure 9.3-2

AVC has maintained a steady average annual increase in growth of approximately 3.8 percent from the 1995-1996 school year to the 2005-2006 school year. Fall 2006 enrollment exceeds 12,000 students, which surpasses its originally designed capacity. Growth requires constant facility expansion and resource upgrades. In 2002, a three-story education building was completed, followed by a 17,180 s.f. Technical Education building in 2003. With the extensive growth in the service area, enrollment is expected to increase by an additional 8,000 students within the next decade, which would reach the facility's build out capacity of 20,000 students.

In November 2004, a $139 million bond issue (Measure R) was approved by voters to assist State funds in the continued construction of new facilities such as labs and classrooms. The first of the planned projects will begin in 2007 with an Agriculture and Landscaping complex, which will give students hands-on experience in landscape construction and environmental horticulture. The agriculture labs, greenhouse and maintenance warehouse are scheduled to open in 2008. The renovation and expansion of the Student Center is also anticipated to begin in 2007. The relocation and construction of the Theater Arts complex and the construction of a Health and Science Building is planned to begin in 2007. These buildings would replace a currently obsolete building and provide new labs and classrooms, a surgery demonstration lab and various other support and educational resources. The 320,886 s.f. Theater Arts building with a 400-seat theater is anticipated to be open by 2010 while the 94,240 s.f. Health and Science building is planned for occupancy by 2012.

Additionally, once capacity is reached at the Lancaster AVC, a Palmdale facility will be opened. A development agreement for a 69-acre campus is pending approval from the City of Palmdale. Initial plans call for a designed service capacity of approximately 10,000 students to begin in 2007.

LANCASTER UNIVERSITY CENTER

In an effort to provide four-year programs in the Antelope Valley, AVC officials and representatives from nearby public universities have established a California State University Center, Lancaster University Center (LUC), which provides branch campus classes for CSUF and CSUB. The LUC provides junior and senior level students with a facility to complete their college education and receive an Undergraduate, Master's, or Doctorate Degree from CSUB or CSUF. The LUC was originally located on the AVC campus, but has since been relocated to the renovated Challenger Memorial Hall at the former Antelope Valley Fairground site at 45356 Division Street. The 20,000 s.f. LUC has 13 classrooms, including two high-tech distance learning rooms and two labs. Administrative offices are located at AVC. Room capacities vary from 40 to 60 seats per classroom with a total seat capacity of 553. Classes are scheduled primarily from 4:00 pm into the evening, with a few day classes available.

Electrical, Mechanical, and Computer Engineering programs are being offered through CSUF and CSUB educational partnerships. CSUB offers Bachelor's Degree programs in Business; Child, Adolescent and Family Studies; Communications; Criminal Justice; Economics; English; Environmental Resources Management; Liberal Studies; Nursing; Psychology; and Sociology through the LUC. A Bachelor of Science in Engineering is available through a joint program with AVC and CSUF. Master's Degrees are also available in Social Work, Educational Administration, and Education Curriculum and Instruction. Teaching credential programs are offered in Single Subject, Special Education, and Elementary Education. In all, the LUC offers 11 Bachelor's degrees, four Graduate degrees, one Ph.D. and three credential certificates.

Anticipated growth is expected to continue and the facility has already outgrown its 13 classrooms. Estimated enrollment for Fall 2006 is approximately 900 students. Laboratory facilities have been funded through generous donations from the Air Force Research Laboratory, Edwards Air Force Base Flight Test Center, and NASA's Dryden Flight Research Center; however, future funding for facility expansion is uncertain as the LUC is a branch campus and not under direct financial obligation of CSUB or CSUF.

Additionally, Lancaster is home to a variety of private continuing, training and post-secondary educational facilities. The Lancaster Beauty School, the Antelope Valley Medical College, the Discovery Training Center and the University of Phoenix are a few of the private resources available in Lancaster. All facilities, both public and private, are a resource to the entire Antelope Valley and draw people to the area.

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9.4 PARKS AND RECREATIONAL FACILITIES

Parks and recreational facilities are made available to Lancaster residents through the Department of Parks, Recreation, and Arts. The State of California, County of Los Angeles, the City of Lancaster, and private groups provide and operate recreation facilities in the north Antelope Valley area, which includes the City of Lancaster and study area. Refer to Section 9.5, Public Facilities, for additional information on arts in the community.

EXISTING FACILITIES

Existing and future recreation facilities within the study area are illustrated on Figure 9.4-1, Existing and Future Park and Recreation Facilities.

State Facilities

State park facilities located within the area include the California Poppy Reserve, the Arthur B. Ripley Desert Woodland, the Saddleback Butte State Park and the Antelope Valley Indian Museum; refer to Table 9.4-1, State and County Existing Park Facilities. The Area Headquarters for the California State Parks Department is located in Lancaster at Avenue G and 40th Street West. The Antelope Valley Fairgrounds, located at Division Street and Avenue I, is part of the California State Fair System.

CALIFORNIA POPPY RESERVE

The California Poppy Reserve, which is located approximately 15 miles west of the Antelope Valley Freeway on Lancaster Road, is part of the State Park System. It occupies approximately 1,700 acres with approximately eight miles of nature trails. The Reserve was created to preserve the wildflowers in the Antelope Valley, specifically the California Poppy. Open primarily in the spring, the Reserve is strictly for day use; it has a small picnic area and Visitor's Center.

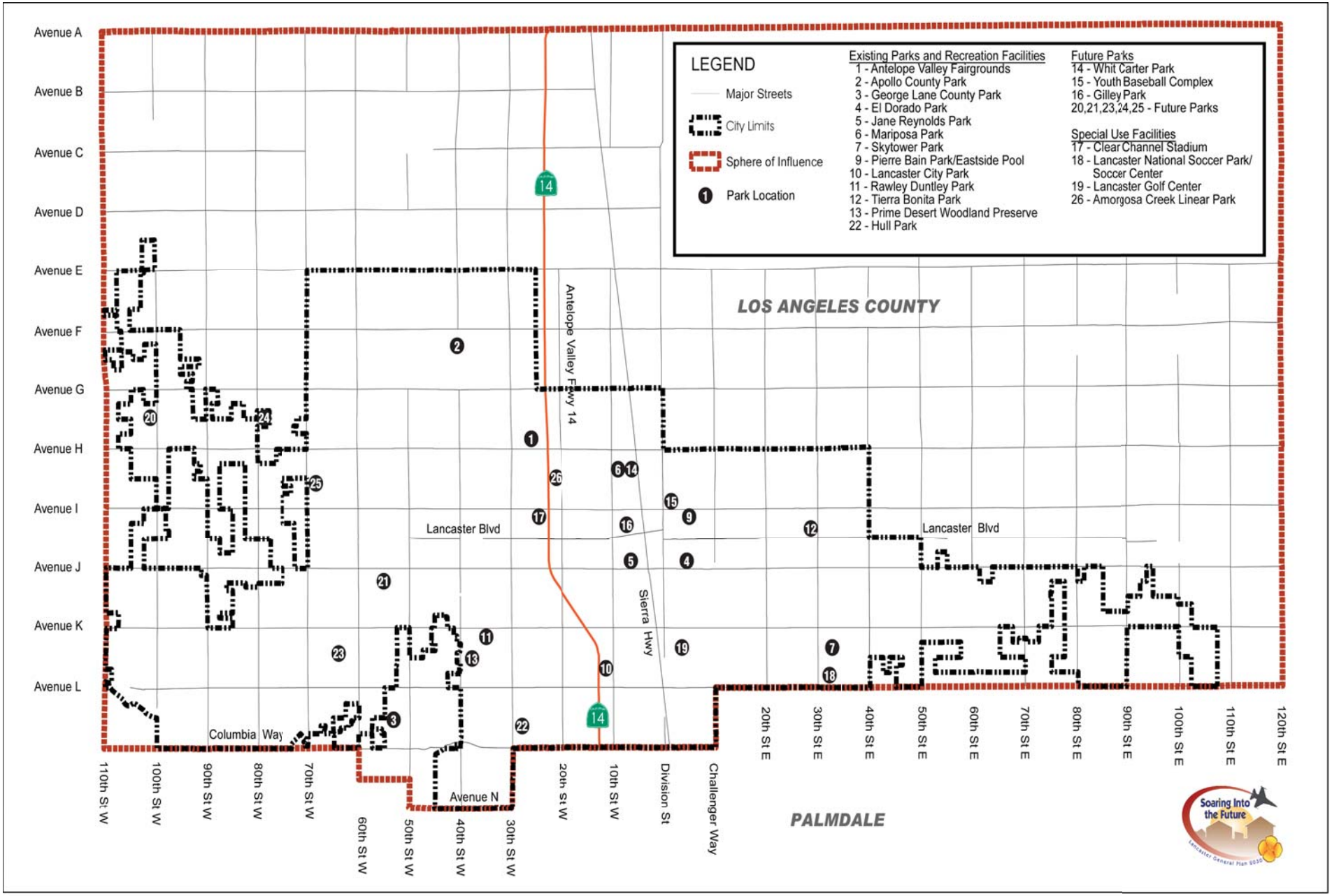
The Visitor's Center, also known as the Interpretive Center, located in a 1,800 square foot building, is open daily from mid-March to mid-May. The center has exhibits on wildflowers, a video presentation area, an area for the sale of books and souvenirs, and an exhibit on wind energy.

ARTHUR B. RIPLEY DESERT WOODLAND

Arthur B. Ripley Desert Woodland State Park is a preserve and an open space resource for the community. It is located west of the Poppy Reserve on Lancaster Road at 210th Street West. The 566-acre open space woodland protects and preserves native Joshua trees and junipers. The State managed park is open year-round from sunrise to sunset and has accessible public trails.

SADDLEBACK BUTTE STATE PARK

Saddleback Butte State Park is a 2,300-acre recreational facility, located 17 miles east of Lancaster, adjacent to the City's expanded sphere of influence. The park contains 50 family campsites, picnic facilities, hiking and nature trails, and a visitor's center containing exhibits of the local history, archaeology and geology.



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Existing and Future Parks and Recreation Facilities

Figure 9.4-1

ANTELOPE VALLEY INDIAN MUSEUM

The Antelope Valley Indian Museum, located on Avenue M between 150th and 170th Streets East is a regional museum. In 1978, the State of California bought the museum and now maintains the exhibits representing Great Basin Indians and California Indians. Refer to Section 9.5, Public Facilities, for additional information on the Antelope Valley Indian Museum.

ANTELOPE VALLEY FAIRGROUNDS

The Antelope Valley Fairgrounds, located west of State Route 14 (SR-14) between Avenue H and Avenue G-8, is also known as the Fiftieth District Agricultural Association of the California State Fair System. The 135-acre fairgrounds were relocated to its existing site in September of 2003. The new site contains two assembly halls (36,000 and 21,000 square feet) and a Poppy and Lilac Pavilion that are available for rent year round. The fairgrounds contain an auction area, livestock barns, a recreational vehicle block, an outside barbecue area, and a grandstand that can accommodate 6,000 people. Most recently, a show arena has been added to the fairgrounds and an 8,000 square foot outdoor Pavilion are anticipated to be completed by August 2007. Future expansion for the facility is dependent upon available funding, but desired future projects include the addition of a 20,000 square foot assembly hall and 60,000 square foot indoor arena.

County Facilities

The Los Angeles County Department of Parks and Recreation is responsible for Apollo Park and George Lane Park, which are located within Lancaster's sphere of influence; refer to Table 9.4-1.

Table 9.4-1
State and County Existing Park Facilities

Park/Facility	General Amenities	Acreage
State Facilities		
California Poppy Reserve	Picnic areas, Interpretive Center	1,700
Arthur B. Ripley Desert Woodland Preserve	Trails, preserves native Joshua trees and junipers	566
Saddleback Butte State Park	50 campsites, nature trails, Visitor's Center	2,300
Antelope Valley Indian Museum	Exhibits representing Great Basin and California Indians	N/A
Antelope Valley Fairgrounds	Assembly halls, grandstands	135
County Facilities		
Apollo County Park	Lakes with fishing, picnic area and play area	56
George Lane County Park	Softball, basketball, picnicking, restrooms, play area, meeting rooms and an auditorium	15
	Total	**4,772**

APOLLO COUNTY PARK

Apollo County Park is a 56-acre park located on William Barnes Avenue between 50th Street West and 30th Street West, east of Fox Field. The park was constructed as a non-contract water recreation area. Recreational facilities available at the park include a picnic area, play

equipment and fishing in the three interconnected lakes that cover 26 acres of the park site and contain 80 million gallons of reclaimed water. The lakes are stocked with fish and were named after the Apollo 11 Astronauts: Neil Armstrong, Edwin "Buzz" Aldrin, and Michael Collins. The park also contains an actual mock-up of the Apollo Space Capsule and a community building.

GEORGE LANE COUNTY PARK

George Lane County Park is located at the southwest corner of Avenue L-8 and 55th Street West. The 15-acre park provides the following facilities; softball, basketball courts, picnic area, restrooms, play area, two meeting/craft rooms and an auditorium. The park also maintains a seasonal swimming pool available to the public from June through August. The park also conducts programs and provides facilities for T-ball, adult softball, youth soccer, youth football, karate, wrestling, preschool, and dance classes. In addition, George Lane Park hosts the Quartz Hill Chamber of Commerce Annual Almond Blossom Festival.

City Facilities

The City of Lancaster Parks, Recreation and Arts Department supervise and maintain park, recreational and cultural facilities in Lancaster. The Department is committed to providing adequate recreational facilities and a diverse variety of activities, programs, classes, day camps and special events. The City currently maintains 13 City parks and recreational facilities, which consist of approximately 448 acres of developed and undeveloped park and recreation land. Approximately 100 acres of these facilities are pending completion as funds become available; refer to Table 9.4-2, Existing City Park Facilities. Existing parks include five neighborhood parks, four community parks, one linear park, one open space park and a variety of special recreation facilities. Refer to Table 9.4-3, Existing City Park Facility Amenities, for a summary of amenities provided at each facility. The City is in the process of acquiring 118 additional acres through various methods, which will be dedicated to future parklands.

The Parks, Recreation and Arts Department is currently preparing a Master Plan for Lancaster's Parks, Recreation and Arts. The purpose of the Master Plan is to create a common vision for the City, meet existing needs and proactively respond to the anticipated future population growth. The Master Plan will determine future need for parks, open space, recreation and arts services; identify operations needs, such as program staff and maintenance; and determine how to fund improvements. Plan approval is anticipated to commence March of 2007.

As of January 28, 2003, the City established a new park standard of 5.0 acres of parkland per 1,000 residents. According to the existing conditions report prepared for the City of Lancaster Master Plan of Parks, Recreation and Arts, as of August 2006, the City's overall level of service was 3.39 acres of parkland per 1,000 residents or 1.61 acres per 1,000 less than the minimum level of service indicated by the General Plan.

Rapid city growth that has occurred over the past decade has made it difficult to achieve and maintain adequate park acreage and facilities. Chapter 15.72 of the *Lancaster Municipal Code* requires dedication of land or payment of park in-lieu fees for park acquisition, park development and park maintenance, prior to the issuance of any building permit for construction of residential developments. Through the master planning process the Parks, Recreation and Arts Department can decide if they want to set acreage and/or geographic standards for different park types to ensure the Department meets the need for more local parks.

Table 9.4-2
Existing City Park Facilities

Park Name	Total Facility Acreage	Developed Acreage	Future Development
Neighborhood Parks			
El Dorado Park	9.5	9.5	0.0
Jane Reynolds Park	6.9	6.9	0.0
Mariposa Park	7.5	7.5	0.0
Skytower Park	13.3	13.3	0.0
Hull Park	8.7	8.7	0.0
Community Parks			
Pierre Bain Park/Eastside Pool	15.0	15.0	0.0
Lancaster City Park	65.6	65.6	0.0
Rawley Duntley Park	19.0	12.0	7.0
Tierra Bonita Park	27.0	27.0	0.0
Linear Parks			
Amargosa Creek Park	5.58	1.95	3.36
Open Space			
Prime Desert Woodland Preserve	96.0	48.0	48.0
Special Use			
Clear Channel Stadium	17.0	17.0	0.0
Lancaster National Soccer Center	157.0	130.0	27.0
Total	**448.08**	**379.72**	**85.36**

Table 9.4-3
Existing Park Facility Amenities

Parks and Facilities	Acreage	Baseball / Softball	Soccer Fields	Basketball Courts	Tennis Courts	Volleyball	Picnic Facilities	Play area/ Children's Playground	9-hole Course	Horseshoe Pits	Activity Center	Exercise Equipment	Barbeques	Stage / Amphitheater	Concession Stand	Restrooms	Swimming Pool	Meeting Rooms	Open Space	Hiking / Walking Trails	Dog Park Area
Neighborhood Parks																					
El Dorado Park	9.5	•			•		•	•										•			
Jane Reynolds Park	6.9	•		•	•	•	•	•		•	•						•[1]				
Mariposa Park	7.5	•					•	•				•						•			
Skytower Park	13.3	•	•	•				•			•										
Hull Park	8.7						•	•					•			•					•
Community Parks																					
Lancaster City Park	65.6	•		•	•	•	•	•			•		•	•	•	•		•	•		
Rawley Duntley Park	19.0	•		•			•	•					•			•			•		
Tierra Bonita Park	27.0	•					•	•					•			•			•		
Pierre Bain Park	12.0	•		•		•	•	•		•			•			•			•		
Linear Parks																					
Amargosa Creek Park	5.6																			•	
Open Space																					
Prime Desert Woodland Preserve	96.0																		•	•	
Special Use																					
Eastside Pool	2.2																•				
Clear Channel Stadium	17.0	•													•						
Lancaster National Soccer Center	157.0		•					•			•				•						

[1] The swimming pool is open during the summer months.

PARKS CLASSIFICATION

Neighborhood Parks

Neighborhood parks support active and passive recreation, and function as the recreational and social focus of the neighborhood.

El Dorado Park. El Dorado Park is located in the central core of the City at the northwest corner of 5th Street East and East Pondera Street. Services provided at this 9.5-acre park include an open play area, a children's play area, meeting room facilities, picnic facilities, tennis courts, a lighted softball field, and an exercise trail.

Jane Reynolds Park. Jane Reynolds Park consists of 6.9 acres at the northeast corner of Fig Avenue and Avenue J. Facilities provided at this park include a community center, a seasonal swimming pool (Webber pool), a children's play area, an open play area, a lighted tennis court, basketball courts, a lighted softball field, volleyball court, horseshoe courts and picnic facilities.

Mariposa Park. Mariposa Park is located in central Lancaster at the southwest corner of Fig Street and Avenue H-4, across from Mariposa Elementary School. The 7.5-acre park provides an open play area, a children's play area, a meeting room used for preschool classes, picnic facilities, an exercise course, and an unlighted softball field.

Skytower Park. Skytower Park consists of approximately 13.3 acres, located at Avenue K-4 and 32nd Street East. Facilities provided at the park include a multi-purpose recreation building, children's play area, covered picnic facilities, a basketball court, and soccer and youth baseball fields. Four baseball fields are provided for the Lancaster Pony Baseball League.

Hull Park. Hull Park is a new park located on the corner of 30th Street West and Avenue L-12. The 8.7-acre park contains a children's playground, picnic tables with barbeque areas, open turf area, walking path, restroom facilities and a one-acre dog park, which will be completed within the next year.

Community Parks

Community Parks are larger in size than neighborhood parks and focus on serving the active and passive needs of several neighborhoods.

Pierre Bain Park. Formally Eastside Park and Pool, Pierre Bain Park is located on 12.0 acres at the southwest corner of 5th Street East and Avenue I. Among the services provided at this park are a year-round enclosed swimming pool, which occupies approximately 2.2 acres and maintains the name Eastside pool. The park also includes an open turf play area and a children's play area, lighted basketball courts, volleyball, horseshoe pits, picnic facilities, and a lighted softball field.

Lancaster City Park and Big 8 Softball Complex. This 65.6-acre park and recreational facility is located south of downtown Lancaster at the corner of 10th Street West and Avenue K-8. Among the available facilities are a multi-purpose room, an auditorium, a children's play area, an open play area, meeting rooms, picnic facilities, group picnic area, tennis courts, basketball courts, six lighted softball fields and two lighted volleyball courts. The Stanley Kleiner Activity

Building is located on the park premises and contains indoor assembly space, a kitchen, game center and youth-size basketball courts. Youth basketball games and practices are held here, as well as some City classes and meetings. Lancaster City Park also houses the annual Summer Concert Series, at which approximately five concerts of popular music of the past are performed, free to the public. The six lighted softball fields serve as a regional tournament facility in addition to serving local leagues.

Rawley Duntley Park. Rawley Duntley Park is located in the western portion of the City at the southeast corner of 35th Street West and Avenue K. The park consists of 19 acres, which include four acres dedicated to Desert Woodland open space and seven acres pending future park development. Facilities provided at Rawley Duntley include an open play area, children's play area, picnic facilities and group picnic area, basketball courts, two baseball fields, and volleyball courts.

Tierra Bonita Park. Tierra Bonita Park consists of 27 acres, located at Lancaster Boulevard and 30th Street East. Facilities provided include open play areas, a children's play area, one lighted soccer field, two lighted softball fields, a small recreation building, and picnic facilities. Ten acres of the original site were donated to the Eastside School District for an elementary school in exchange for specific use times in the multi-purpose room.

Linear Parks

Linear Parks are developed, landscaped areas and other lands that follow corridors such as railroad rights-of-way, washes, boundaries between subdivisions, etc. Linear parks generally contain trails.

Amargosa Creek Linear Park. Amargosa Creek Linear Park is a 5.6-acre park located along SR-14 from West Avenue I to West Avenue H. The park contains approximately two acres of developed parkland with a one-mile walking trail that is anticipated to connect to the trailhead located at the Antelope Valley Fairgrounds in the future.

Conservation Areas/Open Space Parks

Conservation areas and open space parks should protect and manage natural and cultural resources with recreation as a second objective.

Prime Desert Woodland Preserve. Prime Desert Woodland Preserve, located on Avenue K-8 and 35th Street West, is a 96-acre preserve. Of the 96 acres, 48 acres are pending completion when funds become available. The preserve features approximately three miles of trails with an interpretive center open to the public from 2:00 pm to 5:00 pm Monday through Thursday and from 10:00 am to 3:00 pm Saturday and Sunday. Informative walks are hosted at scheduled times during the spring and summer months.

Special Uses

The special use classification applies to facilities for specialized or single purpose recreational, arts, or cultural activities such as the Lancaster Performing Arts Center and the Clear Channel Stadium.

Aquatic Facilities. The City has two swimming pools available to the public. Eastside pool, located at Pierre Bain Park, is the only aquatic facility available year-round. The Webber Pool is located at Jane Reynolds Park and is open to the public during the summer months. Pool facilities provide classes and programs for all ages. Both have designated public and lap swim times throughout the week in addition to private and group classes, lifeguard training, water aerobics and therapy and practice areas for the Oasis Swim Team. The aquatic activities are a vital asset to the community; however, facility adequacy is a problem that has been expressed by residents, particularly students. The County maintains a swimming pool at George Lane County Park, which is also open seasonally from June through August.

Sports

Clear Channel Stadium at Lancaster. Clear Channel Stadium at Lancaster is located at 45116 Valley Central Way and is owned and operated by the City of Lancaster. The Stadium is a 17-acre minor league baseball facility that houses the Lancaster JetHawks of the California Baseball League. The Lancaster JetHawks are a Class "A" affiliate of the Boston Red Sox. The facility, completed in April 1996, includes 4,500 fixed seats, additional lawn seating, picnic areas, clubhouses, a concession concourse, 12 luxury skyboxes, offices, practice batting cages, 1,000 on-site and 500 adjacent parking spaces, state-of-the-art sound system, and a large video/scoreboard. In addition to the 70 home game baseball schedule, the stadium hosts concerts, baseball camps and other community uses. Consistent with its "aerospace" architectural theme, the facility was officially nicknamed "The Hangar." An F-18 fighter jet has been installed at the entrance to the stadium. Refer to Section 9.5, Public Facilities, for additional information.

Lancaster National Soccer Park/Soccer Center. The Lancaster National Soccer Park/Soccer Center is a 157-acre master planned facility located between Avenue K-12, Avenue L, 25th Street East and 35th Street East. Approximately 27 acres consist of parkland and the remaining acreage is dedicated to 34 tournament quality soccer fields. Of the 34 fields, 11 are lighted at game condition levels and five are lighted at practice condition, which is a lower intensity.

In addition, the facilities include children's play areas, a 6,000 square foot activities building, landscaping, pathways, and parking for autos and RV's. The activity building contains a referee's room, exhibition hall and meeting room, storage, rest rooms and concession outlets. The facility draws more than 25,000 players for each year of tournaments.

The Lancaster Golf Center. The Lancaster Golf Center, located at 531 East Avenue K-4, is a public golf practice facility. It was developed in partnership with a private developer on 20 acres of City-owned property. The development includes a lighted driving range, nine hole executive golf course, putting course, clubhouse and restaurant.

Big 8 Softball Complex. The Big 8 Softball Complex is located at Lancaster City Park, on the corner of 10th Street West and Avenue K-8. The Complex is designated for regional softball tournaments. In 2005 the complex drew 22,800 visitors, which included 912 teams, to Lancaster. Additionally, 453 local teams participated in the City's softball league.

Lancaster Batting Cages/Baseball Academy. Lancaster Batting Cages/Baseball Academy was a joint project developed in cooperation with the City of Lancaster on City-owned property at Lancaster City Park, which is now operated by the Department. The facility includes 10 batting cages, various speeds of baseball, and slow pitch softball.

PARK PROJECTS UNDER CONSTRUCTION

A total of 448 acres of parkland is currently owned by the City. These lands include undeveloped acres within existing parks (as shown in Table 9.4-2) and one new park. Additionally, the Department budgets annual monies for park improvements, which include addition of lights, safety and maintenance projects, and additional park amenities.

Improvements

Improvements for fiscal year (FY) 2005-2006 include the following:

- *Hull Park Phase II*. Construction of play area improvements including trash enclosure and picnic facilities and equipment purchase.
- *Youth Baseball/Softball Complex Phase I*. Phase I includes design and construction of a youth baseball center with 10 to 15 ball fields, utilities and irrigation and landscaping on 38 acres. Future phases include concession stands.

New Park Development

New park development includes the following:

- *Gilley Park*. The 12.2-acre Gilley Park will be located at Fern Avenue and Jackman Avenue, within the North Downtown Transit Village area. Construction is anticipated to be completed by late 2008 or early 2009.
- *Whit Carter Park*. Whit Carter Park will be located at Sierra Highway between Avenues H and H-8. Phase I includes design and construction of 25 acres of the 62-acre park, which is scheduled to be completed in 2008. Subsequent development of the park will require additional funds.
- Undeveloped Park Acreage. All remaining undeveloped park acreage (refer to Table 9.4-2) is anticipated to be completed in or around 2010.

Additional Park Lands

Additional parkland currently being acquired is listed in Table 9.4-4, Future Park Land, and totals 118.5 acres. The City is not currently purchasing parkland, but land is secured through other methods.

Table 9.4-4
Future Park Land

Location	Potential Acreage
65th Street West / Avenue K	28.5
52nd Street West / Avenue J	20
70th Street West / Avenue H	10
75th Street West / Avenue G	22
95th Street West / Avenue H	18
40th Street East / Avenue H	20
Total	**118.5**

Source: City of Lancaster, written communication, Bob Green, Assistant Director, Parks, Recreation and Arts Department, September 13, 2006.

ARTS

Lancaster Performing Arts Center

Lancaster Performing Arts Center, completed in November 1991, is located at 750 Lancaster Boulevard, between Fig and Fern Avenues. The center is a 748 to 794-seat state-of-the-art facility that hosts renowned professionals, as well as local performances. In addition to the main theater with a full flytower, the facility includes the Eliopoulos Family Theatre that holds approximately 100 to 110 people, a lobby, two concession areas, a meeting room and offices. Through season presentations, rentals, community performances and special programs, the facility is utilized in excess of 300 days annually. The season performances include celebrities, dance, children's performances, drama and a variety of music offerings. The center brings in over 22,000 youth annually from all over the Antelope Valley for summer training programs and the Arts for Youth program.

The Lancaster Museum and Art Gallery and Western Hotel Historical Museum

The Lancaster Museum/Art Gallery is owned by the City and operated by the Parks, Recreation and Arts Department. Located at Sierra Highway just south of Lancaster Boulevard, the Museum/Art Gallery contains temporary exhibits of local and international artists' works. The Western Hotel, downtown Lancaster's oldest standing building, is also operated by the Parks, Recreation and Arts Department and is located on Lancaster Boulevard just west of Sierra Highway. It houses a historical museum and the rear yard is used for community programs.

Also, refer to Section 9.5, Public Facilities, for additional information.

SENIOR FACILITIES

The Antelope Valley Senior Center, located at Jackman and Fern Avenues, provides a variety of services free of charge through the County of Los Angeles. Services and staff provide outreach, community networking on collaborative projects, information and referral services, social services, health and education referrals and bilingual capabilities. Classes and programs offered at the center include health and nutrition, arts and crafts, exercises, computer, choir, dance support groups and more. Activities include van trips; a ladies' pool group; a men's pool group; and a variety of classes, such as exercise classes, singing classes, arts and crafts classes, and needlepoint and sewing classes. Weekly events include dances, films, bingo, and more. The center is also available for providing additional senior services or hosting support groups for local seniors. Refer to Section 9.5, Public Facilities, for additional information.

PRIVATE AND JOINT-USE RECREATIONAL FACILITIES

The City of Lancaster has joint-use agreements with school facilities to share the use of recreational facilities. These relationships are vital in increasing park acreage for the community and particularly in providing practice fields for recreational sports teams. Privately owned recreational facilities also add to the total recreational opportunities available to the community.

Rancho Sierra Golf Club

Rancho Sierra Golf Club is located just outside the City at the southwest corner of 60th Street East and Avenue F-8. The public nine-hole golf course was built in 1965. Additional facilities also include club rental, snack bar and a lighted practice driving range.

Joint-Use Facilities

The Pierre Bain Park is a joint-use facility that provides the City with its only year-round public pool. Gymnasiums are available at the New Vista Middle School (7,000 square feet), Piute Middle School (7,950 square feet), Park View Middle School (7,950 square feet), and Amargosa Middle School (7,500 square feet). In all, there are approximately 30,400 square feet of gymnasium space available to the public during specified hours. Refer to Section 9.3, Schools, for additional information on joint-use facilities.

PROGRAMS

The Parks, Recreation and Arts Department currently sponsors a variety of recreational, sport and cultural programs within the City. These programs are often free or offered at a subsidized cost to citizens of all ages. The Lancaster *Outlook,* the City's newsletter, is published quarterly with detailed schedules and information on City programs. Activities and programs are described below.

Recreation

The City provides after school recreation, day camps, special youth classes, and preschool. During the summer, aquatic classes and programs are available at the City's public and joint-use facilities. There are also programs for junior and senior high school children, and adult enrichment classes.

Sports

The City provides and maintains facilities that allow for a variety of youth and adult sports leagues throughout the entire year. These include, but are not limited to the following:

- Adult softball leagues (Spring, Summer, Fall);
- Adult and youth basketball leagues;
- Youth and adult soccer leagues;
- T-ball (Spring, Summer);
- Tennis lessons;
- Softball tournaments;
- Soccer leagues and tournaments; and
- Youth track and field.

Education

Classes sponsored by the City include parenting; dance and theatre; arts, crafts and music; training and general information classes; pet obedience; and first aid and health and fitness classes such as martial arts, gymnastics and wrestling.

Cultural

Cultural recreational opportunities include, but are not limited to the following:

- Cultural Arts for Youth;

- Children's Performing Arts Series;
- Children's Theater;
- Visual Arts Outreach programs; and
- Student Art Exhibit.

Special Events

The largest single special event sponsored by the City of Lancaster is the annual California Poppy Festival, which attracts in excess of 50,000 people to the community each April. The event was designed to attract and capture tourists from the southern California region to celebrate the annual poppy bloom at the California Poppy Reserve. The Festival, located at Lancaster City Park, includes musical concerts, arts and crafts, fine arts, children's activities, food, multi-cultural entertainment, a flower market, and environmental booths.

Based on the results of a 1991 study, the City has embarked on a concentrated effort to infuse economic benefit to the community through hosting regional and national sports tournaments. In 1993, the City initiated the "Big 8" softball tournament program with 18 tournaments. In 2005, the City hosted 63 regional tournaments from March through December, and in November the City was awarded the 2005 Men's Slowpitch National Championships, which brought approximately 140 teams to the area from various locations. The City also hosts soccer tournaments on a year-round basis.

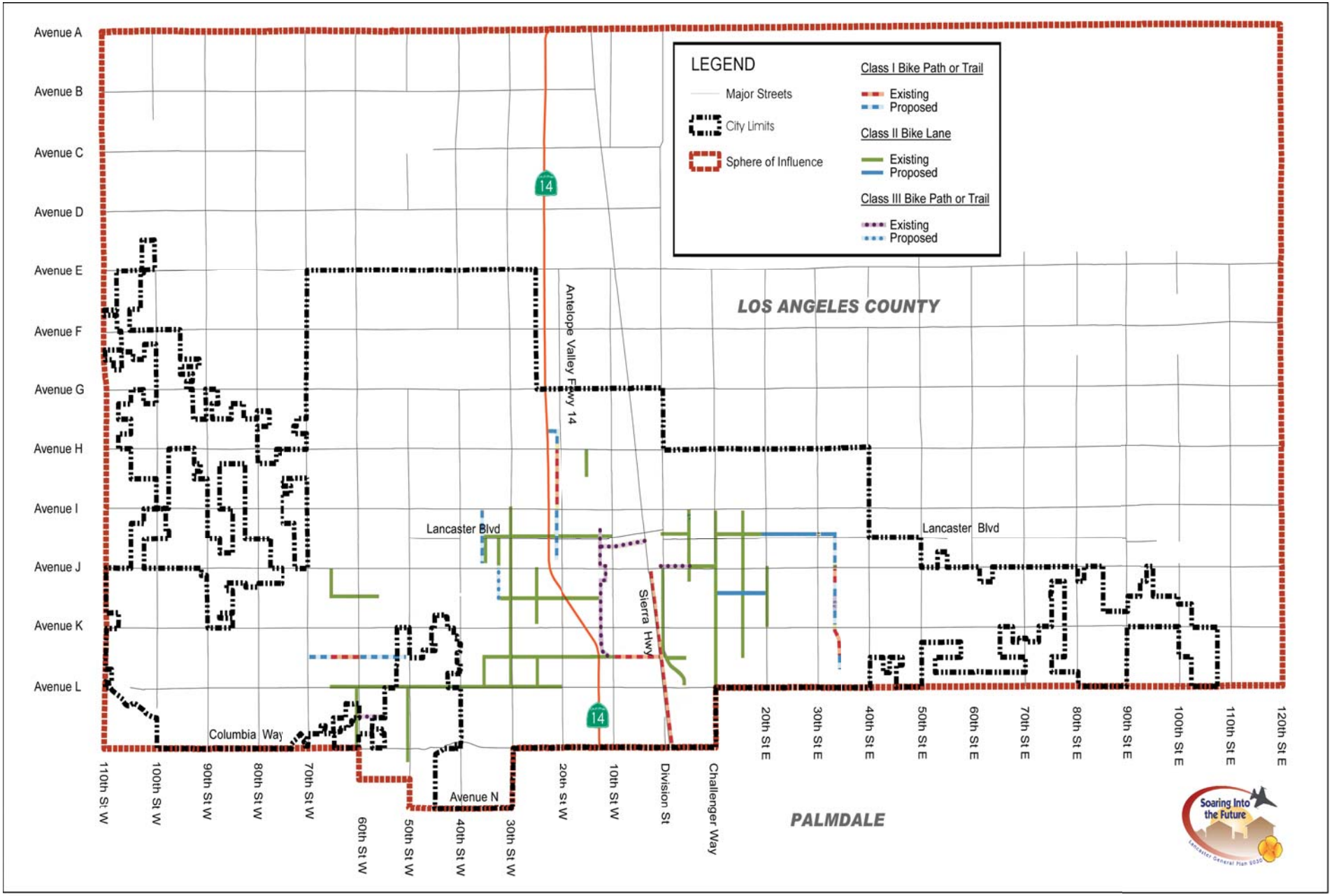
Other special events provided by the City include the 4th of July Festival, Annual Spring Egg Hunt, Breakfast with Santa, Bark in the Park, and Holiday Metro Link Train.

In another effort to facilitate economic growth, the City of Lancaster established the Antelope Valley Film Office in March 1996. The office, under the direction of the Parks, Recreation and Arts Department, is responsible for marketing the region for filming, and providing services to the film industry and local businesses.

PATHS AND TRAILS

This section identifies existing and proposed City trail systems for pedestrian, equestrian, and bicycle use. A diverse parks and trails system that provides a broad range of recreational activities is important to the quality of life for Lancaster residents. The Parks, Recreation and Arts Department is working with the City's Public Works and Planning Departments to draft and adopt a trails system, which would provide guidelines for area-wide trails in Lancaster. A network of trails would be a recreational resource, and provide opportunities for alternative modes of transportation.

Bike paths or lanes are defined as any facility reserved for the exclusive or semi-exclusive use of bicycles and related vehicles. The City of Lancaster has a system of striped bicycle lanes within street rights-of-way. A more in-depth discussion of bicycle lanes within the City can be found in Section 6, Transportation and Circulation. Multi-purpose trails exist within a right-of-way separate from the road and can accommodate bicyclists, equestrians, pedestrians and other users. Figure 9.4-2, Existing and Proposed Trails and Paths, illustrates existing and proposed facilities.



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Lancaster General Plan 2030

Existing and Proposed Trails and Paths

Figure 9.4-2

Class I Bike Paths or Trails

A Class I bike path contains a separate right-of-way for bicycles and other users. The longest continuous Class I bike path parallels Sierra Highway beginning at West Avenue J, extending south beyond the City limits. Amargosa Creek Linear Park and the Prime Desert Woodland Preserve are the only parks with existing trails. There are a few multi-use trails, however, they do not function cohesively nor do they lead to specific destinations.

Class II Bike Lanes

Class II bike lanes are restricted, five- to seven-foot right-of-ways for bicycles on either side of the road. Most often they are designated by a painted line and road signs. Existing trails are concentrated in the center of the City, however, connectivity is still lacking and maintenance is poor. Areas where the lines have worn create safety issues, particularly on routes frequented by school children.

Class III Bike Paths or Trails

Class III bike paths or trails are a travel lane shared by bicycles and motor vehicles which are designated by signs only. This type of bikeway merely informs motorists of the cycling route and does not provide cyclists with increased privileges. This is the least safe path aside from path non-existence and is located in a limited number of areas throughout Lancaster.

Development of Bikeways

Development of future bikeways must be designed in accordance with appropriate Federal and State standards according to the classifications described above. There are several viable locations for a community path and trail network. These include excess railroad rights-of-way, electric and pipeline rights-of-way, dry washes, flood control dikes and levees, irrigation canal banks, and fire breaks.

REFERENCES

Antelope Valley Fairgrounds, personal communication, Dan Jacobs, General Manager, December 6, 2006.

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City of Lancaster, written communication, Bob Green, Assistant Director, Department of Parks, Recreation and Arts, August 2006.

Lancaster Performing Arts Center, personal communication, Mary Tanner, Center Manager, May 9, 2006.

9.5 PUBLIC FACILITIES

The Lancaster study area contains a variety of public institutions, which include City, County, State, and Federal offices; public hospitals; two public libraries; recreation, cultural, and social service facilities; homeless shelters; and a detention center. Public institutions and cultural and social services in Lancaster are described below. Figure 9.5-1, Public and Cultural Facilities and Services, illustrates the location of some of the public and cultural facilities in the Lancaster study area.

CITY FACILITIES

The City of Lancaster's public facilities include the City Hall, the City maintenance yard, cultural facilities, recreation facilities, and the Community Shelter.

Lancaster City Hall, located at 44933 Fern Avenue, was dedicated on January 5, 1985. City Department offices include: Planning; Administration; Finance; City Clerk; Public Works; Parks, Recreation and Arts, Housing and Neighborhood Revitalization and Economic Development/ Redevelopment Agency; and the City Council. City Hall first reached its capacity in 1988, and in 1989 an addition was built which was intended to extend the life of City Hall until 1999. Currently, the facility is expanding to include a new records center. The City Hall facility is approximately 62,846 square feet, which includes the City Council chambers, lobby, resource storage and workspace.[1]

The City of Lancaster Public Works Maintenance Yard, located at 46008 North 7th Street West, functions as the City's corporate yard. It is used for storage, maintenance, and gas service for City owned equipment and vehicles. The facility includes three main buildings: one used for repair, maintenance and storage activities, another used for fueling, and the third serving as an administrative building. The yard's gas pumps and underground storage tanks serve all City vehicles.

Lancaster has a variety of cultural facilities, which provide entertainment and educational opportunities for adults and children of all ages. These include, but are not limited to the following:

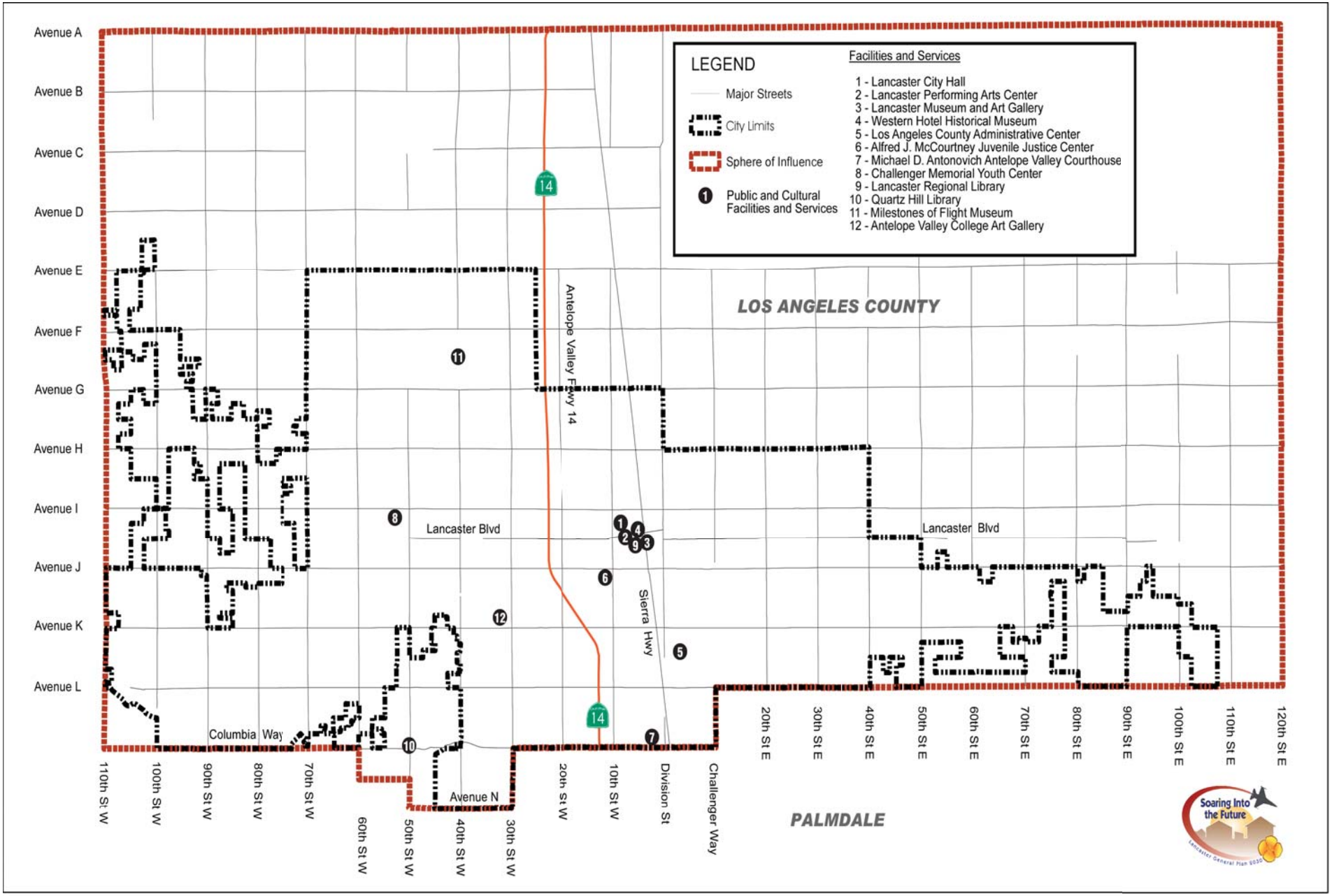
- The Lancaster Performing Arts Center (LPAC), located at 750 West Lancaster Boulevard, is a cultural arts facility for the City with a 748 to 794-seat state-of-the-art theater.

- The Lancaster Museum and Art Gallery is located at 44801 Sierra Highway. The facility displays a variety of art and historical exhibits.

- The Western Hotel Historical Museum was built in 1888. The Museum opened in November of 1989. The museum is the oldest building in downtown Lancaster and is located at 557 West Lancaster Boulevard.

For more discussion on these facilities, see *Cultural Facilities* below. Also refer to the Existing Conditions Summary Report prepared for the Lancaster Master Plan for Parks, Recreation and Arts.

[1] City of Lancaster, personal communication, Craig Earl, Public Works Department, December 20, 2007.



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Public and Cultural Facilities and Services

Figure 9.5-1

Lancaster has a variety of recreation facilities and activity centers that provide entertainment and promote health and teambuilding opportunities for adults and children of all ages; refer to Section 9.4, Parks and Recreation.

- Clear Channel Stadium. Located at 2400 West Avenue I, Clear Channel Stadium is the home field of the Lancaster Jet Hawks, a member of the Class A California League and affiliate of the Boston Red Sox. The stadium is also used for community activities, including concerts, and is rented out for motion picture filming sessions.

- Lancaster National Soccer Center. The Lancaster National Soccer Center is located at 43000 30th Street East in Lancaster. The complex contains 34 tournament quality soccer fields, including lighted fields. The complex is split by 30th Street East, with the Lancaster National Soccer Complex Eastside consisting of 5,904 square feet (s.f.) and the Lancaster National Soccer Complex Westside consisting of 3,485 s.f. The complex is booked 44 weekends out of the year and provides a regional draw of more than 25,000 soccer players each year.

- Activity Centers. Six activity centers owned by the City are distributed throughout the City's parks. El Dorado Park Center is 1,170 s.f., Jane Reynolds Park Center is 4,490 s.f., Mariposa Center is 2,100 s.f., Skytower Center is 1,200 s.f., and the Big 8 Softball Complex located at Lancaster City Park is 10,959 s.f. Additionally, Pierre Bain Park (formally Eastside Park) contains an indoor pool.

The Lancaster Community Homeless Shelter, located at 44611 Yucca Avenue and Nicobar Street, was dedicated on November 16, 1989. It was completed by the City of Lancaster through the Lancaster Redevelopment Agency in cooperation with the Antelope Valley Chapter of the Building Industry Association (BIA). The BIA organized most private donations from the construction industry while the City coordinated construction activities. The 9,100 s.f. facility contains 52 beds, two family units, a commercial kitchen with dining area, laundry facility and resident manager unit. Refer to *Social Services*, below, for additional information.

COUNTY FACILITIES

Los Angeles County public facilities include the County Administrative Center and other County administrative offices, two County courthouses, two hospitals, two Los Angeles County public libraries, a treatment facility for boys operated by the Los Angeles County Probation Department, and other facilities.

The Los Angeles County Administrative Center, located at 335 East Avenue K-6, houses the following County department offices: Agricultural Commission/Weights and Measures, Mosquito Abatement, Weed Abatement, Children's Services.

Administration, Farm Advisor, Community and Senior Services, Forester and Fire Warden, Department of Health Services, Military/Veterans Affairs, Public Works, Regional Planning, and Treasurer. The offices are leased to the County from a private investor.

Offices of the Department of Public and Social Services, Department of Mental Health Services, Department of Health and Safety, and the Department of Children's Services are located at 349 East Avenue K-6. This building is also being leased by private investors to the County of Los

Angeles. The Los Angeles Caregiver Resource Center is located on 10th Street West and Jackman Avenue.

Other administrative offices located in Lancaster include the Los Angeles County Fire Department, located at 44947 Date Avenue (Battalion Headquarters); the Los Angeles County Sheriff's Station, located at 501 West Lancaster Boulevard; and the County Assessor's Office, which is located at 251 East Avenue K-6. There are two Antelope Valley Court Buildings within the City: the Alfred J. McCourtney Juvenile Justice Center is located at 1040 West Avenue J and the new Michael D. Antonovich Antelope Valley Courthouse is located at 42011 4th Street West. The Departments of Juvenile Justice, Administration, Municipal Court, Probation, Public Defender, Superior Court, County Clerk, Marshal's and District Attorney, are located within the Center and Courthouse.

Challenger Memorial Youth Center

The Los Angeles County Probation Department operates the Lancaster Treatment Bureau Facility for boys. The camps are held at the Challenger Memorial Youth Center (CMYC) located at 5300 West Avenue I. The CMYC is approximately 115 acres in size, with the various camps named after the Challenger space shuttle astronauts. The Camp Community Placement Program provides intensive intervention for minors in a residential setting over an average stay of twenty weeks. Upon commitment by the court, a minor receives health, educational and family assessments that allow treatment tailored to meet individual needs. The goal of the program is to reunify the minor with the family, to reintegrate the minor into the community, and to assist the minor in achieving a productive, crime free life. The camps opened in May 1990, and have a designed bed capacity of 110, totaling 660 beds for all six camps.

Los Angeles County Public Libraries

The Los Angeles County Public Library first opened the Lancaster Community Library on October 19, 1912 at Antelope Valley High School. Over the years, the Community Library relocated to several locations. Currently, the Los Angeles County Public Library operates two facilities available to the public within the study area, which include the Lancaster Regional Library and the Quartz Hill Community Library. The North County Regional Office for the Los Angeles County Public Library is located in Lancaster at 601 West Lancaster Boulevard. This administrative office is not open to the public, but is the location of the Bookmobile and Books-By-Mail. The Bookmobile serves the rural areas of Antelope Valley, and Books-By-Mail provides books to people countywide via mail service. Both of these services are provided free of charge.[2]

Lancaster Regional Library, the larger of the two County Public libraries, was opened in 1996 and occupies 48,721 s.f. of floor space. Fully staffed, total employees would consist of 15 full-time and 46 part-time staff members along with volunteers, whose numbers fluctuate with the seasons. The facility includes a meeting room, adult reading room, unique children's area, young adult area, circulation desk with ten check-out terminals, as well as several public use computers. The meeting room has a capacity of 299 persons and it may be rented out when the library is not using it. The library is open to the public Monday through Wednesday from 10:00 AM to 8:00 PM, Thursday and Friday from 10:00 AM to 5:00 PM and Saturday from 11:00 AM to 5:00 PM. The library contains a total of 230,147 recreational, educational and reference

[2] Lancaster Regional Library, personal communication, Fannie Love, Library Manager, August 24, 2006.

materials. This includes books, audio recordings, videos, Federal and State publications, magazines, newspapers and other special materials, which are utilized by over 108,637 registered borrowers annually.[3]

The Lancaster Regional Library hosts educational events, seminars, reading and poetry meetings and guest speakers on a weekly basis. The library holds children's story times for different age groups, as well as movies, guest performers, and handicrafts. Lancaster Regional Library also houses the administrative office for the Bookmobile, and librarians visit schools and speak to teachers and students about library services. The library also contains a career information center, which contains reference materials as well as computers to assist with career planning, job transitioning, resume preparation and more.

The Quartz Hill Library is located at 42018 50th Street West. The Quartz Hill Library is also a branch of the Los Angeles County Library System, and was founded in July of 1959. The library leases the 3,500 s.f. facility, which contains a separate room for children's programs. The library contains 68,479 resource, education and recreation materials, which include books, periodicals, magazines, audio tapes, video tapes, and compact discs. More than 14,092 borrowers utilize the library annually.[4] Its hours of operation are Monday, Thursday and Friday from 10:00 AM to 5:00 PM, Tuesday and Wednesday from 10:00 AM to 8:00 PM and Saturday from 11:00 AM to 5:00 PM.

The Quartz Hill Library provides a variety of services similar to the Lancaster Regional Library including homework assistance for students and Internet access. The library holds weekly story hours for toddlers and preschoolers, as well as organized monthly children's programs and films. The library also offers periodic reading programs for children.[5]

Other Facilities

In addition to the above named facilities, the City of Lancaster is served by additional County facilities, including Animal Care/Control located at 5210 West Avenue I, and the Antelope Valley Senior Center (discussed below under *Social Services*), and Milestones of Flight Museum (discussed under *Cultural Facilities*). Los Angeles County also has a Social Service Department, Children and Family Services, Children Services and Welfare Office located in Lancaster.

STATE OF CALIFORNIA FACILITIES

The City of Lancaster is served by the following State of California Departments: Employment Development Center located at 1420 West Avenue I; Highway Patrol located at 2041 West Avenue I; Department of Motor Vehicles located at 1110 West Avenue I; Parks and Recreation Department located at 43779 15th Street West; Rehabilitation Department located at 43301 Division Street; Department of Transportation (CalTrans) located at 44023 North Sierra Highway; and Water Resources Department located at 3121 East Avenue I.

[3] Number represents amount of borrowers for the 2003-2004 calendar year, provided by Fannie Love, Community Library Manager, August 24, 2006.

[4] *Ibid.*

[5] Lancaster Regional Library, personal communication, Fannie Love, Library Manager, August 24, 2006.

California State Prison

The California State Prison is located at 44750 60th Street West on 262 acres bounded by 60th Street West, Avenue I, 50th Street West, and Avenue J. The prison, which has a total design bed capacity of 1,200 inmates, had an inmate population of 4,185 in the beginning of 2001. Overcrowding is not unique to the prison in the Antelope Valley, and is being experienced in other prisons throughout California. The California State Prison primarily houses medium- and maximum-security inmates, with a support unit housing minimum-security inmates. The facility employs 442 support services staff and Prison Industry Authority (PIA) staff. The facility offers inmate programs that include vocational jobs, academic classes and tutoring, and other programs.

Antelope Valley Hospital

The Antelope Valley Hospital, located at 1600 West Avenue J, is the largest hospital in the high desert with 379 licensed beds. The complex is a district hospital and includes inpatient services, an emergency room, physical and occupational rehabilitation and a Family Resource Center. The Antelope Valley Hospital District operates this facility. In 2005 the Hospital began a 75,000 s.f. expansion of a new Woman and Infant Center. Refer to Section 9.1, Fire Protection and Emergency Services.

FEDERAL FACILITIES

United States government offices located in Lancaster include the following: Agriculture Department, Department of Air Force, Department of the Army, Department of Defense, Department of Health and Human Services, Social Security Administration, Marine Corps, National Aeronautics and Space Administration, Department of Navy, United States Postal Service, and Department of Transportation. The Departments of the armed forces are located at 44513 North Valley Central Way. The Department of Agriculture is located at 44811 Date Avenue. The Social Security Administration is located at 44451 20th Street West. The Postal Service Main Office is located at 1008 Avenue J-2. The Health and Human Services Department is located in the 300 block of East Avenue K-4. The National Aeronautics and Space Administration is located at Edwards Air Force Base.

CULTURAL FACILITIES

There are a number of public and private cultural facilities located in the City of Lancaster. Information on most of the performances and programs associated with the facilities can be found in the Lancaster *Outlook*, which is published quarterly. Figure 9.5-1, illustrates the location of the cultural facilities described below.

Lancaster Performing Arts Center

Lancaster Performing Arts Center, located at 750 West Lancaster Boulevard, is currently in its 29th season of operation. The Center has a 748 to 794-seat main house theater, and the Eliopoulos Family Theater, which is a flexible black box space with a 110-seat capacity. The Eliopoulos Family Theater is an open, versatile facility used for a wide range of performances and various recording equipment. The center hosts a variety of local, national, and international plays, musicals, dramas, children's events, and other productions. The center works with the

Antelope Valley College and also provides an Arts for Youth School Daytime program that prepares students for the theatre experience and allows students to connect what they see on stage to their studies. Performances are held primarily Friday through Sundays and the Arts for Youth program hours vary.

Lancaster Museum and Art Gallery and Western Hotel Historical Museum

Lancaster Museum and Art Gallery is an 8,000 s.f. facility located at 44801 North Sierra Highway in Lancaster. The Western Hotel and Historical Museum is approximately three blocks away at 557 West Lancaster Boulevard. The facilities provide joint programs and resources.

The Lancaster Museum and Art Gallery opened in January 1986 and displays a variety of art and historical exhibits created by local, national, and international artists. The gallery strives to promote the work of Antelope Valley artists and further culture and education in the Lancaster area. The gallery rotates eight to ten exhibits over the course of a year and is open Tuesday through Saturday from 11:00 AM to 4:00 PM and Sunday from 1:00 AM to 4:00 PM.[6] Special programs include exhibits, lectures and summer outdoor silent movies.[7]

The Western Hotel Historical Museum is also operated by the Lancaster Museum and Art Gallery and a staff of six works interchangeably at each facility, as needed. The Western Hotel Historical Museum was originally built in 1888 and opened as a museum in 1989. The museum is the oldest building in downtown Lancaster. Rooms in the Museum are decorated in different period themes, while others serve as permanent displays of Antelope Valley history and Native American history. The facility is open at no charge to the public two weekends a month (Friday and Saturday) from noon to 4:00 PM.[8] Hours and activities are available in the quarterly Lancaster *Outlook*, which is published by the City on a quarterly basis.

The Lancaster Museum and Art Gallery offers tours for both facilities for local schools. Most recently, the Partners in Education Museum Outreach Educational Trunks program was launched. The program allows for a “mini-museum” to be brought to the classroom of elementary students. Each trunk offers a different interactive education of Native Americans, Antelope Valley pioneers, ancient Egyptians or prehistoric dinosaurs. Visits are free and are provided though grant funding.

Antelope Valley Indian Museum

The Antelope Valley Indian Museum, located on Avenue M between 150th and 170th Streets East, is a regional museum. The facility is a Swiss chalet-style house, built in 1928 by Howard Ardin Edwards, a self-taught artist. Mr. Edwards was interested in Native American culture, collected many artifacts, and painted murals on the interior and exterior walls of the home. In 1938, the building was purchased by Grace Oliver and opened as a museum. In 1978, the State of California bought the museum, and now maintains the exhibits representing Great Basin Indians and California Indians. Major interpretive themes of the museum include the following:

[6] Lancaster Museum and Art Gallery, personal communication, Larissa Nickel, August 25, 2006.

[7] City of Lancaster, *Lancaster Master Plan for Parks, Recreation and Arts, Existing Conditions Summary*, 2006.

[8] Lancaster Museum and Art Gallery, personal communication, Nancy Mossman, August 24, 2006.

- The importance of the trade route through the Antelope Valley, which linked and created an interaction sphere for three major culture regions: California, the Great Basin, and the Southwest; and

- Illustrations representing nearly seventy years of change/evolution in the way American Indian cultural materials are exhibited and interpreted in museums.

The museum employs one curator and one to three staff members, depending on the season. Primarily, the museum is maintained and operated by approximately 20 to 25 volunteers. The museum is currently closed for renovation, with an anticipated re-open date of September 2007. At this time, it is anticipated that the Antelope Valley Indian Museum will operate Tuesday through Thursday for group tours, mostly of elementary school children, and will be open to the public on weekends. Educational programs offered by the Museum include lectures, films, videotapes, crafts demonstrations by Native Americans, nature walks and training.[9]

Milestones of Flight Museum

The Milestones of Flight Museum is owned by Los Angeles County and operated by the Milestones of Flight Museum Association. It is located at William J. Fox Field and contains artifacts pertaining to the history of flight, including contributions by women pilots. The facility consists of two hangars with 11 airplanes and a gift shop that is open on weekends. Two additional airplanes are located outside and visitors have the opportunity to climb into them. Four volunteers operate the facility: the museum president, curator and two hosts, who donate their time to give tours throughout the week from 10:00 a.m. until dusk. The museum accepts donations for tours, however its main purpose is to share the history and technology of aviation. Antelope Valley College previously used the museum facilities for its aviation and piloting program, but now leases a hangar and office space from the airfield.[10]

College Art Gallery

The College Art Gallery is located on the Antelope Valley Community College campus. The College Art Gallery provides an educational and art center for the local community by hosting free art shows for local and other artists free to the public. The gallery is open Monday through Saturday with hours varying from 9:00 AM to 9:00 PM.

Allied Arts Cedar Center

The Allied Arts Cedar Center, located on the corner of Cedar Avenue and Lancaster Boulevard, was purchased by the Antelope Valley Allied Arts Members (AVAAA) in 1995. The five-building center was built in the 1920s and contains a north, south and entry gallery with a gift shop and resource library. An adjoining building is an auditorium that is leased out to the public for activities.

The AVAAA began in 1947 and is now a non-profit organization. The AVAAA is dedicated to furthering the appreciation of all the arts, providing educational and entertaining programs for its members and promoting special activities pertaining to the arts in the Antelope Valley. The

[9] California Department of Parks and Recreation, personal communication, Judy Eogin, Mojave Desert Sector, August 24, 2006.

[10] Milestones of Flight Museum, personal communication, Jim Vancil, Museum Host, October 20, 2006.

Center provides monthly workshops, art classes, poetry readings, free monthly art demonstrations, access to a painting studio, life drawing sessions, and free exhibiting space for all members. The center participates in local community events and hosts monthly meetings for members of the AVAAA.

SOCIAL SERVICES

A variety of social service programs are provided to residents of Lancaster and the Antelope Valley by Federal, State, County and local agencies. These agencies provide intervention, medical, support, and recovery programs for adults, children and seniors.

General Adult Services

The Lancaster District office of the Los Angeles County Department of Public and Social Services (DPSS) is located at the corner of Avenue K-6 and Division Street. It is the largest DPSS district in the County and provides assistance to the entire Antelope Valley, east to San Bernardino County, north to Kern County, and northwest to Ventura County. The services provided by the Lancaster District include:

- Aid to Families with Dependent Children (AFDC) provides financial assistance and other services to families and children with one or both parents, who are either absent, incapacitated, unemployed, or deceased.

- Food stamps are issued to promote the health and well-being of low-income households by raising their nutrition levels.

- General Relief is temporary financial assistance for those who are not eligible for Federal or State assistance programs, as well as for those who are in temporary need. This program also provides assistance for refugees that have been in the United States for more than 18 months, but less than 25 months. All General Relief funds issued must be reimbursed to the County.

- Medi-Cal provides comprehensive medical care benefits to public assistance recipients and those who are unable to meet medical care costs.

- The Lancaster District also provides in-home services, which are provided for the elderly, blind and disabled individuals as an alternative to institutionalization or other out-of-home care. Services include domestic services and transportation services.

Children and Youth Services

Public and private agencies provide the Lancaster community with day care for children of low- to moderate-income families, infant development services (such as occupational therapy, speech therapy, and physical therapy), parent training, and medical and dental screening.

The County's Department of Children and Family Services (DCFS), located at 1150 J Street West, investigates allegations of abused and neglected children. Caseworkers with the DCFS work with families, go to court, decide what resources the children and their families need, and refer them to the appropriate agencies. DCFS also provides foster home placement and adoption services.

The Family Connection Program, which operates through the DCFS, is located at Cedar Street and Lancaster Boulevard. This program offers in-house parenting training, parent support groups, sexual abuse prevention, counseling, and other services.

The Children's Center of the Antelope Valley, within the North Downtown Transit Village Plan area, is located at 45111 Fern Avenue. The approximately 15,500 s.f. facility opened in March of 2006. The private, non-profit, community based organization aims to protect the children of the Antelope Valley from abuse and neglect through prevention, intervention, education, and treatment. The Children's Center is funded by Federal, State, and County grants. It has created innovative programs to provide specialized services to child victims of abuse and family members, and also specialized training to professionals in the field. Specialized services include sexual abuse therapy, a community volunteer program, educational programs and training programs and seminars. The center serves and consults with nearly 500 abused children and family members weekly.

The Antelope Valley Alternative Education Center, located at 43423 Division Street, provides services for pregnant or parenting teens. Childbirth, healthy pregnancy, parenting and high school course classes are offered along with educational counseling, childcare and transportation services. Additionally, the Antelope Valley Community College provides similar services such as parenting classes, foster parent training, and independent living training through its Child and Family Education Programs. There is also a Child Development Center that provides development programs for children three months to five years of age.

Youth services are available from several agencies in Lancaster and include counseling, parent support, child care, teen programs, family planning and counseling, sexual abuse programs for developmentally and mentally disabled school children, alcohol and drug abuse programs, teen pregnancy programs, a 24-hour Sexual Assault Response Service (SARS) and a phone friend program.

Additionally, family services are provided by a variety of public and private organizations: pregnancy counseling, marriage counseling, family counseling, domestic violence programs, substance abuse programs, employment training, emergency food and lodging, grief and bereavement therapy, and adoption services.

ANTELOPE VALLEY BOYS AND GIRLS CLUB

The Boys and Girls Club is located at 45404 Division Street and is open from 2:00 PM to 6:00 PM Monday though Friday. The facility includes a Teen Center and computer lab with Internet access. Services and activities include a day camp, tutorial programs, homework assistance, and a recreational program with video games, movies, arts and crafts. The Boys and Girls Club also hosts field trips. There is a cost for membership unless the family is receiving government benefits.

ANTELOPE VALLEY LIGHT FOUNDATION

The Antelope Valley Light Foundation is located at 816 West Lancaster Boulevard. The facility is open Monday through Friday from 8:00 AM to 5:00 PM and some weekends. The Foundation provides parenting classes, anger management classes for youth and adults, team-building programs, sports activities, counseling services and drug testing.

Senior Services

The Antelope Valley Senior Center, located at 777 West Jackman Street, serves as a central location for senior services and activities in Lancaster. It is operated jointly with the Los Angeles County Department of Community and Senior Citizens Services, Wise Senior Services, and the Antelope Valley Committee on Aging, Nutrition, and Transportation. The Los Angeles County Regional Food Bank provides the monthly food distribution. The Senior Center houses a central kitchen that provides 600 to 650 congregate and home delivered meals to seniors throughout the Antelope Valley. The center and its services are available to seniors 50 years and older throughout the Antelope Valley. Services provided include health services, nutrition services, legal assistance, notary services and social work. Programs include the Homeowners/Renters programs, 55 Alive, and the Antelope Valley Transit Authority (AVTA) Senior ID's Braille Mobile Unit. Various social and dance groups, bingo, billiards, fitness and art classes, quilting, needlepoint and crafts are available and schedules are located in the Lancaster *Outlook*. The center also provides transportation for seniors and disabled persons.

From July 2005 to June 2006, over 186,200 seniors utilized various programs, services and activities. With the City's growing senior population, the need for additional facilities and services is apparent, however, there are no plans for expansion of facilities at this time.

Health Services

Four major medical health facilities serve Lancaster including the Lancaster Community Hospital, the Antelope Valley Hospital Medical Center, Desert High Medical Facility and Kaiser Permanente. These facilities provide Lancaster and the surrounding areas with a variety of specialized medical resources and services. Refer to Section 9.1, Fire Protection and Emergency Services, for further details.

The Lancaster Community Hospital, located at 43830 North 10th Street, and the Antelope Valley Hospital Medical Center, located at 1600 West Avenue J, both have 24-hour emergency services, extensive cardiac services, a complete pharmacy, nuclear medicine, physical therapy, radiology, and complete X-ray facilities. These two facilities are classified as Medical Centers, which include an emergency department, hospitals with inpatient services, medical offices, outpatient primary care services and other support services such as pharmacy and laboratory.

The High Desert Health System is located at 44600 North 60th Street West in Lancaster. This facility operates as a Personal Health Clinic, which provides internal medicine, urgent care, same day surgery, psychiatry orthopedic surgery and other outpatient services.

Kaiser Permanente's major facility is located at 43112 15th Street West. The facility offers primary care, outpatient treatment and support services. Additionally, a variety of medical services are also available through a number of private facilities that offer specialized services.

Mental Health Services

Lancaster is served by the National Mental Health Association of Greater Los Angeles (MHA), which is committed to providing quality and innovative mental health services to the Antelope Valley. The program is aimed at helping adults with severe and persistent psychiatric problems. Elements of the program include rehabilitation services, socialization services, transitional young adult services, and the Antelope Valley Homeless Assistance Program. A combination of

counseling, residential care, and medical, educational, social, and recreational activities is utilized in different facets of the program.

The Lancaster facility is approximately 7,700 s.f., with an additional 1,100 s.f. of storage space. The facility contains offices, a large activity center for drop-in services, a bank, a laundry room and one bathroom with a shower. The MHA offers a homeless assistance program, which provides some food as a part of engaging the homeless. However, this facility is not a food bank or distributor. The MHA has an Employment Program, which provides job preparation, job development, job placement and job coaching services. The MHA does not charge fees for services and accepts Medi-Cal for rehabilitation services.

The MHA has broken ground on a new program site in the North Downtown Transit Village area of Lancaster. The facility will provide 20,000 s.f. of program and administrative space in addition to 100 low-to-moderate income residential units. Thirty-five of the 100 residential units will be set aside for disabled tenants. Additional funds will be used to increase services to the community.

Sponsors of the MHA are the Antelope Valley Alliance for the Mentally Ill, Depression Support Group, Housing Task Force, the Antelope Valley Homeless Coalition, and the Special Project Return Club. The Antelope Valley Friendship Center, located at 43423 Division Street, is operated by the MHA. Funding for new facilities and services are anticipated to come from the Mental Health Services Act (Proposition 63), and to be released by fall of 2006 and the following year.[11]

Disabled Services

The Antelope Valley Community Advisory Committee provides parent support, a special education resource directory, and advice to local schools. The Association for Retarded Citizens for Antelope Valley provides work adjustment services, evaluation, job placement, vocational training, behavior training, and counseling. The Association for Retarded Citizens Extended Day Center provides a program for developmentally disabled school children.

The California State Department of Rehabilitation, located at 43301 North Division Street, provides vocational counseling and evaluation for appropriate work, vocational training, and employment placement for rehabilitating patients.

The Independent Living Center provides information and referral services, housing assistance, an advocacy/client assistance program, independent living skills, equipment loan, deaf services, and transportation services at no cost.

The North Los Angeles County Regional Center (NLACRC) serves developmentally disabled persons of the San Fernando, Santa Clarita, and Antelope Valley regions. The Antelope Valley Office, located at 43210 Gingham Avenue in Lancaster, is a satellite office to the Regional Van Nuys Center. NLACRC provides intake and assessment, as well as ongoing case management for individuals through the duration of their life. NLACRC will also provide information to

[11] National Mental Health Association of Greater Los Angeles, written communication, Judy Cooperberg, Director, July 11, 2006.

pregnant women who are believed to be at risk for giving birth to a child with a developmental disability. As of 2006, the Lancaster office was serving approximately 3,000 clients.[12]

Antelope Valley Foundation for the Developmentally Disabled is located at 43439 Copeland Circle. The facility includes an adult development center, day activities center, and behavioral activity center. Employment training, behavioral management, self advocacy and self care services are free to those who qualify.

Domestic Violence Services

The Antelope Valley Domestic Violence Council (AVDVC) operates eight regional programs in the Lancaster area available to any residents escaping physical or sexual domestic abuse. AVDVC provides counseling services, adult education, job training assistance, food, shelter for battered spouses, clothing assistance, outreach groups, welfare assistance, legal consultation and more through a variety of the following eight programs:

- The 60-day emergency shelter program provides victims and their children with a safe place for up to 60 days. These shelter locations remain anonymous for security purposes and are discussed in more detail below. Services provided include domestic living skills, adult education and job training assistance, therapy and counseling, parenting classes, and outreach groups. The primary purpose of the transitional shelter is to provide a safe place for victims to get help and transition out of the violent situation they are currently in.

- The Children's Services program provides services tailored to children's needs in instances of domestic violence, which includes but is not limited to counseling services and classes.

- There are three transitional housing facilities provided by the AVDVC. Two are located in Lancaster and the third, available only for women, is located in Glendale. Although all DVC clients may use the facilities, priority is given to Antelope Valley residents. Services similar to those listed above are available at these facilities. The primary purpose of the transitional housing is to allow residents up to two years to mainstream back into society. At this time they may use services to heal themselves mentally and physically while working or attending school.

- Parent Child Interactive Therapy (PCIT) is a specialized type of therapy where adults and their children are able to talk and interact with direct therapist assistance. It is referred to as "glass therapy" where the child is on one side with the parent on the other receiving direction and counsel from a counselor through headphones.

- The Homeless Solutions Access Center is located at the corner of North Sierra Highway and West Avenue I. This approximately 1,600 s.f. facility is a community service for the homeless population in Lancaster. The center offers a vast range of services and functions primarily as a referral and/or transitional resource. A few of the services provided for homeless and victims of domestic violence include long-term case management, the ability to make and receive phone calls and mail (for employment

[12] North Los Angeles County Regional Center, personal communication, Rebecca Brown, Antelope Valley Office, August 30, 2006.

obtainment purposes), shower and laundry facilities and referral to transitional housing or other social services when necessary.

- The Thrift Store provides household items, clothing and other basic necessities for residents escaping domestic violence. The store is located in Palmdale.

The AVDVC will refer individuals not suffering from domestic violence to the appropriate agency or facility (i.e. persons who suffer from alcohol addictions or mental illnesses and/or transients). Funding is primarily provided through Federal, State and County grants. The AVDVC is also a listed agency with the United Way and receives additional funding through contributions distributed by the United Way.[13]

Shelters and Homeless Centers

Approximately 7,500 homeless persons are in the Antelope Valley each year and the number increases annually. The Red Book Directory for Youth, Family, and Adult Services, published by the United Way, is a comprehensive guide of human services and resources in the Antelope Valley. The following shelters and shelter facilities are available in Lancaster in addition to those discussed previously. The Shelter for Abused Women and Children and the Valley Oasis Shelter are run by the AVDVC and their locations are confidential.

SHELTER FOR ABUSED WOMEN AND CHILDREN

The Shelter for Abused Women and Children is a non-profit organization run by the Domestic Violence Council and funded by the United Way. It is the largest DVC shelter of its kind in Antelope Valley. The shelter has a capacity of 60 women and children. It is the only shelter that will take boys over age 12. Food and transportation are provided for the families, as well as job placement resources and continuing education.

VALLEY OASIS SHELTER

The Valley Oasis Shelter, run by the AVDVC, offers a safe shelter area and a hotline for battered women and children. The facility provides 65 beds for adults and children and includes three nutritious meals per day. Individual and family counseling is available for clients. Additionally, peer group counseling by formerly battered and recovered staff and volunteers is offered. Child therapeutic care is available weekdays.

LANCASTER COMMUNITY HOMELESS SHELTER

The Lancaster Community Homeless Shelter is located at 4461 Yucca Avenue, approximately one half mile from the downtown business district. The Homeless Shelter was built by the Lancaster Redevelopment Agency in 1989 in cooperation with the Antelope Valley Chapter of the Building Industry Association. The Homeless Shelter is a 9,100 square foot facility on approximately 25,000 square feet of land. The Homeless Shelter has 52 beds,[14] adequate bathrooms, showers, laundry facilities, a spacious dining area, and a restaurant-quality industrial kitchen that serves breakfast and dinner to shelter residents. The Lancaster Redevelopment Agency owns the Lancaster Community Homeless Shelter and leases it to

[13] Antelope Valley Domestic Violence Council, personal communication, Pam Colony, August 24, 2006.

[14] Lancaster Community Shelter, personal communication, Patricia Welch, Manager, August 27, 2006.

Catholic Charities to operate the Shelter and administer Supportive Housing Programs.[15] The Homeless Shelter has four programs that serve four separate needs to those requiring assistance:

- Emergency housing during the cold weather period from November to March. At this time an additional 35 beds are added.
- Limited residency for up to 30 days for individuals and families, providing them the time and assistance to find housing alternatives.
- Transitional housing through which residents who commit to working towards changing their lives are given a chance to continue residency at the homeless shelter for up to six months.
- Section 8 Certificates to eligible individuals and families providing more stable and permanent housing.

The Lancaster Redevelopment Agency is finalizing plans to construct an additional 13 family units for the Transitional Housing Program at the Shelter.

The goal of the Homeless Shelter is to provide shelter, food and case management services to homeless men, women, and children in the Antelope Valley. In doing so, the clients, upon successful completion of the program, will leave the Homeless Shelter with permanent housing and income necessary to sustain a more independent and self-sufficient lifestyle. The Homeless Shelter is committed to the Continuum of Care Concept and strives to utilize both internal and external resources to help the homeless move into transitional and permanent housing. The Homeless Shelter provides comprehensive case management services designed for residents seeking to achieve greater self-sufficiency and end homelessness. Case management includes screening, assessment, developing realistic goals, developing an appropriate plan, providing adequate training and referrals and offering support and guidance to each resident. An experienced Shelter director is responsible for the daily operation of the Homeless Shelter and the case management service.

GRACE RESOURCES CENTER

Grace Resources Center, located near the corner of Sierra Highway and West Avenue I, is a charitable non-profit organization that serves the community of Lancaster. The Lancaster Redevelopment Agency owns the facility and leases it to Grace Resources to operate. Funding is provided through donations, fundraising and some grants. The Center consists of three buildings that total approximately 12,000 s.f. of facility area. One of these buildings is utilized by the Domestic Violence Council, which operates their Home Access Center program from the facility. The center primarily occupies one building with three full-time and five part-time employees that, among many duties, teach classes, organize fundraising events, coordinate with volunteers and oversee services offered by the Center. As of 2006, approximately 400 volunteers donated various hours of their time to serve residents in the community.

[15] City of Lancaster, personal communication, Terri Villani, Staff, City of Lancaster Housing and Neighborhood Revitalization Department, December 2006.

Grace Resources Center is primarily a food bank, providing three hot meals per week to approximately 8,000 people. The center also provides emergency crisis counseling and services, employment training programs and classes and other basic needs. All services are provided at no cost to clients. Employment assistance consists of a ten-week Power Class that assists with job acquiring and retention skills, along with strengthening basic work skills. Additionally, a 17-week computer class is offered by the Center.[16]

Other Services

HOTLINES/HELP LINES

There are a variety of hotlines available to area residents for AIDS, Alanon, (alcoholics anonymous), Teen Pregnancy Counseling, Child Abuse, Cocaine Anonymous, Council on Substance Abuse Awareness, Domestic Violence, Elder Abuse, Marijuana Anonymous, Narcotics Anonymous, Sexual Assault Response Service (SARS), Agency Council for Emergency Services (for emergency food, shelter, or other emergency services), Listen and Learn (which provides information and confidential answers on the topics of drugs, alcohol, AIDS, etc.; also available in Spanish), and National Runaway, which provides help for runaways. A gang watch hotline also operates to help stem the growing gang population of Lancaster.

YMCA

The local YMCA, located at 2340 West Avenue J-8 in Lancaster, provides some family and sports programs. The YMCA sponsors the Junior Lakers Basketball Program, a junior swimming program, and senior training program at the Lancaster facility. Day camps, resident camps, and junior caravans have also been organized at the YMCA.

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10.0 Utilities

10.0 UTILITIES

This section provides existing conditions and background information for utilities serving the City of Lancaster General Plan study area. Utilities include Water (10.1), Wastewater (sewers) (10.2), Storm Drainage (10.3), Solid Waste (10.4) and Energy (10.5).

10.1 WATER

INTRODUCTION

The use of water within the City of Lancaster and the Antelope Valley is the focus of this sub section. Antelope Valley is located in a desert environment and underlain by a closed groundwater basin. The two primary sources of supply to the valley are imported water from the State Water Project (SWP) via the California aqueduct and groundwater extracted from the Antelope Valley groundwater basin. Wastewater flow collected within the valley is treated at wastewater reclamation plants, and a portion of the treated effluent is reused. Due to significant growth projections for the valley and the City of Lancaster, the efficient use, reuse, and availability of water are crucial to meeting future demands.

The last study performed to evaluate the condition of water resources throughout the Antelope Valley was the *Antelope Valley Resource Study*, completed in November 1995 by Kennedy Jenks. The study assessed available water resources, and discussed water conservation, recycled water use, aquifer storage and recovery, and provided recommendations in the form of a Water Resource Protection Strategy. Today, some of the recommended facilities of the Water Resource Protection Strategy are being studied, designed or constructed. For the water purveyors of the Antelope Valley to meet demands of the future it will take a cooperative regional effort to plan, design and construct necessary facilities.

In accordance with the California Urban Water Management Planning Act two reports were prepared in 2005 that studied the supply availability in the Antelope Valley. Antelope Valley East Kern Water Agency (AVEK) prepared a 2005 Urban Water Management Plan (UWMP) that evaluated the quantity of water supply, efficient use of water and potential demand management measures. As the retailer of imported water from the State Water Project, the AVEK UWMP focused on the agencies ability to provide reliable supply to each of its customers in the Antelope Valley. In 2005 the Los Angeles County Waterworks Division (LACWWD) also prepared an Urban Water Management Plan. As a water purveyor and customer of AVEK, the LACWWD UWMP evaluated the agency's ability to utilize current supply sources, recycled water use and demand management measures to meet the future demands of its service area and sphere of influence.

In early 2006 an effort headed by Los Angeles County Waterworks was begun to develop the *Antelope Valley Region Integrated Regional Water Management Plan* (IRWMP). The IRWMP is being developed to serve as a regional water management planning document. It will be created through a collaborative effort, and outline the necessary improvements and facilities required to meet future demands in the Antelope Valley.

The following is a discussion of current conditions and significant issues pertinent to water use and reuse in the City of Lancaster General Plan study area. The discussion includes surface

water, groundwater, imported water, and recycled water. This section is based on provided information, review of recently performed studies, coordination with Antelope Valley service agencies, and information gathered during the initial stages of the IRWMP coordination and document drafting process.

WATER RESOURCES

Water supply to the Antelope Valley is primarily via imported water from the State Water Project and groundwater drawn from the Antelope Valley basin. Water service to the City of Lancaster is provided by numerous retail water agencies. Each water retail agency within the City is unique, yet all water provided is from either groundwater, imported water from the Antelope Valley-East Kern Water Agency (AVEK), or a combination of both. The largest purveyor serving the City is the Los Angeles County Waterworks Division 40.

SURFACE WATER

The City of Lancaster is located in the Antelope Valley north of the San Gabriel Mountains and south of the Tehachapi Mountains within the western portion of the Mojave Desert. Within the Antelope Valley are the Portal Wash, Little Rock, Neenach and Palmdale watersheds. Alluvial fans that extend north from the San Gabriel Mountains primarily make up the Antelope Valley drainage basin. As the alluvial fans were naturally formed, no well-defined channels exist. During heavy rainstorms runoff from the San Gabriel Mountains creates streams (or washes). Another source of stream flow is the melting of snowpack from the local mountains. Once the streams reach the valley floor, the runoff percolates into the ground, continues on as temporary streams or results in sheet flow. No perennial streams exist within the Antelope Valley.

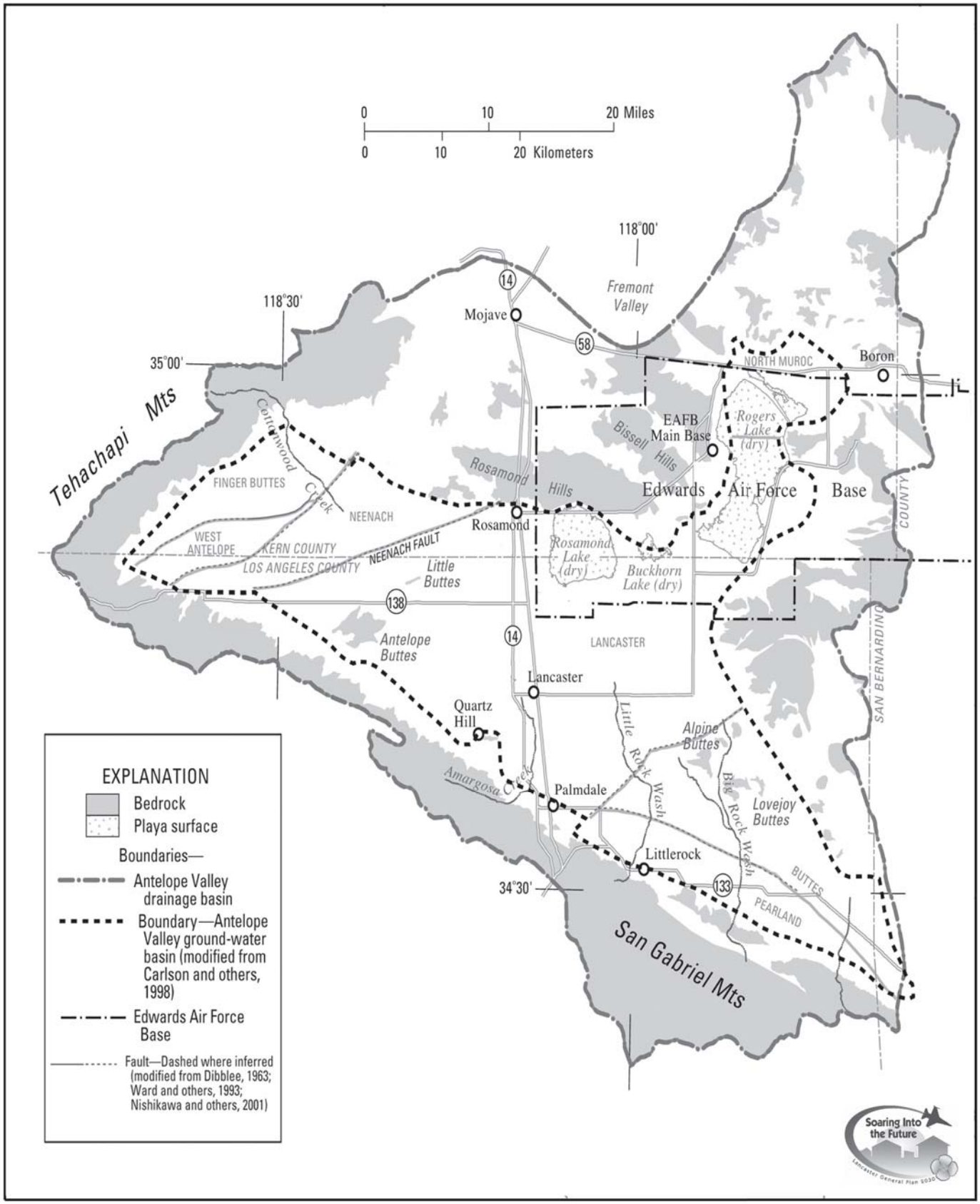
GROUNDWATER[1]

The Antelope Valley groundwater basin stores subsurface water that is extracted by the wells of various agencies as a source of supply. Elevations across the valley floor range from 2,300 to 3,500 feet above mean sea level. Bounding the basin are the Garlock fault zone to the northwest at the base of the Tehachapi Mountains and San Andreas fault zone at the base of the San Gabriel Mountains.

The Antelope Valley groundwater basin consists of the West Antelope, Neenach, Buttes, Finger Buttes, Lancaster, Pearland and North Muroc sub-basins (aquifers). The boundaries to each sub-basin have been and continue to be studied. Presently, the sub-basin boundaries have been based on known faults. Refer to Figure 10.1-1, Antelope Valley Groundwater Basin, for the Antelope Valley groundwater basin and its sub-basins.

Previous investigations of the Antelope Valley groundwater basin concluded that a dual-aquifer system exists. The basin was thus understood to consist of an upper unconfined aquifer and deeper mostly confined aquifer. Primary groundwater extraction has taken place from the upper aquifer. Recent investigations have provided a more detailed analysis of aquifer properties, age and depth. As a result, the basin is now considered to consist of three aquifers. The three aquifers have been identified as the upper, middle and lower aquifers (Leighton, 2000).

[1] Department of Water Resources – California Groundwater Bulletin 118(2003).



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Antelope Valley Groundwater Basin

Figure 10.1-1

GROUNDWATER FLOW

Groundwater flow in the Antelope Valley basin is generally north and northeasterly from the San Gabriel Mountains toward the Rosamond and Rogers Dry Lakes. Groundwater flow is also affected by areas of high extraction, which create local depressions. It is believed that prior to widespread pumping of groundwater, the water level of the upper aquifer was near the ground surface in the north-central area of the Lancaster sub-basin. This condition may have been a result of higher groundwater levels or perched water resulting from ancient alluvial-filled lakebed. However, due to previous high levels of groundwater extraction the condition no longer exists.

To the southeast of the Lancaster sub-basin are the Buttes and Pearland sub-basins. Studies have determined that both sub-basins flow toward and into the upper aquifer of the Lancaster sub-basin. The north Muroc sub-basin, underlying and south of Rogers Lake, has also been found to flow toward the Lancaster sub-basin. This is contrary to the understood direction of flow in the sub-basin prior to 1940.

No precise determination has been made on the degree of interconnection between the aquifers of the Lancaster sub-basin. Through various studies, the USGS has inferred that leakage is downward. However, in the area north of the City of Lancaster, high groundwater extraction is believed to result in water being drawn from the lower to the upper aquifer.

GROUNDWATER TRENDS

Use of groundwater to meet demand is common in southern California. While several areas in California transition from agriculture to developed lands, it is often the case that water supply sources remain fairly consistent. Groundwater was first used in the Antelope Valley to meet agriculture demands. Today the use of groundwater has been expanded to meet the demands of several water purveyors that have a combination of agriculture and urban demand. The result of the reliance on groundwater as a supply source has resulted in declining groundwater levels. According to the United States Geological Survey (USGS), groundwater levels in the Lancaster area declined as much as 200 feet between 1915 and 1988 (USGS, 1993).

Annual groundwater extraction was significantly changed in the early 1970s with the initial deliveries of State Water Project water in 1972. Between, 1975 and 1998 groundwater levels ranged from an increase of 84 feet to decreases in other areas of as much as 66 feet. Along Highway 14 (between Palmdale, through Lancaster and into Rosamond) is where the Antelope Valley Groundwater Basin levels are in most significant decline (DWR Bulletin 118).

Despite the general decline, well hydrographs maintained by Antelope Valley-East Kern Water Agency (AVEK) in cooperation with the USGS, indicated groundwater levels in portions of the Valley rose in the late 1980s and early 1990s. In August 1994 a report entitled “Hydrogeologic Assessment of Palmdale Business Park Center, Antelope Valley, Los Angeles County, California” by Richard C. Slade & Associates indicated that although groundwater levels are declining in the Lancaster area, the rate of decline has decreased since 1977.

In 1996, water-level data was collected for the Antelope Valley groundwater basin. The results of the data collection were summarized in the *Simulation of Groundwater Flow and Land Subsidence, Antelope Valley Ground-Water Basin, California* (USGS 2003). In general it described each sub-basin as having the following water levels (below the ground surface):

- Lancaster sub-basin – approximately 100 feet or greater;
- Finger Buttes, Neenach and West Antelope sub-basins – a range of 150 to 350 feet;
- Buttes, Pearland sub-basins – a range of 50 to 250 feet; and
- North Muroc – a range of 100 to 200 feet.

GROUNDWATER RIGHTS

The Antelope Valley groundwater basin is not adjudicated; meaning the water rights from and management of the basin have not been court appointed. However, steps potentially leading to the adjudication of the basin began in October 1999, with a lawsuit filed against the local water purveyors extracting groundwater from the basin. Without an agreement between the water purveyors and overlying farmers within the Antelope Valley, the matter will likely require a court-mandated judgment. The first step to the process is verification that the basin is in a state of overdraft (historic extraction exceeding natural recharge). Then, the basin boundary and parties extracting groundwater must be identified. Once all necessary information is collected a Judgment will then be made based on the annual recharge and historic extraction from the groundwater basin.

The future means to meet water demands in the Antelope Valley and City of Lancaster will depend on the Judgment resulting from the adjudication process. Once finalized, agencies that rely on groundwater will be capable of planning to meet future demands with higher certainty about the amount of groundwater that they can provide.

GROUNDWATER RECHARGE

Groundwater recharge occurs in two forms, natural and artificial. Recharge to the groundwater basin has been naturally occurring - resulting from stream flow or near surface percolation at the base of the surrounding foothills or mountains into the alluvial fan system. Several studies have been performed to quantify the natural recharge of the groundwater basin. From those studies it is presently estimated that natural recharge of 40,000 to 58,000 acre-feet per year occurs. Safe-yield of the groundwater basin is defined as the amount of groundwater that can be extracted without exceeding natural recharge. Overdraft is the condition where annual extraction exceeds the safe-yield. The Antelope Valley basin is understood to be in a state of overdraft. Records indicate that extraction has continued beyond the safe-yield causing areas of land subsidence and the loss of basin (aquifer) storage.

Increasing groundwater extraction will lead to further decline of the water table unless a combination of water conservation and groundwater recharge balance extraction and natural recharge. In November 2005, the Los Angeles County Waterworks District began injecting treated surface water into the groundwater basin. The project is known as the Aquifer Storage and Recovery Program (ASR). This artificial recharge is planned in the Antelope Valley to assist in the water balance. Additional studies are currently being performed to determine the requirements and capacity limitation affecting the expansion of ASR. The goal of ASR is to bank of water supplies in the groundwater basin during wet years to potentially prevent further overdraft as the Antelope Valley undergoes its anticipated growth.

The *Antelope Valley Water Resource Study* (1995) included discussion of artificial groundwater recharge methods and evaluated potential sites for such activities in the Antelope Valley. The study identified the following methods for increasing aquifer recharge:

- Spreading/Infiltration – use of surface water spreading basins to allow infiltration of water into the aquifer.

- Injection – use of new or existing wells for direct injection of water into the aquifer.

- In-lieu Use – use of an alternative source of water, other than groundwater, when available, and use of groundwater when alternative sources are not available.

Infiltration and injection require aquifer materials that have high permeability for acceptance and transfer of water. In the *Antelope Valley Water Resource Study,* three sites were recommended to have the highest potential for infiltration, and another three for injection.

The sites identified with the highest infiltration were:

- Amargosa Creek – bounded by Avenue N, 10th Street West and Division Street.
- Little Rock Creek – near Avenue N located between 60th and 70th Streets.
- Amargosa Creek – nearest to Elizabeth Lake Road and 25th Street West.

The three wells identified as best for injection were located at:

- Avenue K – south of Avenue K between 10th Street and Division Street.
- Avenue L – south of Avenue L between 10th Street West and Division Street.
- Avenue P – south of Avenue P between 20th Street East and 40th Street East.

Since 1995, two studies have been performed to analyze groundwater injection, storage, and extraction capabilities of the groundwater basin by U.S. Geological Survey (USGS). The first study was titled, *Vertical-Deformation, Water-Level, Microgravity, Geodetic, Water Chemistry, and Flow-Rate Data Collected During Injection, Storage, and Recovery Tests at Lancaster, Antelope Valley, California, September 1995 through September 1998* and dated 2002. It provided the results of testing and measurement when injecting treated groundwater in the area of Lancaster. A second study titled *Simulation of Ground-Water Flow and Land Subsidence, Antelope Valley Ground-Water Basin, California*, was prepared by USGS in 2003 to model the Antelope Valley groundwater basin and perform analysis of the basin's response to future pumping scenarios.

These studies provided the initial steps toward the larger goal in the Antelope Valley of banking imported water to increase supply reliability. Additionally, the Quartz Hill Treatment Plant is planning for conversion of their disinfection system from chlorine to ozones/choramines. Conversion will reduce the trihalomethanes (THMs) from treated water, which has prevented Los Angeles County Water Works District 40 from expanding the Aquifer Storage and Recovery program.

GROUNDWATER QUALITY

Groundwater is primarily drawn from the upper aquifer of the Antelope Valley basin. Historically the groundwater quality is good, with dissolved solids concentrations of 200 to 800 milligrams per liter (mg/l). Hence, water quality meets the maximum concentration limit of 1,000 mg/l per Title 22 of the State Code of Regulations. For the Lancaster sub-basin, the primary dissolved solids are calcium bicarbonate and sodium bicarbonate. Previous studies have found the

groundwater to be more alkaline in the eastern area of the basin. The lower aquifer, in general, contains higher levels of sodium bicarbonate and total dissolved solids.

Areas of lower quality groundwater exist within the basin. In the northeastern area of the valley, lower quality groundwater is presumed to be associated with underlain playa deposits where evaporation concentrated solutes and natural boron deposits occur. Other potential sources for lower quality groundwater are leaching of fertilizer and manure, fuel leaks, improper disposal practices, and runoff from landfills.

Groundwater quality throughout the Antelope Valley could decline due to increased urban waste runoff and the declining level of the groundwater basin that can result in fissures allowing ground surface water to reach the groundwater table. Another potential source of contamination is storm water, which may transport contaminants such as petroleum products, metals, salts, silts, fertilizers and bacteria.

Heightened water quality regulations for the State of California also pose a challenge for the water purveyors of the Antelope Valley. Certain areas of the valley have been found to have nitrate or arsenic levels. Such contaminates can lead to shutdown of groundwater wells.

On January 23, 2006, the United States Environmental Protection Agency (EPA) drinking water regulation for arsenic was changed from a maximum contaminate level (MCL) of 0.05 mg/L or 50 parts per billion (ppb) to 0.010 mg/L (10 ppb). Since then, the Los Angeles County Water Works District 40 has measured arsenic levels above the 10 ppb MCL at 20 wells. In response the District deactivated six wells and established an Arsenic Mitigation Project to improve the quality at five wells by blocking the high arsenic zones from entering the well. Quartz Hill Water District and Rosamond Community Services District (RCSD) have also observed arsenic levels above the MCL. Quartz Hill Water District has utilized its ability to blend water to produce water below the MCL. RCSD has utilized similar methods to meet the MCL.

STATE WATER PROJECT

In 1972 State Water Project (SWP) deliveries were first made to the Antelope Valley. State water is delivered to the area by the California Aqueduct, which runs along the southwestern border of the study area. Entitlements to SWP water are held by the Antelope Valley-East Kern Water Agency (AVEK), Palmdale Water District and Little Rock Irrigation District. AVEK treats and supplies imported SWP water for the City of Lancaster.

Annual supply from the SWP depends on the extent of rainfall and snowmelt water capture in northern California. The Department of Water Resources has established entitlements (referred to as Table 'A' Allotments) that dictate the maximum amount of water an agency can annually receive. Each year the Department of Water Resources determines the amount of total SWP supply. Then, water is distributed to each agency proportionally. However, during times of drought the Department of Water Resources may reduce supply below the amount an agency requires. As a result, many studies have been performed to determine the average SWP supply. According to the 2005 AVEK UWMP and *SWP Delta Table A Delivery Reliability for Year 2005* prepared by DWR, AVEK projects its regular delivery to be 69 percent of its full entitlement.

Historic SWP supply reductions (between 1910 and 2000) of 20 percent maximum supply have occurred three times, and 60 percent of maximum supply has occurred fifteen times. At other

times, the maximum supply was made available resulting in a surplus of water supply. It is important for each purveyor to plan according to the variation in supply. Hence, the use of Aquifer Storage and Recovery in the Antelope Valley has great potential for banking excess SWP supply. Once complete ASR should enable reliable long-term supply.

ANTELOPE VALLEY EAST-KERN WATER AGENCY

In 1962, AVEK signed a contract with the State Department of Water Resources to receive imported water supply. In 1972 imported water was first delivered to the Antelope Valley through the SWP. Today, SWP water purchased from AVEK is the primary source of imported water to the City of Lancaster. AVEK is a wholesale water distributor that sells and distributes water to local retail (public and private) water agencies. The retail water agencies then sell the water directly to consumers.

AVEK has a Table 'A' allotment (entitlement) for up to 141,400 acre-feet per year (approximately 126 million gallons per day) of SWP water. The actual amount of water delivered to the AVEK from the SWP is dependent on total SWP entitlements, and several factors that determine the amount of water available through the SWP each year. Despite improvements in reliability and delivery capability from possible future SWP projects and facilities, it is anticipated that the SWP will not be capable of ever delivering the full entitlement of all the contractors throughout the entire State.

Factors that have influenced the amount of SWP water taken by AVEK are the transmission capacity from the aqueduct to AVEK water treatment plants, and AVEK's distribution and treatment plant capacity. Treatment of the imported water occurs at the Quartz Hill, Eastside, Rosamond and Acton treatment plants. The largest plant is the Quartz Hill water treatment plant, which is capable of treating 65 million gallons per day (mgd) of aqueduct water.

The annual amount of SWP water received by AVEK has varied considerably over the years. In 1991, AVEK had their allocation reduced by 20 percent from the amount requested. Since then, the policy for assignment of reduction has been changed, so that allocations are based on the Table A rights. In 2004, AVEK sold 53,627 acre-feet of water for municipal and industrial use.

WATER TREATMENT AND DELIVERY

AVEK maintains a regional water delivery system referred to as the Domestic Agricultural Water Network (DAWN) for imported SWP to the City of Lancaster General Plan study area. DAWN consists of four treatment plants, 100 miles of pipelines, four 8-million gallon storage reservoirs and one 3-million gallon reservoir. With the capacity to treat 65 million gallons of water per day, the Quartz Hill Water Treatment Plant supports a majority of the City of Lancaster.

AVEK's transport system consists of the west, south and east feeder pipelines. The south feeder transports treated water from the Quartz Hill Water Treatment Plant through a series of 30- to 39-inch pipelines east of the southern area of Lancaster. From the south feeder the 60th Street West lateral runs north and supplies the Quartz Hill Water District and other water retail companies serving the City of Lancaster.

The East Feeder delivers treated water from the Eastside Water Treatment Plant, located next to the Aqueduct, to the areas south of Lancaster. East Water Treatment Plant is capable of producing 10 million gallons per day (mgd), and includes a 3.3 million gallon tank. The West

Feeder pipeline conveys water from the California Aqueduct to the Rosamond Water Treatment Plant north of the City of Lancaster. Rosamond Water Treatment Plant has a capacity of 14 mgd, while the Acton Water Treatment Plant has a four mgd capacity. Figure 10.1-2, Regional Water Facilities, shows the regional water facilities supporting the City of Lancaster.

RETAIL WATER AGENCIES

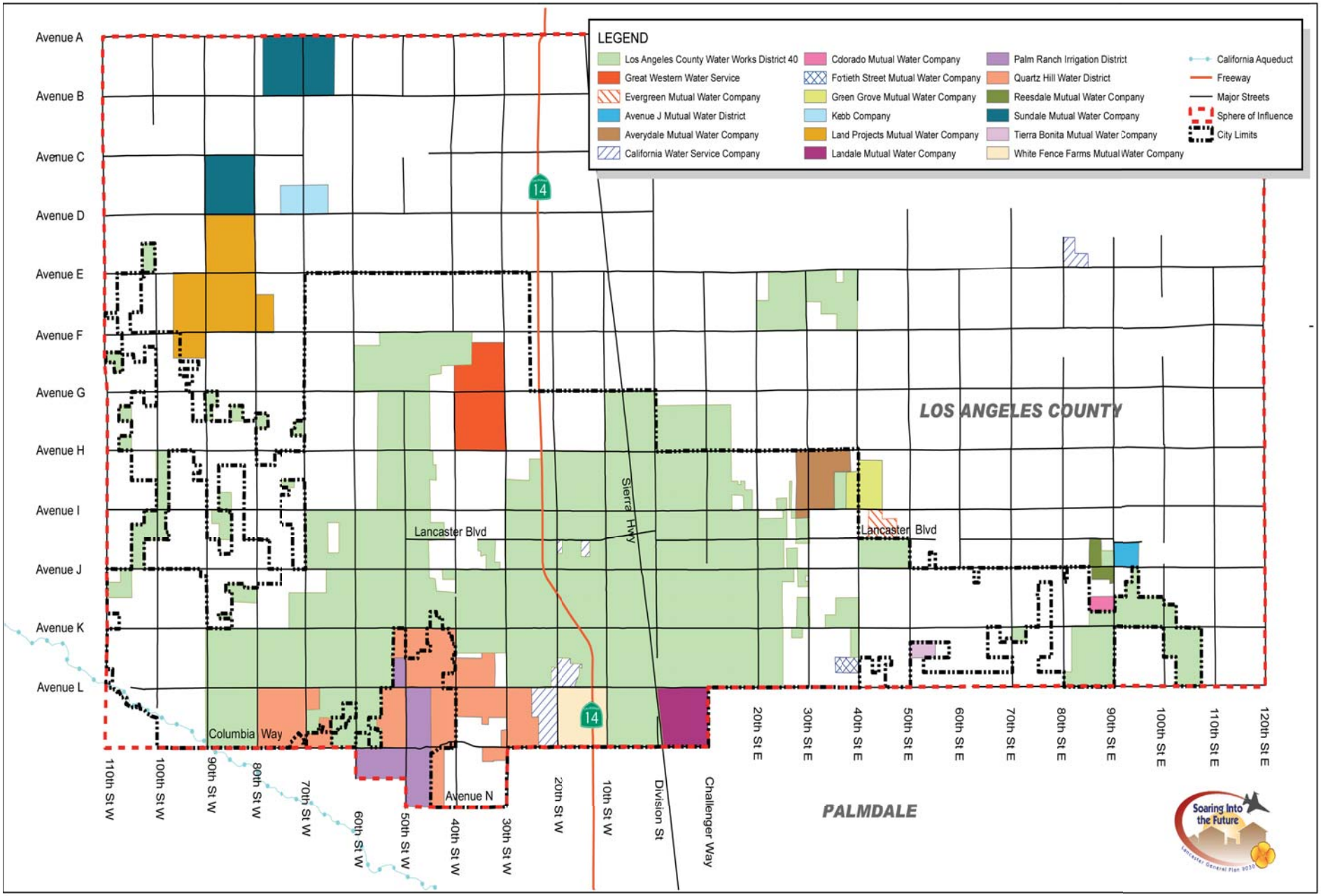
The City of Lancaster is served by the following districts or mutual water companies:

- Avenue J Mutual Water District;
- Averydale Mutual Water Company;
- California Water Service Company;
- Colorado Mutual Water Company;
- Evergreen Mutual Water Company;
- Fortieth Street Mutual Water Company;
- Great Western Water Service;
- Green Grove Mutual Water Company;
- Kebb Company;
- Land Project Mutual Water Company;
- Landale Mutual Water Company;
- Los Angeles County Waterworks District No. 40;
- Palm Ranch Irrigation District;
- Quartz Hill Water District;
- Reesdale Mutual Water Company;
- Tierra Bonita Mutual Water Company;
- Sundale Mutual Water Company; and
- White Fence Farms Mutual Water Company.

The boundaries of service to these agencies are depicted in Figure 10.1-2. The larger water purveyors within the study area consist of Los Angeles County Waterworks District No. 40 and the Quartz Hill Water District. Los Angeles County Waterworks District No. 40, Region 4, serves the majority of Lancaster. Quartz Hill Water District serves several large portions of southwest Lancaster. Most of the smaller water companies are served by the South Feeder water line from AVEK. Two mutual water companies, Averydale and Green Grove, serve a few square miles of land northeast of downtown Lancaster near 30th Street East and Avenue I. The Landale Mutual Company serves an area between the Antelope Valley Freeway and Challenger Way south of Avenue L. Some portions of the City of Lancaster are served by individual wells. Coordination between local water agencies has historically been minimal as there are no interconnections between individual systems. During emergencies, such as a line break, some water agencies will assist one another. However, it can be difficult to coordinate such efforts between agencies as each system has unique operation characteristics.

LOS ANGELES COUNTY WATERWORKS DISTRICT NO. 40

Los Angeles County Waterworks District No. 40 (WWD40) is a County agency governed by the Board of Supervisors, and is responsible for providing water to its designated service area. It is the largest retail water purveyor in the region, providing water service to both Lancaster and Palmdale areas via Regions 4 and 34. Together, both regions have a service area of approximately 40,000 acres.



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Lancaster General Plan 2030

Regional Water Facilities

Figure 10.1-2

WWD40 has two sources of water: groundwater from local wells and imported SWP water through AVEK. Groundwater is supplied from 42 wells with a combined capacity 38,492 gallons per minute (gpm). The majority of the wells extract from the upper aquifer ranging in depth from approximately 100 to 800 feet. WWD40 has 29 service level storage tanks with a combined capacity of 48.3 million gallons (MG) and 30 booster pump stations. Additional storage tanks are planned to increase total storage in the WWD40 system.

As shown in Table 10.1-1, WWD40 Annual Supply, WWD40 used approximately 37 percent well water and approximately 63 percent as State water from the California Aqueduct (via the SWP) in 2004.

Table 10.1-1
WWD40 Annual Supply

Year	Imported SWP Water		Groundwater		Total
	Amount (AF)	%	Amount (AF)	%	
2000	34,655	67%	17,419	33%	52,074
2001	30,965	59%	21,736	41%	52,701
2002	33,442	61%	21,195	39%	54,637
2003	37,442	69%	16,837	31%	54,279
2004	36,231	63%	21,357	37%	57,588

Source: 2005 Integrated Urban Water Management Plan for Antelope Valley.

WWD40 will expand its groundwater capacity and storage to address increased demands. The WWD40 begins capital improvement identification by projecting population increases. Several improvement projects are planned in 2008 and 2009 to increase supplies in the Antelope Valley region, including:

- 3.2 MG Reservoir at Avenue M and 62nd West Street
- 36-inch transmission main in Avenue K
- 36-inch transmission main in Avenue M and 60th Street West
- Booster Pump Station at Avenue J and 15th Street West
- Booster Pump Station at K-8 Street and Division Street

In addition, new wells are planned (lead by WWD40) as part of the aquifer and storage recovery plans in Antelope Valley following the completion of the *Antelope Valley Integrated Regional Water Management Plan* (AVIRWMP). The wells are:

- Drilling / equipping wells 4-69, 4-72 (and potentially 4-70 and 4-71) in Lancaster.
- Drilling / equipping wells 4-73, 4-74, 4-80, 4-81 with chlorine.

Financing of capital projects is through connection fees and "local system improvement charges" as described in the WWD40's General Conditions and Rules. Financing for regional improvements, such as those proposed under the AVIRWMP varies depending on project and agency benefit. Potential financing means include, water and wastewater general funds, capital

improvement funds, general funds from local Cities, contribution by private parties and possibly by local taxpayers through rate increases, bond measures or tax increases.[2]

QUARTZ HILLS WATER DISTRICT

The Quartz Hill Water District (QHWD) is a special district that serves areas of the City of Lancaster and Palmdale along with unincorporated area between the two cities. The District's total service area encompasses approximately 4.5 square miles.

QHWD obtains its water from WWD40, its own wells, and AVEK. QHWD operates seven wells and has six reservoirs ranging in size from 0.13 to 2.0 mg, for a combined storage of 11.2 MG. In 2004, Quartz Hill Water District met the demands of its customers by extracting 1,300 acre-feet of groundwater and importing 4,100 acre-feet of imported water from AVEK.

LOCAL WATER DELIVERY

The local water agencies provide a network of water distribution pipelines within the developed portions of the City. Twelve inch water mains are primarily located in all of the arterial streets within the City limits, with four to 10-inch mains in the local streets. With this system, adequate water service is generally available to most developed parcels in the City. New development is required to install adequately sized water mains to provide domestic service and meet fire flow requirements.

WATER CONSUMPTION PATTERNS

The Antelope Valley is located in an arid to semi-arid location of the Mojave Desert. As a result, periods of high temperature (greater than 100° F) occur, particularly during the summer months. These conditions result in much higher water demands than those of the winter season. Average daily consumption per land use type as estimated by the Los Angeles County Water Works District No. 40 (WWD40) is as follows:

- Single Family Residential – 785 gallons per day (gpd) per connection;
- Commercial – 2,500 gpd per connection;
- Industrial – 3,300 gpd per connection; and
- Landscape – 4,200 gpd per connection.

In response to drought conditions, Los Angeles County WWD40 has utilized water rationing. During the 1977 California drought, WWD40 implemented a water rationing program designed to reduce consumption to 90 percent of the previous year's level. Significant savings were obtained for the short-term, however consumption quickly increased to former levels as soon as the program ceased. In June 1991, WWD40 began mandatory water rationing in response to drought conditions that existed at the time.

Most of the water purveyors encourage water conservation practices and can provide literature upon request to customers about water conservation. Some agencies and individuals are taking additional steps to increase water conservation in the City of Lancaster and larger Antelope Valley; refer to Water Conservation discussion below.

[2] Antelope Valley Integrated Regional Water Management Plan, Page 8-24.

NON-POTABLE WATER

Due to overdraft in the Antelope Valley groundwater basin and the potential for reductions in SWP supply during drought conditions, non-potable water service has become crucial to ensuring water supply for the City of Lancaster. Sources and uses of non-potable water are discussed in detail in the *Recycled Water Facilities and Operations Master Plan* (January 2006). Potential sources include: 1) recycled water from the Lancaster and Palmdale Water Reclamation Plants, 2) stormwater/ nuisance water, and 3) low quality groundwater.

Wastewater generated in the Antelope Valley is primarily treated to disinfected secondary effluent and discharged to spreading grounds or ponds. Some flow from the Lancaster Water Reclamation Plant is presently discharge to the Antelope Valley Tertiary Treatment Plant (AVTTP) for tertiary treatment. The AVTTP currently provides 0.5 mgd of tertiary-treated effluent. In spring 2008 an addition 1.0 mgd of tertiary treated-effluent will be made available following the completion of the Membrane Bioreactor (MBR). Additionally, the Sanitation Districts of Los Angeles County plans to further expand tertiary treatment in the valley during the planned expansions of the Lancaster and Palmdale Water Reclamation Plants.

The effective use of water for the City of Lancaster is key to meeting future demands. As a result, the City contracted with RMC to produce the *Recycled Water Facilities and Operations Master Plan* to evaluate potential recycled water use, projects, and funding. City of Lancaster and the Los Angeles County Waterworks are working toward the development of a recycled water system supplied by the Lancaster Water Reclamation Plant. The City of Lancaster has begun conditioning the installation of purple pipe (recycled water) for new residential development to serve the irrigation areas of new landscape maintenance districts. Hence, the steps necessary to develop the recycled water system are taking place.

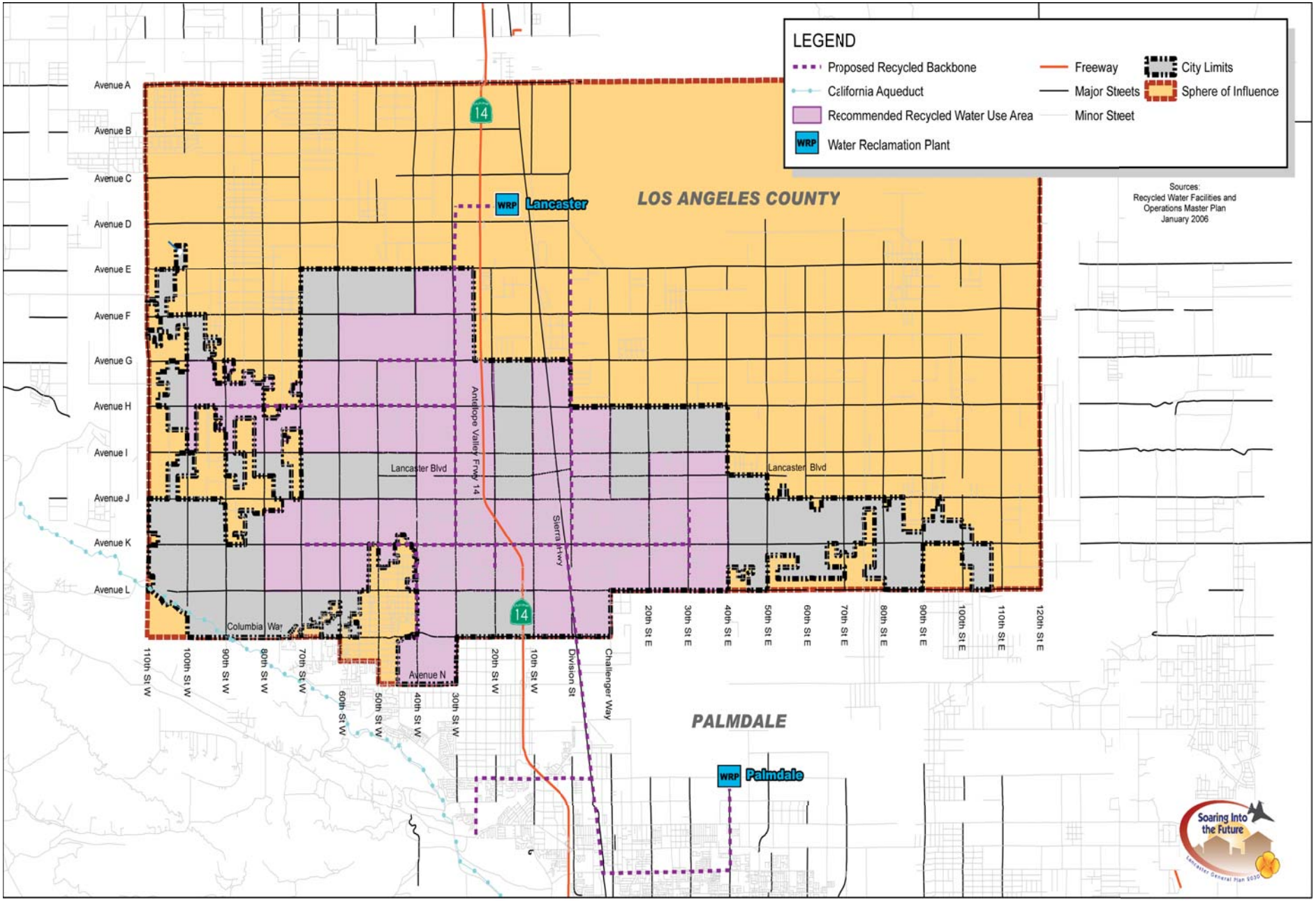
Figure 10.1-3, Proposed Recycled Water System, illustrates the recommended urban reuse backbone system. Recycled water users are depicted according to the envisioned phase of system expansion.

Benefits to be realized through the development of the recycled water system are:

- Freeing up domestic water supply for municipal and industrial uses;
- Providing a drought tolerant supply to irrigation; and
- Reducing wastewater overflow to the Rosamond Dry Lake.

For further discussion of recycled water, also refer to Section 10.2, Wastewater.

Storm water and low quality groundwater serve as other potential sources of non-potable supply. Through storm water collection and re-use, the Antelope Valley could reduce the extent of water loss by evapotranspiration utilizing the water as a potential source of blend water for recycled water recharge (similar to the Inland Empire Utilities Agency). Low quality groundwater could be extracted to assist in meeting summer demands and is a viable option for supplying the non-potable system, but requires extensive coordination with local water purveyors on the quality, quantity and impact of its use. As a result, both potential supply sources remain as alternatives to assist in bringing non-potable water supply to the Antelope Valley.



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Proposed Recycled Water System

Figure 10.1-3

WATER CONSERVATION

Water conservation is a highly viable option to extend current water resources for the City of Lancaster. Through education, analysis and application of technology, the Antelope Valley Water Conservation Coalition (AVWCC) was created in November 2005 to increase water conservation within Antelope Valley. The AVWCC consists of representatives from the City of Lancaster Parks, Planning and Public Works Departments, along with several other representatives from the City of Palmdale, Los Angeles County Water Works District 40, Antelope Valley Building Industry Association, developers, and other retail water companies. Meetings held by the AVWCC have identified several efforts to increase water conservation through education, legislation and establishment of incentives. The goal of the AVWCC is to create the coordination necessary to identify and implement ways to reduce water waste, encourage the use of water efficient landscape/plants, and increase public awareness.[3]

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[3] Per August 2006 phone Conversation with Robert Neil, City of Lancaster.

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10.2 WASTEWATER

INTRODUCTION

Collection, treatment, and disposal of wastewater within the City of Lancaster and adjacent unincorporated areas are under the jurisdiction of County Sanitation District No. 14 of Los Angeles County (District No. 14). District No. 14 owns and maintains the trunk sewers and Lancaster Wastewater Reclamation Plant (LWRP), which convey and treat wastewater generated by residential, commercial and industrial areas of the City of Lancaster, as well as portions of the City of Palmdale and unincorporated County. The boundary of County Sanitation District No. 14's service area is reflected in Figure 10.2-1, LACSD Service Area and Regional Facilities, and is approximately 45 square miles. Local sewer collection is provided by the small diameter pipelines owned by the City of Lancaster.

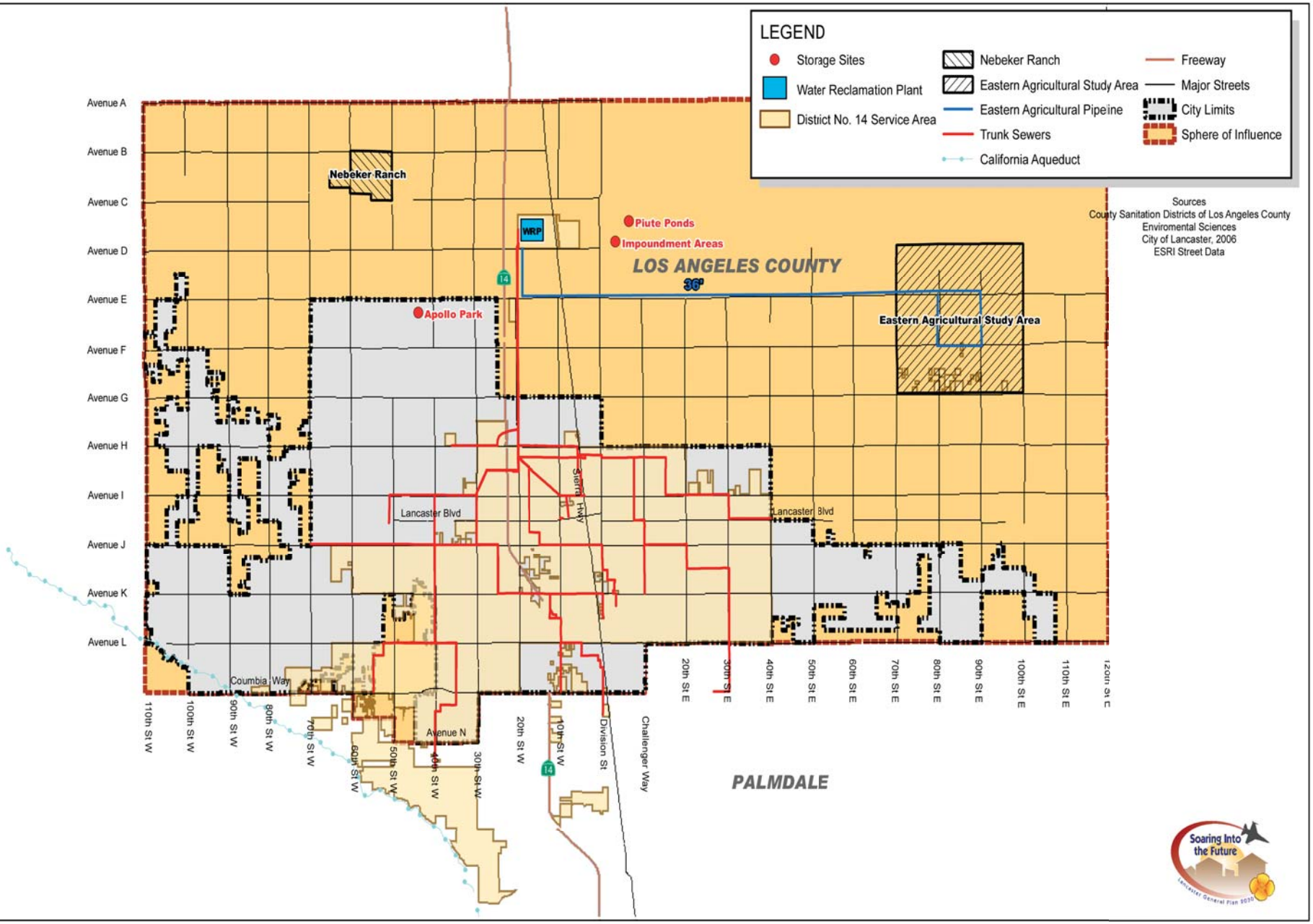
To address current and projected population growth in the Antelope Valley, District No. 14 prepared the *Lancaster Water Reclamation Plant 2020 Facilities Plan and EIR.* The plan discusses the projected increase in wastewater flow and environmental impact of expansion of the plant. Another key component of the document is a discussion regarding the planned use of recycled water. Through the addition of tertiary treatment to the Lancaster Wastewater Reclamation Plant, District No. 14 will be capable of providing recycled water for various uses throughout the Antelope Valley.

COLLECTION

Wastewater collected in the City of Lancaster initially flows through the local sewer pipelines owned by the City of Lancaster and currently maintained by the Los Angeles County Public Works Department Sewer Maintenance Division. Beginning July 1, 2008 the City of Lancaster will begin maintaining the local sewer system. At the locations of significant flow confluence, connection is made with the regional trunk sewers owned, operated and maintained by District No. 14. The District No. 14 trunk main network consists of approximately 64 miles of pipeline. Trunk sewer pipelines 24-inches in diameter or smaller are usually constructed of vitrified clay pipe. Larger trunk sewers are typically reinforced concrete pipe. District No. 14 checks the capacity and physical condition of the pipeline periodically to determine if repairs or hydraulic relief is necessary. Refer to Figure 10.2-1.

TREATMENT

The majority of wastewater generated by the City of Lancaster is treated at the Lancaster Water Reclamation Plant (LWRP), located near Avenue D and east of 20th Street West. The plant is located on approximately 560 acres and includes four effluent storage reservoirs and the Antelope Valley Tertiary Treatment Plant (AVTTP). A maximum of 0.5 million gallons per day (mgd) of the LWRP's overall effluent is tertiary treated for use as recycled water by the AVTTP. In winter of 2007, the tertiary treatment at the LWRP was increased to 1.5 mgd upon the completion of a Membrane Bioreactor (MBR) at the plant. The present permitted capacity for the LWRP is 16.0 mgd. In 2006, the plant treated an average flow of 14.615 mgd.



Lancaster General Plan 2030

LACSD Service Area and Regional Facilities

Figure 10.2-1

In June 2004 the County Sanitation Districts of Los Angeles County certified the *Lancaster Water Reclamation Plant 2020 Facilities Plan and EIR*. The report indicates that the LWRP capacity needs to be expanded to 26.0 mgd to treat the estimated flows of 2020. Expansion of the plant is proposed to occur in three phases. The first expansion will result in a capacity of 18 mgd by late 2010. The second expansion is planned to achieve a 21 mgd capacity by 2013. The third phase, needed for the projected flows of 26 mgd in 2020, will be completed by 2014.

Wastewater flows by gravity to the LWRP through the 66-inch Rosamond Outfall Relief Trunk Sewer pipeline from the south. Treatment at the LWRP consists of primary and secondary treatment. Primary treatment is performed through sedimentation (settling). Secondary treatment utilizes oxidation ponds and aeration. Upon reaching the LWRP, wastewater is pumped through comminutors and grit chambers to the primary sedimentation tanks. Effluent then gravity flows to oxidation ponds, some of which are equipped with surface aerators. A small portion of the effluent is routed to the Antelope Valley Tertiary Treatment Plant where it is treated for recycled water use. Sludge is collected from the primary sedimentation tanks and conveyed to the sludge digesters. Bio-solids (treated sludge) are initially stockpiled at the treatment plant and are then transported to San Joaquin Composting Facility (to become fertilizer amendment).

REGIONAL WASTEWATER

In addition to District No. 14's service to the City of Lancaster, wastewater is also collected and treated by County Sanitation District No. 20, Rosamond Community Services District, and the Edwards Air Force Base (EAFB). County Sanitation District No. 20 serves most of the rest of the Antelope Valley (primarily the City of Palmdale). Collection and treatment is similar to that for District No. 14, with trunk sewer mains conveying flows by gravity to the Palmdale Water Reclamation Plant. Rosamond Community Services District serves a small portion of the Antelope Valley, and facilities to support the Edwards Air Force base are independently owned, operated and maintained.

DISPOSAL

Wastewater generated within the Antelope Valley has historically been disposed of through treatment and spreading. As the Antelope Valley is a closed basin (no ocean outfall), wastewater effluent from the Lancaster and Palmdale Water Reclamation Plants has been routed to storage reservoirs on the treatment plant property or other locations. The Lancaster Wastewater Reclamation Plant directs effluent flow to the four on-site storage reservoirs (160 acres of storage), Nebeker Ranch, Piute Ponds, Impoundment Areas and Apollo Lakes Regional County Park; refer to Figure 10.2-1.

- *Nebeker Ranch*. A 680 acre privately owned farm approximately seven miles northwest of the LWRP. Recycled water is used to irrigate alfalfa and other fodder crops. Deliveries to Nebeker Ranch have occurred since 1988.

- *Piute Ponds*. A water body primarily consisting of effluent water located approximately three miles northeast of the LWRP. The ponds were created in 1961 when a dike was built to bound effluent flow from the LWRP and prevent overflow onto the Rosamond Dry Lake located on EAFB.

- *Impoundment Areas*. Impoundment Areas south of Piute Ponds were created in the late 1980s for recreational duck hunting. Discharge to the areas is governed by the

Memorandum of Agreement (MOA) between County Sanitation District No. 14 and the Edwards Air Force Base, and limited to a seasonal period of November 1 through April 15.

- *Apollo Lakes Regional County Park.* Tertiary treated wastewater from the Antelope Valley Tertiary Treatment Plant is conveyed to Apollo Park, located on William Barnes Avenue between 50th Street West and 30th Street West, east of Fox Field. Deliveries began in 1972 and today the tertiary treated recycled water supply is used to maintain three recreational lakes.

As described by County Sanitation District No. 14 in the executive summary of the *LWRP 2020 Facilities Plan and EIR*, balance of supply and demand for recycled water has historically been dealt with, as follows:

> *In order to balance the supply and demand for recycled water throughout the year, the LWRP relies on its four storage reservoirs with a total storage capacity of 500 million gallons, or 1,534 acre-feet (AF). When the storage reservoirs become full (typically by late fall), recycled water in excess of daily reuse demand is discharged to the Piute Ponds.*

Effluent induced overflows from the Piute Ponds onto the Rosamond Dry Lake have taken place in previous years. Mitigation of such overflows is a primary goal of the *LWRP 2020 Facilities Plan and EIR*, as past overflows impacted the Edward Air Force Base's designation of the area as an emergency aircraft landing area. The *LWRP 2020 Facilities Plan and EIR* identified four alternatives for expanding treatment and effluent management capacity for further conditions. Under each alternative a need to increase agriculture reuse was reflected. Consequently, District No. 14 considered several locations for agricultural reuse taking into account factors such as existing soil quality, operations, public impact and interest in recycled water use. Through the process, the Eastern Agriculture site was deemed the preferred location of expanded agricultural reuse; refer to Figure 10.2-1.

RECYCLED WATER

Sanitation Districts No. 14 and No. 20 currently convey effluent water to locations of wetland habitat, recreational reuse, and agricultural reuse. Effluent in excess of agriculture demand is stored at the on-site storage reservoirs of the Lancaster Water Reclamation Plant. The on-site storage allows for a portion of that water to be lost to evaporation. The reuse of effluent in the Antelope Valley has been identified as a significant way for water to be used more efficiently in the Antelope Valley. Tertiary treatment (treatment to Title 22 of the California Code of Regulations) at the Lancaster and Palmdale Water Reclamation Plants will increase the ways recycled water can be reused. Instead of water being lost to evaporation at the spreading areas, such water could be used to meet municipal, industrial, and groundwater recharge demands. By doing so, more local groundwater and imported State Water Project water would be available to meet potable demands.

Districts No. 14 and No. 20 plan to add tertiary treatment to the Lancaster and Palmdale Water Reclamation Plants during the currently planned expansions of each facility. The only current tertiary treatment takes place at the Antelope Valley Tertiary Treatment Plant located at the Lancaster Reclamation Plant. Until the expansions are completed, the Sanitation District must

use its current means of managing annual and peak wastewater flows. By 2010 District No. 14 anticipates 13 million gallons per day of tertiary treated recycled water will be available.

To plan for the most efficient and immediate use of recycled water, the City of Lancaster and its consultant (RMC) produced the *Recycled Water Facilities and Operations Master Plan* (January 2006). From a combination of the *Recycled Water Facilities and Operations Master Plan*, *Lancaster Water Reclamation Plant 2020 Facilities Plan and EIR* and *Palmdale Water Reclamation Plant 2025 Facilities Plan and EIR*, treated recycled water will be available as described:

- *Recycled Water from the LWRP.* Tertiary treatment is presently taking place at the Antelope Valley Tertiary Treatment Plant located on the Lancaster Water Reclamation Plant site. This existing facility has the capacity to treat 0.5 million gallons per day (mgd). A 1.0 mgd membrane bioreactor pilot project was completed in 2007. With expansion of the LWRP to 26.0 mgd, tertiary treatment of approximately 18 mgd is envisioned for 2010 of which 13 mgd will be available as recycled water.

- *Recycled Water from the PWRP.* The Palmdale Water Reclamation Plant is planned for expansion from 15.0 mgd to 22.4 mgd, by 2013 in the *Palmdale Water Reclamation Plant 2025 Facilities Plan and EIR.* County Sanitation District intends to add tertiary treatment at the plant to allow for municipal reuse, agricultural reuse, and groundwater recharge.

Discussion of the anticipated market for recycled water was provided in the *Recycled Water Facilities and Operations Master Plan (RWFOMP).* Three type of recycled water reuse were identified:

- *Urban Use.* Primarily as irrigation at golf courses, parks and major other turf or landscaped areas. This use is anticipated to generate the greatest demand.

- *Agricultural Use.* Supply to areas of agriculture. Expanded agricultural reuse is identified as a necessary effluent management measure in the *2020 LWRP Facilities Plan and EIR*. The recommended site for reuse is the Eastern Agriculture site; refer to Figure 10.2-1.

- *Groundwater Recharge.* Per the RWFOMP there is high potential for reuse of recycled water as groundwater recharge. However, such reuse will need to be regionally planned and studied to determine the viability. For further information on groundwater recharge, refer to Section 10.1, Water Resources.

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10.3 STORM DRAINAGE

INTRODUCTION

The section examines existing storm drainage conditions in the Lancaster General Plan study area (study area) including flood control and drainage facilities, flood hazards and management and stormwater quality.

EXISTING FLOOD CONTROL AND DRAINAGE FACILITIES

An extensive portion of the City of Lancaster and the General Plan study area is subject to flooding. This is caused by uncontrolled runoff from the San Gabriel foothills flowing across the flat desert basin. Runoff flows north out of several major canyons, then spreads out and flows across the alluvial fans, eventually reaching the dry lake beds including Rogers, Rosamond, and Buckhorn all located northeast of the City. Much of the study area is subject to sheet flow, the type of flooding in which water flows over large areas with depths of only a few inches.

Natural Drainage

Most localized drainage problems correspond closely to natural tributaries. Flood hazards are most severe in the southwestern foothill region of the study area, where debris-laden flows move at the greatest velocity. Storm flows in the undeveloped portions of the study area eventually reach wide north-south swales, and are then intercepted by various flood control channels or natural creek beds. The drainage channels of greatest concern are Amargosa Creek, Anaverde Creek, Fairmont Creek and Little Rock Creek.

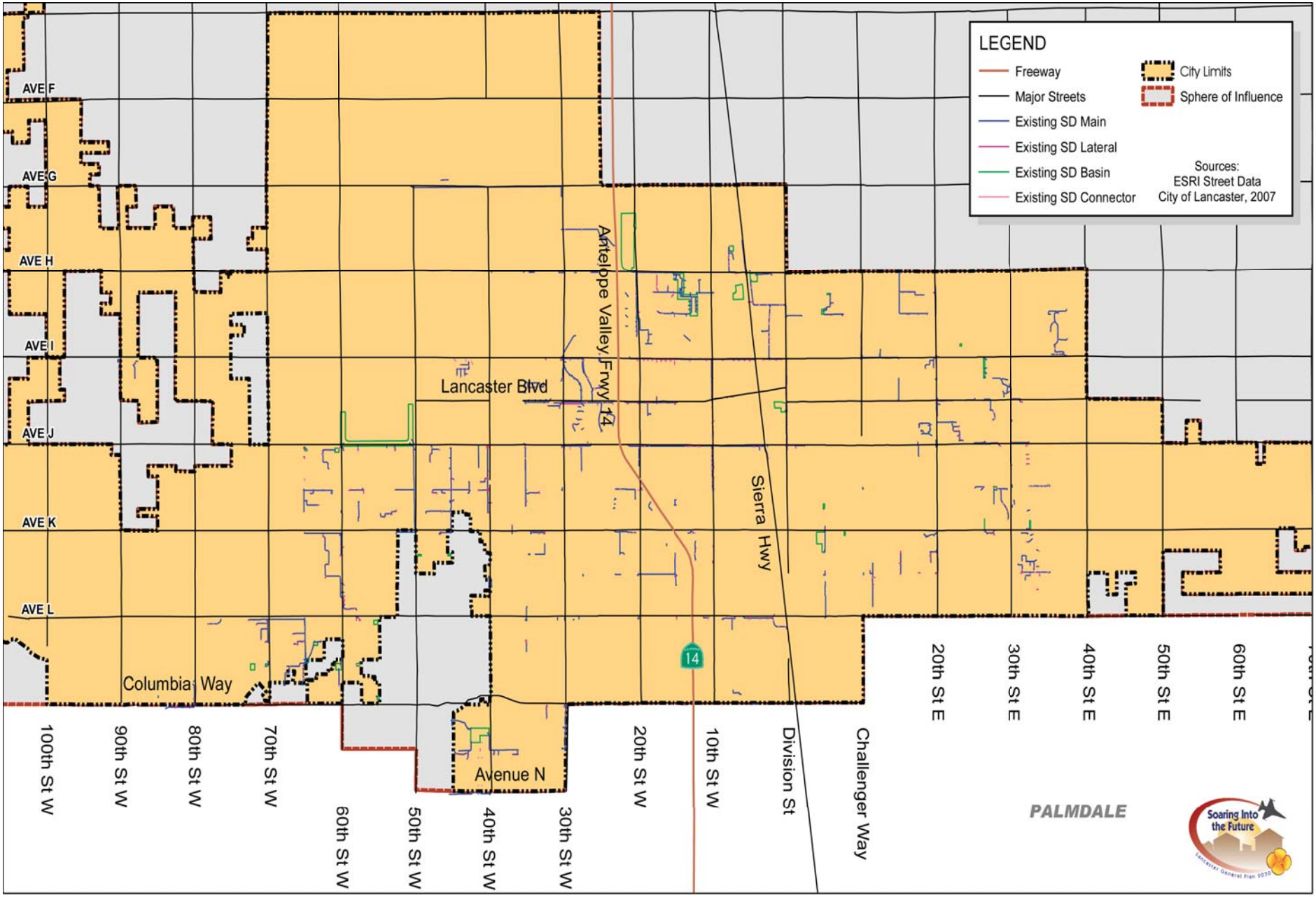
Drainage Facilities

There are a number of existing local and regional flood control facilities in the City, including channels, storm drains, and retention basins refer to Figure 10.3-1, Existing City Flood Control Structures. The City constructs new drainage facilities through its Capital Improvement Program (CIP). Another source of new drainage facilities are those constructed by private developers.

City streets are still generally used to convey water runoff, which tends to flow in sheets over paved surfaces and collect in low-lying areas. In many areas City streets are designed to accommodate 10-year and/or 25-year storm flows within the right-of-way. Several areas in the City have recurring flood problems during rainy periods. Additional structural improvements are necessary to address these areas.

Flooding

To protect the public from flood hazards, the Federal Emergency Management Agency (FEMA) maps local floodways and flood zones. FEMA provides cities and counties with maps that show the boundaries of 100-year and 500-year floods. The limits of these floods are based on the largest storm that could be expected to occur once every 100 and 500 years, respectively. In other words, these storms have a one in 100 and one in 500 chance of occurring in any given year. It should be noted that the 100-year and 500-year storms (and their floods) are only statistical concepts, and there is nothing that would prevent two 100-year storms from occurring in succeeding years either in the City or within the watershed (although statistically there is a low probability of occurrence).



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Existing City Flood Control Structures

Figure 10.3-1

Much of the City of Lancaster and its General Plan study area are susceptible to flooding because of its relatively flat topography. Flooding is primarily caused by runoff from the San Gabriel and Sierra Pelona mountains to the south. The Antelope Valley drainage basin consists of a series of alluvial fans extending north from these mountains to the dry lake beds at Edwards Air Force Base. The basin has no natural outlet to the sea, which restricts the removal of runoff to percolation or evaporation.

Following short-term, low intensity rainfall, deep deposits of permeable sands absorb nearly all runoff by percolation as it flows out of the San Gabriel Mountains. However, following major storms, the sands become saturated and runoff from the mountains flows northward across the valley, sometimes overflowing natural drainage channels. Flash flooding or extended periods of rain can cause drainage channels such as Amargosa Creek and Little Rock Wash to overflow. Runoff also occurs over paved surfaces within the City and flows toward low-lying areas to the north. Currently, the City is installing storm drain facilities to alleviate problems in some areas of the City.

Major floods in the Antelope Valley generally coincide with winter storms that occur between November and April. The highest frequency and greatest intensity of winter flooding normally occurs between December and March. Infrequent thunderstorms during the summer and fall may also produce major flash floods. Severe flooding events have been recorded for the following dates:

- September 24-26, 1939;
- August 9-10, 1942;
- January 21-24, 1943;
- February 20-24, 1944;
- August 4-5 and August 19-22, 1961;
- January 18-27, 1969;
- February 27 - March 3, 1983;
- February 1992; and
- February 2005.

Flood Hazards

Local drainage problems and flooding generally occur along natural tributaries. The City's flooding may be reduced by the California Aqueduct drainage crossings. Runoff originating in the Sierra Pelona and San Gabriel Mountains must cross under the aqueduct before entering the City. Storm flows in the undeveloped portions of the study area are generally channeled through wide, north-south swales until intercepted by various flood control channels or natural creek beds. Sheet flooding can occur when the capacities of washes and dry stream beds are exceeded. However, sheet flooding can also occur due to factors unrelated to the overflow of washes and stream beds, such as runoff directed across level basin areas.

The following list of natural tributaries constitute flood hazards within the Lancaster area. Figure 10.3-2, FEMA Flood Zones, shows the 100- year flood hazard areas associated with these tributaries.

Amargosa Creek. This creek collects runoff from the Sierra Pelona Mountains and San Andreas Rift Zone at the southwest end of the Antelope Valley. The creek initially flows eastward and then meanders northerly through Palmdale and Lancaster. The change in flow

direction occurs near State Route 14 (SR-14). The creek eventually terminates at Rosamond Dry Lake.

Anaverde Creek. This creek collects runoff from the Sierra Pelona Mountains and flows northeasterly through Anaverde Valley. Flow is collected in the Lockheed Drainage Channel on the U.S. Air Force Base Flight Production Center (Plant 42) and held in a retention basin. Flow that exceeds the capacity of the retention basin eventually confluences with Amargosa Creek.

Little Rock Creek. Little Rock Creek begins at the outflow of Little Rock Dam and consists of runoff from the San Gabriel Mountains in Little Rock Canyon. The Creek passes west of the community of Littlerock and travels in a northerly direction to Rosamond Dry Lake.

Neenach Wash. This wash collects runoff from La Liebre Rancho and travels due east until it merges with runoff from the Fairmont Wash. Waters from the wash eventually enter the study area along 40th Street West and Avenue D.

Fairmont Wash. This wash collects runoff from Broad Canyon in Portal Ridge and from the Fairmont and Antelope Buttes. The wash flows north until reaching Avenue D, where it changes to an easterly direction and eventually reaches Rosamond Dry Lake.

Flood Zones

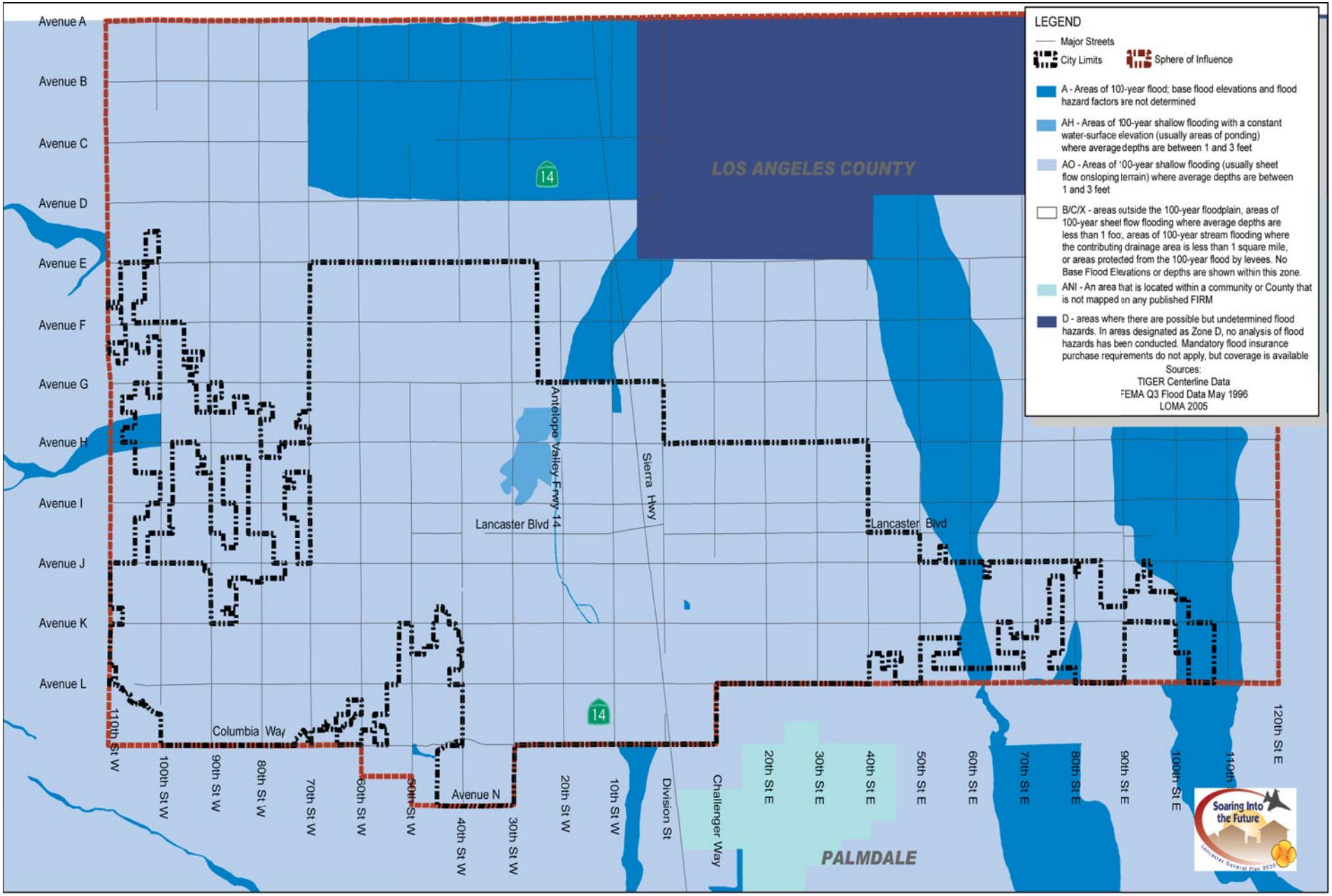
The current Flood Insurance Rate Map (FIRM), as published by FEMA, Map Number 060672 0005B, 0010B, 0015B and 0020B dated January 1982 and revised 0010B to reflect LOMR dated May 20, 2005, indicates that the study area contains the following four types of flood zones; refer to Figure 10.3-2:

- Zone A – Areas inundated during a 100-year flood.
- Zone AO – Areas of 100-year shallow flooding (usually sheet flow) where average depths are between one (1) and three (3) feet.
- Zone AH – Areas of 100-year shallow flooding with a constant water-surface elevation where depths are between one (1) and three (3) feet.
- Zone B/C/X – Areas outside the one percent annual chance Floodplain.

Because most local reservoirs are holes in the ground, the risk of flooding due to dam embankment is very low. However, the California Aqueduct and Little Rock Reservoir present some risk of overflow as indicated by FEMA.

In the event of a major earthquake, the Aqueduct might be breached. During such a break, millions of gallons of water could spill north across the western portion of the study area. Failure of the Little Rock Dam would result in the inundation of a large area north of the dam. In 1994 Little Rock dam was improved to meet seismic requirements. The crest was elevated and spillway was raised 12 feet, increasing the dam capacity. The new spillway section was designed to meet a 100-year flood event.

Liquefaction is a phenomenon in which the strength and stiffness of a soil is reduced by earthquake shaking or other events. This phenomenon typically occurs in saturated soils that undergo intense seismic shaking typically associated with an earthquake. The greatest danger from liquefaction occurs in areas where the groundwater table is within 30 feet of ground level, and the soil is poorly consolidated or relatively uncompacted. Potential liquefaction zones are identified on Figure 2-7 in Section 2.0, Earth Resources.



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FEMA Flood Zones

Figure 10.3-2

Floodplain Management

Development occurring in FEMA Flood Zones is required to meet FEMA requirements referenced in the City of Lancaster's Building Code. The Code requires new structures and substantial improvements to structures, be elevated at or above the base flood elevation, or at least at the depth specified in feet on the FIRM. The City Ordinance requires that construction and substantial improvements be constructed to minimize flood damage. Non-residential construction shall be either elevated above the highest adjacent grade, at least as high as the depth number specified in feet on the FIRM, or at least two feet if no depth is specified. These structures will be floodproofed so that below the base flood level the structure is watertight with walls substantially impermeable to the passage of water. It also requires the structure to have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.

REGIONAL PLANS

County of Los Angeles Antelope Valley Master Plan of Drainage

The City of Lancaster adopted the *Master Plan of Drainage*, prepared by Willdan and Associates, in October 1981. In 1984, the County of Los Angeles Department of Public Works prepared the *Antelope Valley Comprehensive Plan of Flood Control and Water Conservation*, which was adopted by the City in October 1985. The County revised the plan in 1987, removing the majority of the retention/detention basins and increasing the size of many of the drainage facilities. Since the 1987 County Plan, the City has combined the Wildan Plan and County plan, to create a City of Lancaster Master Plan of Drainage, discussed below.

Master Plan of Drainage (MPD), Willdan and Associates, 1981. The purpose of the MPD was to identify areas susceptible to flooding and develop alternatives to eliminate and reduce flood hazard and street flooding. Also, the MPD developed an alternative method of financing.

Antelope Valley Master Plan of Drainage, 1985. This study addressed the regional approach to flood control to include both conveyance facilities and detention/ retention basins. This system would conserve storm water and optimize the impact of inundation of the dry lakes at Edwards Air Force Base (AFB). The portion of the study that addresses the City of Lancaster, divides the City into seven planning areas or "study elements": Amargosa, Anaverde, Fairmont, Pearland, Portal Ridge, Little Rock, and Big Rock. It should be noted that most of the planning areas of the Amargosa, Little Rock, and Big Rock study elements are outside the study area.

Antelope Valley Comprehensive Plan, 1987. The *Antelope Valley Comprehensive Plan* was intended to provide mitigation for the regional flood control needs and to reduce the adverse effects of private development projects. This plan was to allow development to proceed in the Antelope Valley in a safe and viable manner as needed drainage facilities are funded, designed and constructed. Furthermore, the plan was to develop a coordinated solution that includes facilities to mitigate the impact of runoff reaching Edwards AFB.

The *Antelope Valley Comprehensive Plan* proposed eight basins, 114 miles of open channels and 73 miles of storm drains in the urbanizing of the valley. The basins are the major element of the plan for flood control.

Summary. As lands are developed, their natural absorption capabilities are reduced and flood waters are redirected. The 1985 Master Plan of Drainage calls for the construction of local retention/detention basins until the regional system can be established. The City of Lancaster Public Works Department estimates that only about five to ten percent of the regional system has been implemented, mostly in the Amargosa Creek watershed. Local flood conveyance facilities are built in conjunction with the planned regional system on an individual, project by project basis. Current City policy requires that new development dedicate lands necessary to complete the regional system. Figure 10.3-3, City of Lancaster Master Plan of Drainage Facilities (2005), shows the City of Lancaster Master Plan of Drainage facilities based on the updated 2005 report.

LAKEBED FORMATION

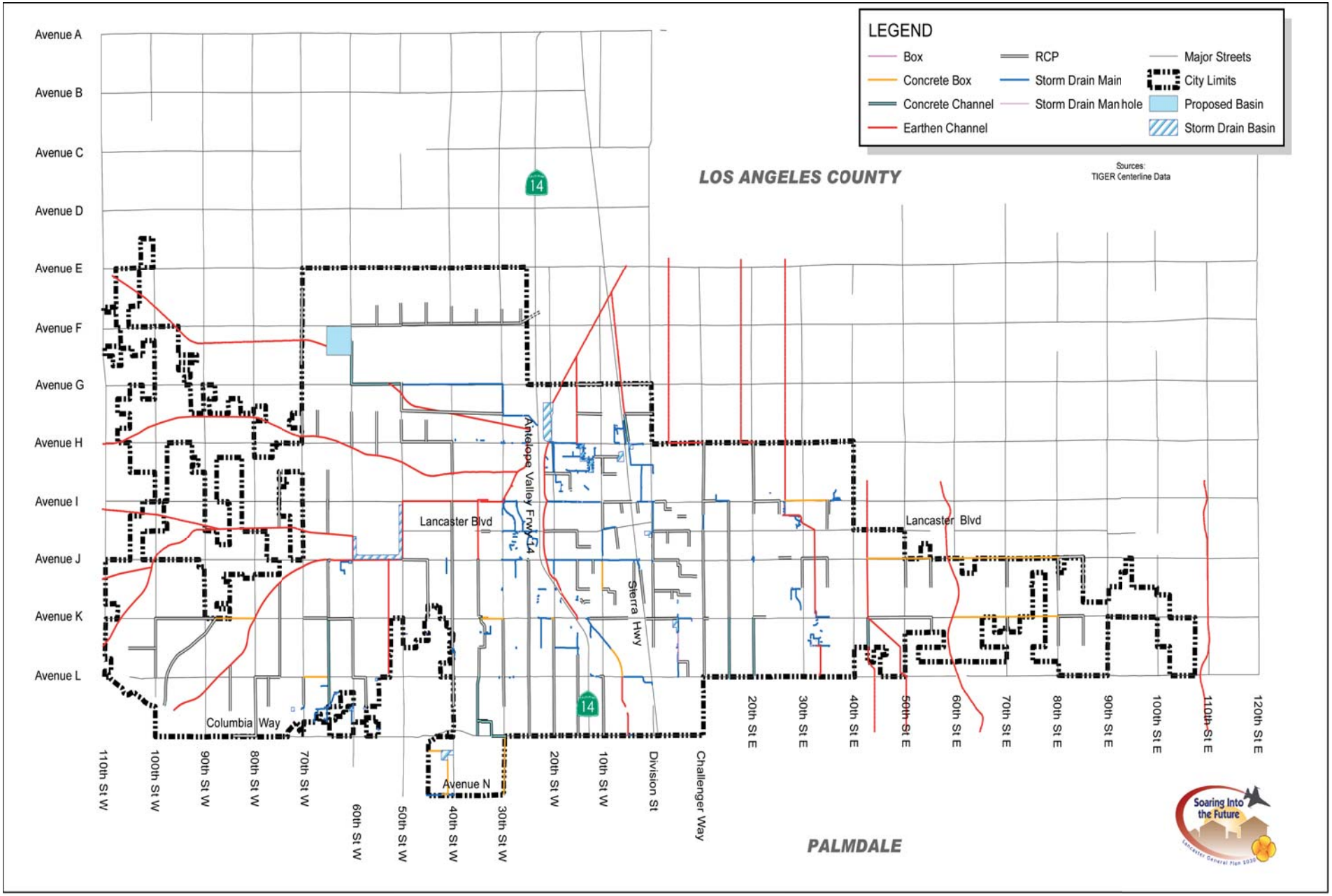
One of the three major goals of the Antelope Valley Master Plan of Drainage is to promote the maintenance of the Rogers and Rosamond dry lake beds as they promote ground water recharge and support unique ecosystems. It is a commonly held belief that replenishment of these dry lake beds, northeast of the City, depend on annual storm flows out of the mountains that carry mud, silt, and clay onto the flat basin, where new material is deposited on the lake beds. While this sequence is generally correct, it is more likely that stormwaters with little or no debris, carrying only a small amount of fine clay particles, liquefy the top layers of the existing lake surface. This, along with the small amount of additional materials, forms a new, flat lake surface through redeposition during evaporation.

Over the centuries, this process has continued to create the "self-sustaining" dry lakebeds observed today. The key to successfully maintaining the health of these lakes is to allow storm flows to continue depositing small layers of clay on an annual basis. Concreting creeks for flood control has been proposed for the area. If this happens it will be critical to establish minimal flows that contain sufficient materials to maintain lake bed formation.

LOCAL PLANS

City of Lancaster Master Plan of Drainage

In 1992 the City adopted its *Master Plan of Drainage* based on the *Antelope Valley Comprehensive Plan*. The current version of the *Master Plan of Drainage* contains updated facilities and drainage fee schedules. The *Master Plan of Drainage* update addresses runoff problems that have occurred due to the construction of facilities within the City of Palmdale. Also the *Master Plan of Drainage* incorporated studies done by private developers/engineers that have been approved by the City. The *Master Plan of Drainage* was completed on a single drainage area within the City of Lancaster. Currently the City of Lancaster has a development fee schedule. City of Lancaster funds all Master Plan of Drainage facilities through the Drainage Impact fees and Drainage Maintenance Fees. As undeveloped lands are covered or paved over, their natural absorption capabilities are reduced and the amount of runoff is increased. Even small amounts of rain in the Lancaster area can cause flooding problems because of the general lack of sufficient improved storm drain facilities.



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City of Lancaster Master Plan of Drainage Facilities (2005)

Figure 10.3-3

For large projects (equal to or greater than 100 lots), the City's *Master Plan of Drainage* calls for the construction of local retention or detention basins until the regional system can be built. New local flood control facilities are presently built on an individual, project by project basis. These projects will need to be designed for the Capital Flood Protection. Los Angeles County defines the Capital Flood as the runoff produced by a 50-year frequency design storm falling on a saturated watershed (soil moisture at field capacity). A 50-year frequency design storm has a one in 50 probability of being equaled or exceeded in any year. Capital Flood protection also requires adding the effects of fires and erosion under certain conditions. Los Angeles County Capital Flood and Urban Design Storms meet the Federal Insurance Agency (FIA) requirements. New developments that fall under the Capital Flood Protection criteria are required to design their plan based on a 50-year storm frequency. As the regional system is built, these basins may be eliminated or converted to detention basins for peak flows only. The lowest finish floor elevation of all habitable structures shall be a minimum of one foot above maximum water level resulting from a Capital Flood.

For smaller projects (less than 100 residential units/lots, regardless of size), streets are considered the primary stormwater conveyance facility. Local streets currently direct much of the storm water flows to the few existing improved storm drain structures. Existing City standards are to maintain a 50-year storm within the right-of-way. The City's *Master Plan of Drainage* calls for containment of 25-year and/or 10-year storm flows within the curbs of the streets.

In portions of the City with no *Master Plan of Drainage* facilities streets act as the primary local flood control program and new houses are usually built two to three feet above street grade. However, some older homes were built at or near street grade, and local flooding presently affects areas with older housing to a greater degree than areas with new housing.

FUNDING

The City currently charges $4,064.76 per single-family dwelling unit or mobile home within a Residential or Multi-Family Zone and $2,023.38 per multi-family dwelling unit within a Multi-Family or Commercial Zone for planned local drainage facilities. Existing facilities are not subject to payment of drainage fees established unless additional dwelling units are constructed on the property. Since 1984, the County has been collecting $2,000 per unit in the surrounding unincorporated areas to fund regional improvements. The County conducts a Deficiency Study every two years to identify needed improvements and maintenance. To help provide for maintenance of drainage facilities, the City formed its own Drainage Benefit Assessment District that new developments are required to be annexed into.

STORMWATER QUALITY

The City of Lancaster lies within the Lahontan Regional Water Quality Control Board (LRWQCB). The RWQCB is responsible for identifying within each region unique features with regards to water quality. Water quality objectives are intended to protect the public health and welfare, and to maintain or enhance water quality in relation to the existing and/or potential beneficial uses of the water. The LRWQCB uses planning, permitting and enforcement authorities to meet this responsibility, and has adopted a Water Quality Control Plan for the Lahontan Region (Basin Plan) to implement plans, policies and provisions for water quality management.

Beneficial Uses

An effective water quality control plan requires determination of the beneficial uses that are to be designated and maintained. Water quality issues in the Lahontan Region are largely related to non-point sources (including erosion from construction, timber harvesting, and livestock grazing), stormwater, and acid drainage from inactive mines, and individual wastewater disposal systems. There are relatively few point source discharges; these include wastewater treatment plants, fish hatcheries, and some geothermal discharges. There are no beneficial uses of surface water identified in the Lancaster region per the Basin Plan.

Nonpoint Source Pollutants

The following is a list of pollutants generally found in storm water runoff:

Sediment. Sediment is made up of tiny soil particles that are washed or blown into surface waters. It is the major pollutant by volume in surface water. Suspended soil particles can cause the water to look cloudy or turbid. The fine sediment particles also act as a vehicle to transport other pollutants including nutrients, trace metals, and hydrocarbons. Construction sites are the largest source of sediment for urban areas under development. Another major source of sediment is streambank erosion, which may be accelerated by increases in peak rates and volumes of runoff due to urbanization.

Nutrients. Nutrients are a major concern for surface water quality, especially phosphorous and nitrogen, which can cause algal blooms and excessive vegetative growth. Of the two, phosphorus is usually the limiting nutrient that controls the growth of algae in lakes. The orthophosphorous form of phosphorus is readily available for plant growth. The ammonium form of nitrogen can also have severe effects on surface water quality. The ammonium is converted to nitrate and nitrite forms of nitrogen in a process called nitrification. This process consumes large amounts of oxygen, which can impair the dissolved oxygen levels in water. The nitrate form of nitrogen is very soluble and is found naturally at low levels in water. When nitrogen fertilizer is applied to lawns or other areas in excess of plant needs, nitrates can leach below the root zone, eventually reaching ground water. Orthophosphate from auto emissions also contributes phosphorus in areas with heavy automobile traffic. As a general rule of thumb, nutrient export is greatest from development sites with the most impervious areas. Other problems resulting from excess nutrients are 1) surface algal scums, 2) water discolorations, 3) odors, 4) toxic releases, and 5) overgrowth of plants. Common measures for nutrients are total nitrogen, organic nitrogen, total Kjeldahl nitrogen (TKN), nitrate, ammonia, total phosphate, and total organic carbon (TOC).

Trace Metals. Trace metals are primarily a concern because of their toxic effects on aquatic life, and their potential to contaminate drinking water supplies. The most common trace metals found in urban runoff are lead, zinc, and copper. Fallout from automobile emissions is also a major source of lead in urban areas. A large fraction of the trace metals in urban runoff are attached to sediment and this effectively reduces the level, which is immediately available for biological uptake and subsequent bioaccumulation. Metals associated with the sediment settle out rapidly and accumulate in the soils. Also, urban runoff events typically occur over a shorter duration, which reduces the amount of exposure, which could be toxic to the aquatic environment. The toxicity of trace metals in runoff varies with the hardness of the receiving water. As total hardness of the water increases, the threshold concentration levels for adverse effects increases.

Oxygen-Demanding Substances. Aquatic life is dependent on the dissolved oxygen in the water and when organic matter is consumed by microorganisms then dissolved oxygen is consumed in the process. A rainfall event can deposit large quantities of oxygen demanding substance in lakes and streams. The biochemical oxygen demand of typical urban runoff is on the same order of magnitude as the effluent from an effective secondary wastewater treatment plant. A problem from low DO results when the rate of oxygen-demanding material exceeds the rate of replenishment. Oxygen demand is estimated by direct measure of DO and indirect measures such as biochemical oxygen demand (BOD), chemical oxygen demand (COD), oils and greases, and total organic carbon (TOC).

Bacteria. Bacteria levels in undiluted urban runoff exceed public health standards for water contact recreation almost without exception. Studies have found that total coliform counts exceeded EPA water quality criteria at almost every site and almost every time it rained. The coliform bacteria that are detected may not be a health risk in themselves, but are often associated with human pathogens.

Oil and Grease. Oil and grease contain a wide variety of hydrocarbons some of which could be toxic to aquatic life in low concentrations. These materials initially float on water and create the familiar rainbow-colored film. Hydrocarbons have a strong affinity for sediment and quickly become absorbed to it. The major source of hydrocarbons in urban runoff is through leakage of crankcase oil and other lubricating agents from automobiles. Hydrocarbon levels are highest in the runoff from parking lots, roads, and service stations. Residential land uses generate less hydrocarbons export, although illegal disposal of waste oil into storm waters can be a local problem.

Other Toxic Chemicals. Priority pollutants are generally related to hazardous wastes or toxic chemicals and can be sometimes detected in storm water. Priority pollutant scans have been conducted in previous studies of urban runoff, which evaluated the presence of over 120 toxic chemicals and compounds. The scans rarely revealed toxins that exceeded the current safety criteria. The urban runoff scans were primarily conducted in suburban areas not expected to have many sources of toxic pollutants (with the possible exception of illegally disposed or applied household hazardous wastes). Measures of priority pollutants in storm water include: 1) phthalate (plasticizer compound); 2) phenols and creosols (wood preservatives); 3) pesticides and herbicides; 4) oils and greases; and 5) metals.

WATER QUALITY REQUIREMENTS

The City of Lancaster Engineering Design Guidelines requires:

- Coverage under the National Pollution Discharge Elimination System (NPDES) General Permit be obtained from the California State Water Resources Control Board for a site development of one acre or greater in area.

- Applicants prepare and submit a Notice of Intent (NOI) to comply with the Construction General Permit to the California State Water Resources Control Board.

- All dischargers prepare, retain at the Construction site, and implement a Storm Water Pollution Prevention Plan (SWPPP). This report shall conform to the NPDES permit requirements.

- Clarifiers for all non-residential projects to treat the first flush.

POST-CONSTRUCTION SOURCE CONTROL BMPS

Examples of source control BMPs for stormwater problems include control of air pollutants, enforcement of anti-litter ordinances, educational programs (to limit fertilizer and pesticide use by home gardeners and dumping of waste motor oil in storm drains), street and storm drain maintenance practices, spill prevention and cleanup, and BMPs for erosion control.

POST-CONSTRUCTION TREATMENT CONTROLS

Examples of treatment control BMPs for stormwater include infiltration, wet ponds, extended detention basins, biofilters (such as grassy swales), media filtration (e.g., a settling basin followed by a sand filter), oil/water separators, and constructed wetlands. Because of differences in efficiency among BMPs, combinations of different methods often provide the best treatment.

CONSTRUCTION

The USEPA's guidance for the issuance of stormwater NPDES permits (USEPA 1993) treats construction projects as a subset of industrial discharges. The State Board treats industrial and construction discharges separately, and has issued a statewide construction NPDES permit. The permit applies to construction projects resulting in land disturbance of one acre or greater; the area requirement affects both one-time disturbances and phased projects that cumulatively disturb more than one acre. (A court decision may result in application of the NPDES program to smaller projects, but guidance is not yet available). The permit does not apply to routine or emergency maintenance work sponsored by public agencies, to dredging and/or filling permitted by the U.S. Army Corps of Engineers, or to projects on Indian lands or within the Lake Tahoe Basin. Project proponents are required to:

- Prepare a Stormwater Pollution Prevention Plan (SWPPP) before construction begins;
- File a Notice of Intent (NOI) with the State Board before construction begins; and
- File a Notice of Termination with the State Board once construction is complete.

These requirements are summarized as follows:

Notice of Intent. The NOI certifies that the applicant will comply with conditions in the statewide general NPDES permit. It is not a permit application and does not require approval, although an annual fee must be submitted with it.

Stormwater Pollution Prevention Plan. The SWPPP is directed toward construction staff; it describes erosion and runoff control measures to be used during and after construction, and a plan to inspect and maintain these control measures. The SWPPP may be revised during construction in response to changed conditions, or if the properly installed BMPs are ineffective in preventing sediment transport off the site. Revisions to the SWPPP are also required if there are changes in activities which could result in a significant amount of pollutants discharged in stormwater.

Notice of Termination. The State Board must be notified (via a Notice of Termination form) once construction is complete. It must also be notified if a change of ownership occurs during construction. In this case, a revised NOI must be submitted, and the SWPPP must be revised by the new owner to reflect any changes in construction conditions.

The general construction permit requires that the project owner arrange for maintenance of drainage/stormwater control facilities after project completion; maintenance may be done by private parties or by a public agency such as a community service district. Municipalities may require maintenance agreements. Construction project proponents may request to be placed under individual NPDES permits rather than the general permit. The Regional Board may issue individual stormwater NPDES permits to construction projects when more stringent controls are necessary to protect water quality. As noted above, individual construction projects may also be regulated under a municipality's NPDES management program.

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City of Lancaster, personal communication, Steve Dassler, City Engineer, Department of Public Works, Engineering Division, January 08, 2007.

Federal Emergency Management Association, Flood Insurance Rate Maps (FIRMs), Community Panel Number 060672.

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10.4 SOLID WASTE GENERATION, COLLECTION, AND DISPOSAL

INTRODUCTION

This section analyzes the solid waste generation, collection, and disposal services for the City of Lancaster. The intent is to evaluate the existing facilities and methods for solid waste in Lancaster, which includes a brief discussion of regional facilities.

WASTE GENERATION

Municipal Solid Waste (MSW) generation within the Lancaster area increased steadily between 1990 and 2003. MSW generation in the Antelope Valley for 2003 was approximately 362,140 tons, which represents an approximately 135 percent increase in MSW from 1990 (approximately 154,375 tons). This increase in MSW production is attributed to the housing market and increased economic activity in the Lancaster area. MSW generation in the Antelope Valley for 2004 was approximately 397,702 tons, which represents an approximately 9.8 percent increase in MSE from 2003.

Imported MSW to Lancaster and Antelope Valley (Palmdale) landfills in the Antelope Valley from non-Antelope Valley origins was 318,348 tons for 2003 and 382,311 tons for 2004.

COLLECTION

In July 1991, the Lancaster City Council approved a trash franchise agreement with Waste Management of Lancaster and Antelope Valley Rubbish. Through this agreement, Waste Management of Lancaster received the right to serve residents north of Avenue L, while Antelope Valley Rubbish received rights to serve residents south of Avenue L. The drive for the agreement came as part of the City's effort to meet the Integrated Waste Management Act of 1989 (AB 939), which required cities to reduce trash by 25 percent by 1995 and 50 percent by 2000. In an effort to meet these requirements, the agreement also allowed the City to impose an official tax lien against residents who refuse to pay for trash collection service. In April 1999, Waste Management of Lancaster acquired Antelope Valley Rubbish and the merger was approved by Resolution 99-85. Waste Management of Antelope Valley was formed, and is currently the sole franchise private hauler serving the incorporated areas for waste collection.

Waste Management of Antelope Valley (Waste Management) is located at 1200 City Ranch Road in Palmdale and provides all solid waste collection and disposal services to the City of Lancaster. Residential, commercial and industrial trash collection in the Cities of Lancaster and Palmdale and unincorporated areas of Los Angeles County is currently hauled to the Antelope Valley Landfill or Lancaster Landfill. Waste Management has a service area of 120 square miles, from 110th Street West to 110th Street East, north of Avenue M. According to Waste Management, they collect an average of approximately 2,800 tons of waste per day, which is deposited between the two local landfills.

DISPOSAL

Landfills in Los Angeles County are categorized by three classes, which represent their use. Class I landfills are hazardous waste only landfills. Class II are considered waste management

units (class II Units) and accept specified hazardous waste and non-hazardous waste. These units are located where site characteristics and containment structures isolate waste from waters of the State of California. Class III landfills dispose of non-hazardous waste. These landfills are located in areas that provide adequate separation between non-hazardous solid waste and waters of the State.

Local Landfills

Two landfill sites are located in the Antelope Valley: the Lancaster Landfill and the Antelope Valley Landfill.

LANCASTER LANDFILL

The Lancaster Landfill and Recycling Center is privately owned and operated by Waste Management of Antelope Valley. The landfill is designated as a Class III landfill facility. It is located within the unincorporated territory of Los Angeles County on 276 acres of land, with a 209-acre disposal site at 600 East Avenue F, near 10th Street East, approximately one mile north of the Lancaster City limits. Operations occur Monday through Saturday. The facility offers waste disposal and recycling services, and accepts agricultural, non-friable asbestos, construction/demolition, contaminated soil, green materials, industrial, inert, mixed municipal, sludge, and tire wastes. The facility has a green-waste recycling program in place. In 1998 the facility was expanded by 185 acres. This included a 125-acre expansion in the eastern portion of the landfill and a 60-acre expansion in the west. The remaining permitted capacity in June of 2001 was approximately 22,645,000 cubic yards (cy), which was reduced to 17,860,810 cy as of November 2005. The Lancaster Landfill's maximum permitted daily capacity is 1,700 tons per day (tpd). The landfill is anticipated to serve the existing and future population for the next 16 to 18 years assuming completion of an ongoing expansion to increase the daily permitted disposal limit to 3,000 tons by late 2007.

ANTELOPE VALLEY LANDFILL

Waste Management owns and operates the Antelope Valley Recycling and Disposal Facility, which is located at 1200 West City Ranch Road in Palmdale. This Class III landfill consists of two fully permitted landfills, Landfill I (LF I) and Landfill II (LF II). Presently, both LF I and LF II are permitted to operate Monday through Saturday. LF I is 72 acres in size, with a 57-acre active disposal area and LF II is a 108-acre facility with a 57-acre disposal area. These two landfills are currently separated by 11.0 acres of unused property. Materials accepted by the landfill include municipal solid wastes, appliances, tires, clean dirt, concrete, woodwaste, and greenwaste. Hazardous materials are not accepted.

The maximum permitted capacity for Antelope Valley LF I is approximately 7,400,000 cy. The maximum permitted daily capacity of LF I is 1,400 tpd. In November 2003, the estimated remaining capacity was approximately 2,000,000 cy (27 percent) and as of February 2006, the estimated remaining capacity is 1.1 million cy (15 percent).

LF II is slightly larger than LF I, with a total permitted capacity of 9.2 million cy. LF II has a daily permitted capacity of approximately 1,800 tpd. LF II's total remaining capacity is equal to that of its permitted capacity (9.2 million cy), as it is a new facility. The Antelope Valley Landfill has received between 1,100 and 1,400 tpd over the past three years. This daily waste flow is anticipated to increase due to regional needs and continued growth in the Antelope Valley.

Plans to join the two landfills into one area are expected to occur during 2007. The 11-acre expansion is anticipated to extend the facility's operations past the year 2025.

Landfill expansions are subject to review and approval by the following agencies:

- Los Angeles County Department of Regional Planning (Lancaster Landfill and Recycling Center);
- Los Angeles County Planning Commission (Lancaster Landfill and Recycling Center);
- Los Angeles County Department of Public Works (Lancaster Landfill and Recycling Center);
- California Department of Health Services;
- City of Palmdale (Antelope Valley Recycling and Disposal Facility); and
- Antelope Valley Air Quality Management District.

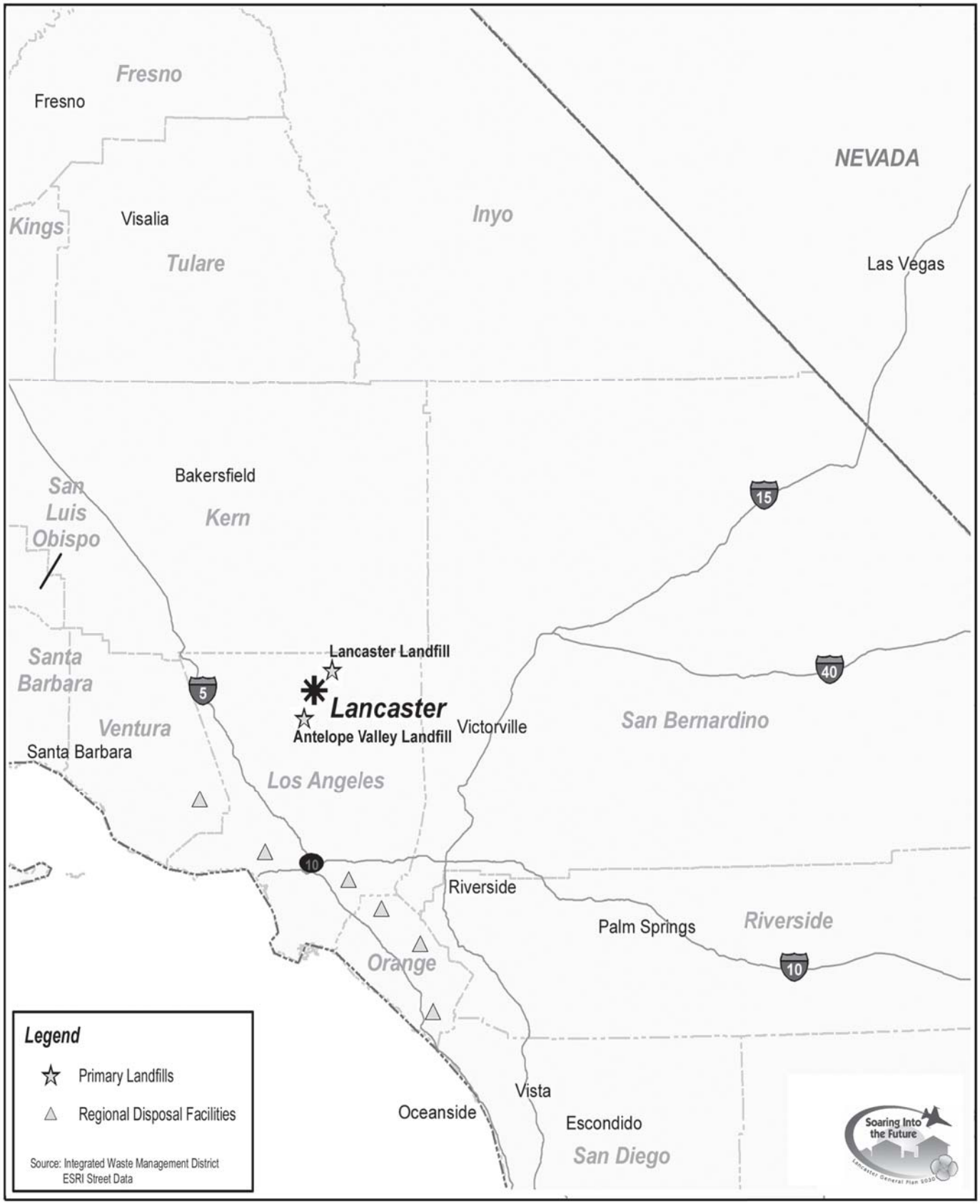
Antelope Valley Environmental Collection Center. The Antelope Valley Environmental Collection Center (AVECC) recently opened a permanent facility at the Antelope Valley Landfill in Palmdale. The AVECC is in a joint partnership with the Cities of Lancaster and Palmdale, the California Integrated Waste Management Board (IWMB), County of Los Angeles, Supervisor Antonovich's office, and Waste Management Inc. The AVECC provides a method for residents in the Antelope Valley to drop-off their Household Hazardous Waste (HHW) and electronic waste (E-waste) without charge.

Regional Landfills

At this time, nearly 100 percent of Lancaster's solid waste is taken to the Lancaster and Antelope Valley landfills; however, other regional landfills in Los Angles County and the counties of Kern, Ventura, and Orange also accept solid waste from the City. Many landfills have restriction where solid waste can originate from; therefore, not all regional landfills may be able to accept solid waste from Los Angeles County.

Figure 10.4-1, Regional Disposal Facilities, illustrates major county landfills that accept waste from the City of Lancaster. The landfills are classified as major Class III landfills, which are permitted to accept only non-hazardous waste.

Landfills operate in a free-enterprise system. Their operating expenses and profits are obtained by collecting disposal fees from the haulers on a per ton basis. The capacities of the landfills are regulated by the amount of solid waste that each particular facility is permitted to collect per day and by their total capacity. Los Angeles County's landfills have adequate capacity to service the existing population and planned growth until 2020. After that time, the daily volume of solid waste generated would exceed the volumes that the landfills are permitted to accept unless new landfills or other disposal alternatives are approved. Table 10.4-1, Regional Facility Capacities, provides a list of facilities, recent remaining capacities and estimated cease operation dates. Solid waste landfills that previously served the area and have reached capacity and are currently in a "closing" status include: Lopez Canyon Sanitary Landfill, BKK Sanitary Landfill, and Spadra Sanitary Landfill #2 located in Los Angeles County.



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Lancaster General Plan 2030

Regional Disposal Facillities

Figure 10.4-1

Table 10.4-1
Regional Facility Capacities

Landfill (County)	Regulatory/ Operational Status	Remaining Capacity (cy) (Date)	Estimated Cease Operation Year
Frank R. Bowerman Sanitary Landfill (Orange)	Permitted/Active	63,019,060 cy (2000)	2022
Olinda Alpha Sanitary Landfill (Orange)	Permitted/Active	38,578,383 cy (2000)	2013
Prima Deshecha Sanitary Landfill (Orange)	Permitted/Active	87,384,799 cy (2004)	2067
Simi Valley Landfill-Recycling Center (Ventura)	Permitted/Active	23,201,173 cy (2005)	2022[1]
Puente Hills Landfill #6 (Los Angeles)	Permitted/Active	55,711,200 (2005)	2013
Bradley Landfill West Extension (Los Angeles)	Permitted/Active	4,725,968 (2002)	2007

Sources: Solid Waste Information System (SWIS), http://www.ciwmb.ca.gov/SWIS/Search.asp, accessed September 2006. Integrated Waste Management Board, Jurisdiction Profile for City of Lancaster, http://www.ciwmb.ca.gov/profiles/Juris/JurProfile2.asp?RG=C&JURID=250&JUR=Lancaster, accessed in December 2006.

cy = Cubic yards.

[1] California Integrated Waste Management Board, personal communication, Cathleen Oliver, Facility/Site Summary Details, December 12, 2006.

In 2000, 18,550 tons of MSW received at Lancaster Landfill and 42,625 tons of MSW received at Antelope Valley Landfill originated from unincorporated areas of Los Angeles County within the Antelope Valley. In that same year, the City of Palmdale contributed a total of 21,247 tons of MSW to the Lancaster Landfill. In 2005, 9,574 tons of MSW from commercial haulers and 2,987 tons of MSW from self-haulers received at the Lancaster landfill and 81,832 tons of MSW from commercial haulers and 5,659 tons of MSW from self-haulers received at the Antelope Valley Landfill, originated from unincorporated portions of Los Angeles County within the Antelope Valley. Also in 2005, the City of Palmdale contributed a total of 3,730 tons of MSW to the Lancaster Landfill.

The Lancaster and Antelope Valley landfills also received imported MSW from other areas. The total MSW tons imported to the Lancaster Landfill from non-Antelope Valley origins for years 2000, 2003, 2004 and 2005 were 4,955, 187,343, 262,608 and 317,851, respectively. The total MSW tons imported to the Antelope Valley Landfill from non-Antelope Valley origins for these same years was 16,208, 131,005, 119,703 and 123,955.

Solid Waste Disposal Methods

Source reduction is the first and most important step toward addressing waste disposal. The Integrated Waste Management Act of 1989 (AB 939), first addressed the abuse of landfills by requiring cities to divert their solid waste by 2000. Since that time, jurisdictions have made strides to further reduce and properly treat waste through collection services, proper handling access, and education.

Disposal is still necessary and is possible through various methods. Although it is extremely speculative to identify specific options that will be implemented to dispose of solid waste years from now, discussions include the expansion of existing landfills, developing new landfills locally, transferring solid waste out of the County or State by truck or rail car, and incineration

within co-generation plants locally and regionally. Solid waste is subject to the Law of Conservation, which states that matter may change form but it cannot be created or destroyed, therefore, management of future solid waste disposal is a concern regarding where and how solid waste will be handled, and how much it will cost to do so. At this time, solid waste disposal is largely an open market, regulated by various government controls.

It is unlikely that all existing landfill space will reach capacity and that no new landfill space will be made available. The existing population continues to generate solid waste and it must be disposed of or serious health problems (i.e. disease) would result. This would force State and local agencies to address the problem and it is likely that the State would intervene and implement new landfilling and/or other disposal options, which may reflect similar characteristics to AB 939. If the problem persisted, the transfer of solid waste out of the County or even out of the State could be an option, although some government agency landfills are restricted to accept solid waste from limited geographical areas. This limits inter-county or inter-state transfer. The U.S. Supreme Court has held that restrictions, which limit inter-jurisdictional transfers to landfills willing to accept solid waste, infringe on the landfill operator's ability to actively participate in interstate commerce and are unconstitutional.

However, the transfer of solid waste would not solve the comprehensive problem associated with solid waste and its disposal. As a more proactive approach, Los Angeles County's Public Works Department is developing new strategies to reduce and accommodate for regional waste, including hazardous waste. The Los Angeles County Public Works, Environmental Programs Division and, more specifically, the AVECC create and implement plans and programs for recycling, collection, and waste reduction. The AVECC collects and disposes of, or recycles household hazardous and electronic waste (e-waste), tires, oil, and cell phones. Standard recycling facilities are located in communities throughout the County. Programs provide information and workshops that educate the public on yard waste recycling. Education ranges from alternative household products to youth education. The Los Angeles County Online Materials Exchange (LACoMAX) is one of the most recent free service programs established by the Los Angeles County Department of Public Works, Environmental Programs Division. The primary goal of LACoMAX is to conserve landfill space by helping businesses, organizations, and institutions find alternatives to the disposal of valuable materials, which are presently discarded as waste. By using LACoMAX, Los Angeles County businesses and communities benefit in the following ways:

- Dwindling landfill space is conserved as materials are diverted from disposal for reuse or recycling;
- Schools and nonprofit organizations receive desperately needed materials at little or no cost;
- Disposal costs are reduced for generators of discarded materials;
- Economic development is promoted as discarded materials are used as feedstock at low or no cost; and
- Virgin raw materials (and the energy to process them) are conserved.

Incineration. Although not presently occurring in Los Angeles County, solid waste incineration is a disposal option used in other areas. Incineration facilities may provide a dual function of

disposing of solid waste and generating regional power supplies. If local landfills are not expanded or developed and solid waste is hauled to distant locations, incineration facilities may also become an economically attractive means of disposing of solid waste.

Cogeneration. Cogeneration is an efficient energy management technology whereby one fuel source is used to generate electricity while the by-product of this process simultaneously produces usable heat. The term "cogeneration" generally refers to two different energy processes. The first application is the "cascading" of energy use, typically by substituting natural gas for electricity. In this application, natural gas or some other type of combustive fuel is used to power an electrical generator. The waste heat, which would normally be lost, is recovered and used for some other purpose (heating a pool, baking some product, electricity to power equipment, etc.). While this system requires sophisticated electrical switching equipment and a purchase agreement with the local serving agency, it is a definite way for some organizations, most often large commercial, industrial, or service agencies, to efficiently use energy. At present, there are no major organizations that make use of this type of cogeneration within the City.

The second use of this term is a waste-to-energy process typically proposed at sanitary landfills. In this application, methane that is generated within a landfill by the decomposition of biodegradable materials, which would normally escape undetected, is collected and burned to produce electricity and sometimes waste heat (similar to the first application). None of the local landfills currently utilize this energy process.

Materials Recovery Facilities (MRFs). A Materials Recovery Facility (MRF) processes recyclables and prepares them for market. All MRF have specifications on accepted materials, fees and/or compensation. MRFs may include, but are not limited to the following operations:

- Standard recyclables handling and recovery facilities;
- Organic waste processing facilities;
- Construction and demolition debris processing facilities;
- Waste tire handling and recovery facilities; and
- Electronics handling and recovery facilities.

Facilities, similar to solid waste disposal sites, must attain operational permits and are subject to inspections and reporting requirements. Currently, there are no MRFs serving Lancaster, recyclable materials are collected and deposited by local collectors through Los Angeles County.

PLANS AND POLICIES FOR SOLID WASTE

Regional Waste Planning

The County of Los Angeles is responsible for regional waste management and planning. The California State Solid Waste and Resource Recovery Act of 1972, as amended, required each county to prepare a comprehensive waste management plan. In 1986, AB 2948 (Tanner) was passed by the State legislature, which required counties to prepare a plan that specifically addressed hazardous wastes. The County's Solid Waste Management Plan is designed to work in conjunction with the County's Hazardous Waste Management Plan to provide guidelines and a set criteria for all future landfill and waste management support facilities. These plans do not specifically identify future landfill sites, but the Hazardous Waste Management Plan does

identify "General Areas Potentially Suitable for Off-site Hazardous Waste Management Facilities." However, the City of Lancaster has adopted Ordinance 560, which uses the Los Angeles County Hazardous Waste Management Plan as a base, but establishes more stringent criteria.

Both of the County's Waste Management Plans identify planning and set criteria for disposal and other types of waste management facilities. At present, no specific additional disposal sites for solid waste within the Lancaster study area or within the Los Angeles County portion of the Antelope Valley have been locally identified or studied.

Integrated Waste Management Act

The Integrated Waste Management Act of 1989 (AB 939) required cities and counties to recycle 25 percent of their wastes by 1995 and 50 percent by 2000. If the 50 percent goal was not met by the end of year 2000, the jurisdiction would be required to submit a petition for a goal extension to the California Integrated Waste Management Board (CIWMB).

In response to AB 939, Lancaster prepared and adopted a Source Reduction and Recycling Element (SRRE) on August 3, 1992. The intent of the SRRE was to establish goals and policies for the City regarding source reduction, recycling and composting and environmentally safe solid waste management alternatives to land disposal. These reduction goals include the following:

- To reduce at the source the volume of materials and packaging entering the wastestream by reducing the use of non-recyclable materials and excessive packaging;
- To increase the amount of recyclable materials in products and packaging and promoting more efficient use of paper, cardboard, glass, metal and other materials;
- To change patterns of consumption that produce unnecessary generation of waste by encouraging the replacement of disposable products with reusable products; and
- To reduce green waste through on-site composting.

In 1995, Lancaster generated 127,000 tons of solid waste. Of this, 33 percent of the total waste stream was diverted from the landfill. In 2000, the City's approved diversion rate was 52 percent, which exceeded the 50 percent requirement established by AB 939. Preliminary diversion rates for 2001, 2002, 2003 and 2004 are 48 percent, 41 percent, 40 percent and 36 percent, respectively. These rates are preliminary and have not been approved by the CIWMB.

On January 1, 1997 all legal and financial obligations for AB 939 compliance became the responsibility of the waste hauler. All educational and recycling related services are now handled by private companies. Currently, neither the CIWMB nor the State Legislature have introduced new legislation to set diversion requirements beyond 2000.

Lancaster's *Municipal Code* Section 13.16.120, *Recycling Waste Reduction Program*, establishes the provision of recycling programs by the City. "The city shall provide through contractual provisions for recycling programs which have been recognized by city council as exemplary public policy and are necessary to be implemented by the laws established by the State of California. All contractors shall comply with existing state or local mandates for

reduction of waste stream and promoting recycling per specific provisions of the contract". In conjunction with solid waste haulers, the City has implemented curbside recyclable and greenwaste collection programs to divert solid waste from landfills. In addition, Waste Management processes tree and landscape trimmings for use in public projects and local parks. Currently, there are no organized recovery programs at the local landfills, such as scrap metal or automobile tires, although private users periodically recover some resources.

Household Hazardous Waste Element. The City of Lancaster prepared a Household Hazardous Waste Element (HHWE) in response to AB 939. The City's HHWE is identical to the County's element. Both the City and Countywide household hazardous waste management programs consist of collection and public education/information services and have been formulated to serve residents in the City of Lancaster and throughout the unincorporated areas of the County in a convenient and cost-effective manner. In addition to reducing the amount of waste that might otherwise be sent to a landfill as required by AB 939, these programs are important facets in the City and County's effort to clean up the solid waste stream.

Non-Disposal Facility Element. AB 939 requires every city and county within the State to prepare and adopt a Non-disposal Facility Element (NDFE) identifying all existing, expansions of existing, and proposed new non-disposal facilities which will be needed to implement the local jurisdiction's SRRE. In an effort to maintain proper solid waste management, the City of Lancaster has prepared a NDFE that parallels the County's NDFE. The County's NDFE identifies 20 existing materials recovery facilities/transfer stations, and nine proposed material recovery facilities as non-disposal facilities that the County intends to utilize to implement its SRRE and meet the diversion requirements of AB 939. In addition, the County's NDFE also identifies the utilization of four landfill facilities, operated by the County Sanitation Districts of Los Angeles County, for diversion of yard/green waste which is intended to be used as alternative daily cover at the landfills.

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10.5 ENERGY

This section identifies the existing agencies that provide electricity and natural gas service to the City of Lancaster. Where applicable, location and the respective capacities of these systems is discussed. Additionally, generation, demand and future improvements are described along with regional conservation programs and demand reduction strategies.

ELECTRIC

Southern California Edison (SCE) is the primary electricity service provider to the City of Lancaster and the General Plan study area. A variety of sources provide electricity to SCE, including natural gas, nuclear and hydroelectric plants throughout the western states. Service is not bound by jurisdictional boundaries as SCE distributes power to a 50,000 square mile service area and a population of 12 million people through 4.6 million business and residential accounts. Generation facilities provide power through conventional methods; however, approximately 17 percent is supplied by alternative and renewable energy from a variety of resources.[1]

Energy Transmission Facilities

SCE currently maintains several regional electrical transmission lines in the western portion of the Lancaster study area. There are two transmission lines located in the southwest portion of the City, which range from approximately 220kV (kilovolts) to 500 kV. Other lines existing throughout the study area are approximately 66 kV or less.

Two known corridors exist within the study area. The first corridor parallels 110th Street West to south of Avenue G, and then proceeds in a southerly direction toward the Los Angeles area. The second corridor parallels the first corridor until south of Avenue J where it proceeds south to Avenue K and then splits into three lines serving the southwest portion of the study area and beyond. The 220kV and 500kV lines are located in a right-of-way, which varies in width from 330 feet to 505 feet.

SCE operates one regional substation in Lancaster. Regional substations are generally large facilities that provide service for several jurisdictions and are located throughout the southern California region for this purpose.

Power is initially delivered from the California grid to transformers in the Antelope Valley, where the voltage is then reduced and transmitted to seven distribution or neighborhood substations throughout the area through high voltage (66 kV) electrical lines. The following neighborhood substations serve the City of Lancaster and the surrounding area of unincorporated Los Angeles County and the City of Palmdale:

- Avenue E and 90th Street East (Redman Substation);
- Avenue J and 90th Street East (Piute Substation);
- 20th Street East and Avenue M (Oasis Substation);
- Jackman Avenue and Fern Avenue (Lancaster Substation);
- Avenue M-4 and 20th Street West (Shuttle Substation);

[1] 17 percent is representative for the entire SCE service area and does not reflect Lancaster specifically.

- Avenue L and 55th Street West (Quartz Hill Substation); and
- Avenue H and 90th Street West (Del Sur Substation).

At each of the neighborhood substations the voltage is once again stepped down, and finally distributed to users. As of December 31, 2005, there are approximately 465 miles of transmission and distribution facilities within the City of Lancaster. Electrical lines increased by 11 miles in 2004 and 12 miles in 2005. The total existing lines include overhead and underground electrical lines located in the streets and alleyways throughout the City. Distribution lines under 60 kV may be placed underground.

Electrical Use[2]

Energy consumption for the City of Lancaster is calculated based on demand. Demand measurements are taken from consumer's meters. SCE retains energy consumption data through Rate Groups. Rate Groups are a group of consumers that fit into a particular category based upon their service needs. Depending on the category, these Rate Groups may or may not have meters which track energy consumption and allow SCE to quantify usage for that group. All Rate Groups in Lancaster are listed below. Those Rate Groups without specific energy consumption data are provided first, followed by Rate Groups with meters and associated consumption data.

The following descriptions are for demand measured rate groups without demand data include:

- Domestic (Domestic Service). Includes all residential single-family service (lighting, heating, cooking, and power) and domestic farm service when supplied through the farm operator's domestic meter.

- GS-1 (General Service Non-Demand). Includes single- and three-phase general service (lighting and power) except for customers whose monthly maximum demand is expected to exceed 20 kW or has exceeded 20 kW in any three months during the preceding 12 months).

- TC-1 (Traffic Control Service). Includes single- and three-phase service for traffic directional signs or traffic signal systems located on streets, highways, other public thoroughfares, railway crossing and track signals, 24 hour public thoroughfare lighting that is not controlled by switching equipment (tunnel or underpass lighting), and most bus stop shelters.

- Street Lighting. Includes service for the lighting of streets, highways, and publicly-owned and publicly operated automobile parking lots which are open to the general public where SCE owns and maintains the street lighting equipment and associated facilities included under this schedule.

Rate groups with meters include the following:

- TOU-GS (Time-Of-Use - General Service - Demand Metered). The TOU-GS rate is a time-of-use option available to all single- and three-phase general service (lighting and

[2] This information was provided by SCE who has made every effort to provide accurate information while upholding their legal responsibility of maintaining individual customer confidentiality.

power) customers. A customer whose monthly maximum demand is expected to exceed 500 kW or has exceeded 500 kW for any three months during the preceding 12 months is ineligible for service under this schedule.

- GS-2 (General Service - Demand). Includes single- and three-phase service (lighting and power). A customer whose monthly maximum demand is expected to exceed 500 kW or has exceeded 500 kW for any three months during the preceding 12 months is ineligible for service under this schedule.

- AG TOU (Time-Of-Use Agricultural and Pumping - Demand Metered). Includes accounts where 70 percent or more of the customer's electrical usage is for water pumping used for agricultural purposes. A customer whose monthly maximum demand is expected to exceed 500 kW or has exceeded 500 kW for any three months during the preceding 12 months is ineligible for service under this schedule.

Rate Group demands were used to estimate the City's total energy demand. Table 10.5-1, Estimated Annual Energy Consumption, is based on 12 months usage data ending September 2006 for SCE service accounts within the county's boundaries and extracted from SCE's Customer Service System based on the Public Authority Code for the City of Lancaster.

Table 10.5-1
Estimated Annual Energy Consumption

Rate Group	Annual kWh
AG TOU	15,589,333
Domestic	321,633,844
GS-1	43,578,357
GS-2	217,755,917
TC-1	476,078
TOU-GS	67,003,754
Street Lighting	24,554,462
Grand Total:	690,591,745

Source: Southern California Edison, *Electricity Use Report for City of Lancaster*, November 14, 2006.
Note: Consumption estimates are provided by SCE for informational purposes only.

Annual energy consumption, for the City of Lancaster has increased from approximately 526.7 million kWh hours per year in 1995 to approximately 690.6 million kWh hours per year in 2006. This growth represents a total of approximately 31 percent over nearly 11 years, or an annual growth rate of approximately 2.8 percent.[3] During this time Lancaster's population was growing at an annual rate of 2.2 to 2.8 percent.[4]

Future loads and energy consumption varies for a variety of reasons, including changes in energy usage, demand levels (reflective of new development and population growth), and weather patterns. For this reason, SCE does not predict future energy usage and loads within city boundaries.

Electricity Supply and Reliability

In 2005, the California Energy Commission and the California Public Utilities Commission adopted the Energy Action Plan (EAP) II, which expanded on the EAP adopted in 2003. The EAP II identifies key action areas including demand response, electricity adequacy, reliability and infrastructure, and natural gas supply, demand, and infrastructure. Key actions are identified to achieve energy goals established by the State.

The EAP II notes that California is in the process of transforming its electric utility distribution network from a system using 1960s era technology to an intelligent, integrated network enabled by modern information and control system technologies. The transformation can decrease the costs of operating and maintaining the electrical system. With the improvements, California can lower consumer costs and increase electricity system reliability.

Significant capital investments are needed to augment existing facilities, replace aging infrastructure, and ensure that California's electrical supplies will meet current and future needs at reasonable prices and without over-reliance on a single fuel source. The EAP II notes that even with emphasis on energy efficiency, demand response, renewable resources and distributed generation, investments in conventional power plants will be needed. Additionally, the EAP II identifies the need to upgrade and reinforce the distribution system to ensure reliable service.

In 2008, the California Energy Commission and the California Public Utilities Commission prepared an update to the 2005 EAP II. The update focuses on global climate change and identified policy changes in the key action areas necessary to reduce greenhouse gas emissions.

The California Energy Commission (CEC) is currently considering applications for the development of new power-generating facilities in southern California and elsewhere in the State. These facilities could supply additional energy to the power supply grid within the next few years. Additionally, efforts are being taken to modify existing plants and re-powering existing sites to improve generation capacity. A broad-ranging effort is also being undertaken by the State to reduce peak electricity demand in California, including actions to encourage

[3] SCE is not at liberty to predict future energy usage and loads within city boundaries therefore estimates are based on total electrical generation rates provided in the 1995 Lancaster MEA and totals provided by SCE in the report prepared in 2006.

[4] From 1990 to 2000 the City experienced a 2.2 percent average annual growth rate and from 2001 to 2006 the City experienced a 2.8 percent average annual growth rate.

voluntary load reduction by customers and to promote incentive programs for demand reducing technologies, energy efficient construction techniques, and the installation of energy efficient equipment.

EXPANSION, MAINTENANCE AND RECONSTRUCTION

SCE maintains a five to ten year demand horizon. SCE always anticipates providing sufficient energy to meet new and existing demand. Funds for new facilities, maintenance, and reconstruction are reported and granted by the Public Utilities Commission. Due to the extensive amount of approvals and agency reviews, SCE cannot disclose anticipated projects prior to its official filing. However, due to continued growth in the area, transmission lines and electrical infrastructure would be necessary to be extended in accordance with SCE's projected development demands. At this time, there is two filed projects anticipated to be completed and in service by 2009 to 2010. This 1,100 megawatt transmission project will be located in west Lancaster near 92nd Street and Avenue J, and will provide additional supply to the entire region. Neighborhood facility expansions are being studied as residential, commercial and industrial demands grow.

NATURAL GAS

Natural gas service to the City of Lancaster and the General Plan study area is provided by the Southern California Gas Company (SCG) whose total service territory encompasses approximately 20,000 square miles throughout central and southern California. In 2006, the City of Lancaster consumed approximately 3.2 trillion cubic feet of natural gas. This equates to an 8.7 billion cubic foot daily usage. Natural gas consumed by the City of Lancaster increased by approximately 0.7 trillion cubic feet (approximately 28 percent) since 1996 when the City consumed approximately 2.5 trillion cubic feet.

SCG maintains an extensive supply network within the City of Lancaster and unincorporated portions of the study area and service lines range in size from two- to six-inch delivery mains. The main 30-inch supply line to the Antelope Valley comes from the south end of the valley, from Palmdale off of Avenue S. SCG has an eight-inch supply line along Division Street, flowing south to north, and a 10-inch supply line along Avenue H. Six-inch supply lines also runs within 10th Street West, 40th Street East, and Avenue L. A 10-inch supply line runs within Avenue I, extending from Division Street and flows west toward the freeway.

Most of the transmission and distribution lines currently serving the study area operate at a medium delivery pressure of approximately 35 to 50 pounds per square inch (psi), except for those located in industrial areas where large natural gas users are prevalent and require higher pressure lines.

Facility expansion is based on demand and existing SCG facilities are adequate to provide service to the City of Lancaster. No major supply lines are planned for Palmdale. Any upgrades or additional facilities that would be required with new growth would be accommodated by allowances based on the land use of each new project.

REGULATORY

State

The energy consumption of new buildings in California is regulated by State Building Energy Efficiency Standards, Title 24. These are contained in the California Code of Regulations, Title 24, Part 2, Chapters 2-53. Enforcement of the regulations is addressed in the California Code of Regulations, Title 20, Chapter 2, Subchapter 4, Article 1. Title 24 applies to all new construction of both residential and non-residential buildings, and regulates energy consumed for heating, cooling, ventilation, water heating, and lighting. Title 24 is the minimum requirement for energy efficiency.

ENERGY CONSERVATION PROGRAMS

The potential for rolling electrical outages will continue as long as Statewide energy shortages exist. Because energy conservation can significantly help avert outages by reducing the demand for energy, County programs promote energy conservation countywide and within the City of Lancaster.

Los Angeles County

The County posts conservation tips on its website, which covers topics that include lighting, appliances, and office equipment. The County offers a number of programs to encourage consumers to reduce their energy usage and lower their energy costs. An Internet based Rebate and Demand Reduction Program Database is available on-line at the County's Consumer Energy Center. Various rebate and savings programs are listed on the websites of Southern California Edison and Southern California Gas Company.

Southern California Edison provides rebates and savings programs for residential users, including income qualified households, businesses, and builders and buyers. Residential rebate and saving programs are available for appliances, heating and cooling, lighting, and pools. Rebates are also available to multifamily residential property owners and managers for energy efficiency improvements in lighting, HVAC, insulation and window categories. The Energy Management Assistance (EMA) program helps income-qualified households conserve energy and reduce electricity costs by paying the cost to purchase and install energy efficient appliances and equipment. Energy Efficiency Programs and Demand Response Programs are available to businesses to reduce energy and greenhouse gas emissions and to reduce energy usage during peak times. SCE provides incentives to homebuilders who construct homes that exceed California's energy efficiency standards for new residential construction (Title 24) and for the construction of sustainable and energy efficient buildings and communities. For nonresidential buildings, SCE offers building owners and design teams design assistance, owner incentives and design team incentives for those owners and design teams that meet energy efficiency targets.

The U.S. Green Building Council, as part of a green building certification program, developed the Leadership in Energy and Environmental Design (LEED) criteria. LEED criteria includes the following categories: sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor air quality, and project innovation.

Within each of these criteria are a variety of standardized elements to select from. Each element is incorporated into a construction project are worth a point, with a minimum number of points required to certify a project as a green building. The developer needs to register with and submit documentation to the U.S. Green Building Council. The elements in these types of buildings have been documented to be cost effective and provide a better environment for productivity, as well as protect and conserve natural resources. As of 2003, the County plans to incorporate the LEED design standards into County capital projects.

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11.0 Cultural and Paleontological Resources

11.0 CULTURAL AND PALEONTOLOGICAL RESOURCES

11.1 INTRODUCTION

The purpose of this section is to identify historic, archaeological and paleontological resources existing in the Lancaster General Plan study area (study area). A cultural and paleontological resources overview was conducted to provide the City with the necessary information and analysis to facilitate cultural resources considerations in the planning process and in formulating City policies. In order to inventory previously identified cultural and paleontological resources and prepare a sensitivity assessment of the study area. A historical/archaeological and paleontological resources records search, historical and ethnohistorical background research, reconnaissance-level field survey, and consultation with representatives of the local community were conducted.

11.2 EXISTING SETTING

PREHISTORIC CONTEXT

Archaeological Chronology

In order to understand Native American cultures prior to European contact, archaeologists have devised chronological frameworks on the basis of artifacts and site types dating back some 12,000 years. One of the more frequently used time frames for the Mojave Desert, including the Antelope Valley, divides the region's prehistory into five periods marked by changes in archaeological remains, reflecting different ways in which Native peoples adapted to their surroundings. These five periods are the Lake Mojave Period (12,000-7,000 years ago), the Pinto Period (7,000-4,000 years ago), the Gypsum Period (4,000-1,500 years ago), the Saratoga Springs Period (1,500-800 years ago), and the Protohistoric Period (800 years ago to European contact).

This time frame is based on general technological changes from large stone projectile points, with few milling stones for grinding food products, to smaller projectile points with an increase in milling stones. The scheme also notes increases in population, changes in food procurement and resource exploitation, and more cultural complexity over time. During the Protohistoric Period, there is evidence of contact with the Colorado River tribes and the introduction of pottery across the Mojave Desert.

Ethnohistory

The study area lies in the Antelope Valley where, at least during the Late Prehistoric and Protohistoric periods, the traditional territories of four Native American groups overlap: the Kitanemuk located principally on the southern and western flanks of the Tehachapi Mountains; the Serrano of the San Bernardino Mountains; the Kawaiisu of the Tehachapi Valley region; and the Tataviam of the Santa Clarita Basin. The Kitanemuk reportedly frequented the springs of the Willow Springs area and other areas on the valley floor. The Kawaiisu used the springs found along the northern edge of the Antelope Valley, including areas on the Edwards Air Force

Base, and the southern foothills of the valley from Littlerock Creek northwestward to at least as far west as the Fairmont Buttes area was occupied by Serranos. The Tataviam occupied the southern foothills at the far western edge of the valley.[1]

Whatever the tribal and linguistic affiliation, Native Americans in the Lancaster area exhibited similar social organization and resource procurement strategies. Villages were based on clan or lineage groups. Their home base sites are marked by midden deposits, often with stone tools, lithic debitage, and fire-affected rocks. During their seasonal rounds to exploit plant and animal resources, small groups would migrate within their traditional territory in search of specific plants and animals. Other aspects of their culture however, were particular to their group, as observed in the rock art designs of the desert Serrano group at Lake Los Angeles east of Lancaster.

Native American settlements were situated near available water sources, especially on the desert floor, where the availability of a permanent water source was a determining factor in the nature, duration, and distribution of Native settlements. Native American groups living in the Antelope Valley region relied on three principal sources of water: mountain canyon drainages; artesian springs on the desert floor; and desert and foothill margin springs associated with fault systems. Native groups exploited the wetter upper elevation mountain areas during the warmer months of the year, where pinyon nuts, acorns, holly-leaf cherry, yucca, and agave were available, along with many other plant resources, and animals to hunt or trap. During the winter months villages on the edge of the desert floor and at desert springs offered more hospitable climate conditions. The desert floor offered a range of resources, including mesquite, yucca, seeding plants, roots, and forbes. Higher altitude desert and desert margin areas also provided zones of juniper woodland where the staple juniper berry was gathered.[2]

The Kitanemuk probably occupied or used the majority of the study area. They had a number of customs that were similar in nature to their neighbors and other southern California tribes. They reportedly buried their dead, and had a memorial burning of the property, usually including a clothed representative figurine of the person. They practiced using jimson weed as an intoxicating drink for the boys' initiation ceremony. Tobacco was pounded with lime and water in a small stone mortar and eaten as ritual to relieve fatigue before sleep. Ground seeds were often sprinkled over the fire or sacred objects as an offering. Basketry was made using both coiling and twining techniques, though the basket style was more like those of the San Joaquin Valley tribes than the southern California tribes. The Kitanemuk also had wood vessels with abalone shell inlays that may have been acquired through regular trade with the Chumash near the coast.

Although the Kitanemuk had contact with Garcés and Spanish colonizers as early as the 1770s, little historical information is available today on this small group, which may have had no more than 500-1,000 members at the peak of its population. The Kitanemuk were apparently represented at the San Fernando, San Gabriel, and San Buenaventura Missions. After the American take-over, some were found on the Tejon Reservation in the 1850s, and later on at the Tule River Reservation, where some of their descendants still reside. Spanish influence on Serrano lifeways was negligible until 1819, when a mission *assistencia* was established on the southern edge of Serrano territory. Between then and the end of the mission era in 1834, most of the Serranos in the San Bernardino Mountains and the high desert were removed to the

[1] Earle, David, *Aspects of Protohistoric Subsistence on the Mojave Desert Margin*, Draft reprint of paper presented at the 1992 annual symposium of Society of California Archaeology, Pasadena, California, 1992.

[2] *Ibid*.

nearby missions. At present, most Serrano descendants are found on the San Manuel and the Morongo Indian Reservations, where they participate in ceremonial and political affairs with other Native American groups on an inter-reservation basis.

HISTORIC CONTEXT

In 1772, a small force of Spanish soldiers under the command of Pedro Fages became the first Europeans to set foot in the Antelope Valley. Over the next century, a number of famous explorers, including Francisco Garcés, Jedediah Smith, Kit Carson, and John C. Fremont, traversed the Antelope Valley, but their explorations brought little change to the region. For much of the 19th century, the Antelope Valley continued to receive only the occasional hunters, drawn by its legendary herds of antelopes, and travelers. Don Alexander and Phineas Banning's first stage line between Los Angeles and northern California, for example, ran through the southern edge of the valley.

The history of today's City of Lancaster began in 1876, when the Southern Pacific Railway Company chose the essentially uninhabited Antelope Valley for its line between the San Joaquin Valley and the Los Angeles Basin, and established a string of regularly spaced sidings and water stops across the desert. Around one of these sidings and water stops, Moses Landley Wicks, a real estate developer who was active in many parts of southern California at the time, purchased from the Southern Pacific 640 acres of land and laid out the townsite of Lancaster in 1884. During the land boom of the 1880s and early 1890s, the new town prospered, thanks to the abundance of artesian water in the vicinity. Beginning in 1895, however, several years of continuous drought all but destroyed Lancaster and other settlements in the Antelope Valley, and forced nearly half of the settlers to abandon their land and leave the region.

Along with the other settlements, Lancaster recovered slowly after the turn of the century. With the adoption of electric water pumps, irrigated agriculture became the primary means of livelihood in the region. Alfalfa, which was first introduced around 1890, emerged as the principal crop in the early 20th century, so much so that "alfalfa is king" became the slogan for the agricultural interests in the valley. After WWII, however, the aerospace and defense industry overtook agriculture as the most important sector in the Antelope Valley economy. In 1977, Lancaster was incorporated as a city. Since then, the city has experienced rapid growth due to the phenomenal expansion of housing development, and increasingly taken on the characteristics of a "bedroom community" in support of the Greater Los Angeles area.

GEOLOGIC SETTING

The study area is located within the Mojave Desert Geomorphic Province of southeastern California. The study area is within the Antelope Valley portion of the Western Mojave Desert, characterized by a high-elevation desert landscape marked by scattered, isolated mountains, and numerous broad, shallow basins, some with dry lake beds at their low points. Many of these basins have pediment surfaces developed along the margins, separating the mountains from the basins. These pediment surfaces are commonly covered by desert pavement that protects the area from sheetwash and channeling. The formation of high-clay alluvial deposits created an artesian belt with the subsurface inflow of pluvial-origin groundwater from the surrounding mountains.[3]

[3] Gurba, Norma, Images of America: Lancaster, Arcadia Publishing, San Francisco, California, 2005.

The mountains and intermountain valleys of the Western Mojave Desert tend to have a northwest-southeast trend that is controlled mainly by faulting. The Mojave Desert Geomorphic Province is separated from the Sierra Nevada and Basin-and-Range Provinces on the north, by the Garlock Fault system and from portions of the Transverse Ranges and Colorado Desert Provinces to the south, and by the San Andreas Fault system. The Antelope Valley is a down-dropped area that lies to the northeastern side of the San Andreas Rift Zone. This portion of the San Andreas Fault is reported to have last ruptured in 1857. Because uplifting adjacent to the northeastern side of the fault has been ongoing in this region for many years, including into historic times, older rocks have been brought to the surface in some areas, while covered by thin layers of Recent Alluvium in others. The Antelope Valley basin is filled with sediments ranging in age from Miocene to Recent. Rosamond Dry Lake is a Quaternary Period lake situated in the northern portion of the study area that catches water during occasional rains and after snowmelt. The network of geological faults that define the valley and supported important springs and water sources were important for early settlement.

NATURAL SETTING

The study area lies in the southwestern portion of Antelope Valley, which lies in the western portion of the Mojave Desert, bounded on the south by the San Gabriel Mountains, and on the northwest by the Tehachapi Mountains. Elevations in the study area range from approximately 3,600 feet above mean sea level at the foot of Portal Ridge in the southwestern corner to approximately 2,275 feet along the shoreline of Rosamond Dry Lake in the northern portion.

The majority of the study area is rural and relatively isolated in comparison to the more urbanized core of the City of Lancaster located in the southern-central portion. The community of Quartz Hill is situated to the southwest of the City, and much of the space between has been the location of large residential and commercial development in recent decades. The northeastern portion of the study area contains small, aeolian sand dune formations, with some areas that have small groves of mesquite and scattered Joshua trees. The western portion consists of a very gradual downward east-sloping alluvial fan with fine soils that have been tilled in the past for agricultural use. The soils in the southeastern portion are similar except they slope downward to the north. Other vegetation in the study area consists mostly of low-lying desert brush and grasses, except where residential and commercial developments have occurred.

11.3 RESEARCH METHODS

HISTORICAL/ARCHAEOLOGICAL RESOURCES

Records Search

A records search was conducted by the South Central Coastal Information Center (SCCIC) at California State University, Fullerton. The SCCIC is the official cultural resource records repository for Los Angeles, Orange, and Ventura Counties, and a part of the California Historical Resources Information System, established and maintained under the auspices of the Office of Historic Preservation.

The Center's electronic database was checked for previously identified historical/ archaeological resources in or near the study area, and existing cultural resources reports pertaining to the

vicinity. Previously identified historical/archaeological resources include properties designated as California Historical Landmarks or Points of Historical Interest, as well as those listed in the National Register of Historic Places, the California Register of Historical Resources, or the California Historical Resources Information System.

Historical Research

Historical background research was conducted using published literature in local and regional history and historic maps of the Lancaster area. Four sets of historical maps provided detailed illustration of the growth of the Lancaster area between the 1850s and the 1950s: the township plat maps produced by the United States General Land Office (GLO) based on surveys completed in 1850-1870, and topographic maps produced by the United States Geological Survey (USGS) based on surveys completed in 1930-1931 and aerial photographs taken in 1942-1943 and 1952-1958. These maps are collected at the Science Library of the University of California, Riverside, and the California Desert District of the U.S. Bureau of Land Management, located in Moreno Valley.

Ethnohistorical Research

Additional research was conducted on Kitanemuk culture and history to assess possible sites of Native American traditional cultural value. In particular, the location of known Kitanemuk village sites and sites associated with neighboring tribes in the vicinity that would be of Native American cultural significance were identified.

Field Survey

A field survey was conducted to examine the current conditions of selected cultural resources that had been previously identified and to acquire a first-hand impression of the sensitivity of various portions of the study area for cultural resources that are yet to be identified.

PALEONTOLOGICAL RESOURCES

Records Search

The records search was provided by the Regional Paleontologic Locality Inventory located at the San Bernardino County Museum in Redlands and by the Natural History Museum of Los Angeles County in Los Angeles. These institutions maintain files of regional paleontological site records as well as supporting maps and documents. The records search results identify any known paleontological localities within the study area and in the general vicinity.

Literature Review

In addition to the records searches, a literature search was conducted including unpublished reports produced during surveys of other properties in the area.

Field Survey

A field survey was conducted to inspect and identify geological formations and exposed soils. The main purpose of the field survey was to examine and evaluate the sensitivity of the study

area for paleontological resources and paleontologically sensitive soils that may be encountered during future excavation and construction activities.

11.4 RESULTS AND FINDINGS

HISTORICAL/ARCHAEOLOGICAL RESOURCES

Records Search

KNOWN HISTORICAL/ARCHAEOLOGICAL SITES

According to records on file at the SCCIC, the southern portion of the study area in and around downtown Lancaster has been the location of much recent growth, necessitating numerous cultural resource surveys for development projects. Those studies encountered a number of archaeological sites, historic-period buildings, and other built environment features. Meanwhile, most of the rural, less populated land to the west, north, and east of the urbanized portions of Lancaster remains unsurveyed for cultural resources, reflecting the fact that development projects, usually the cause for such surveys, have not been as widespread in those areas. A notable exception to this is the portion of Edwards Air Force Base (EAFB) lying within the study area, which has been intensively surveyed as part of the EAFB's effort to inventory the cultural resources located within its boundaries. As a result of that effort, a total of 286 archaeological sites, including several prehistoric camps, lithic scatters, historic-period trash dumps, built environment features such as foundations and irrigation dating to the late 19th and early to mid-20th centuries, and 96 isolates, or sites with fewer than three artifacts, have been recorded on the portion of EAFB located within the study area. The high percentage of sites found on the base through systematic surveys suggests that other locations of the study area have the potential to contain archaeological resources that have yet to be found.

In all, less than one-fourth of the total acreage within the study area has been covered by project-related surveys, leaving most of the study area yet to be surveyed systematically and intensively. Some of these older surveys, at least those that occurred outside of the EAFB boundaries, may have been surveyed at a reconnaissance level, and would be inadequate by today's standards. Due in part to some of these previously completed surveys, at least 432 historical/archaeological sites and 134 isolates have been discovered within the study area. These resources, including 152 prehistoric (i.e., Native American) sites and 287 historic-period sites, have been recorded into the California Historical Resource Information System. The isolated finds include 111 prehistoric artifacts, such as ground or flaked pieces of stone, and 23 historic-period items including glass bottle fragments and other refuse. A total of 566 previously recorded historical/archaeological sites and isolates have been found within the boundaries of the study area.

At least 37 prehistoric campsites and numerous prehistoric lithic scatters have been recorded within the boundaries of the study area. Many of these prehistoric habitation and use areas were recorded within a two-mile radius of the shoreline of Rosamond Dry Lake on EAFB. This mass of sites were recorded to the southern and western boundaries of EAFB, suggesting that many similar sites may be found to the south and west of the EAFB boundaries. The topography where these sites were found is very similar to the surrounding area, consisting of small dunes that contain, or may have once contained, many stands of mesquite and Joshua

trees. Mesquite and Joshua trees were once important food plants for southern California desert tribes.

One prehistoric village site has been recorded near Rosamond Dry Lake within the study area. Another important site is located in the southern portion of Lancaster. The prehistoric campsites recorded in the area usually contained items such as stone flakes, milling stones, flaked stone tools, fire-affected rock, animal bone, shell beads, and shell fragments. Sites containing milling stones and fire-affected rock are usually associated with food processing activities, and are areas where Native Americans ground, prepared, and cooked plant and animal resources for food. Lithic scatters generally represent stone reduction sites where prehistoric Native Americans manufactured stone tools, but may also contain artifactual materials related to milling, and other habitation-related activities. These prehistoric sites represent some of the relics from thousands of years of Native American occupation in the study area before Europeans arrived.

Among the historic-period sites recorded in the study area are numerous late-19th and early 20th century homesteads, ranches, and townsites; residential and public buildings, foundations, and ruins; irrigation features, wells, and reservoirs; agricultural features; old wagon roads; transmission lines from the early 20th century; the remains of past mining activities; military structures from World War II; aeronautic structures from the post-WWII era; and numerous refuse scatters, all indicative of early settlement and land development activities. Many of these sites are situated in Lancaster's downtown area and its immediate vicinity, while others are spread out across the less urbanized areas to the north, east and west. The majority of these sites, however, are located within the boundaries of EAFB in the northern portion of the study area.

As can be expected, a number of the recorded buildings in the study area are concentrated in the downtown area, especially along Lancaster Boulevard that runs through the heart of downtown Lancaster. The construction dates of these properties range from the late 1800s to the early and mid-1900s.

A total of 138 additional historic-period buildings have been recorded within the study area over several years that apparently have not yet been processed by the SCCIC. All of these buildings have been evaluated, and only two, the Carter Ranch house at 45635 North Sierra Highway, and the Rowell adobe home at 45007 North Elm Avenue, were determined eligible for listing in the National Register of Historic Places or in the California Register of Historical Resources.

DESIGNATED OR ELIGIBLE HERITAGE PROPERTIES

A total of six sites located in the study area, all of them buildings, have been previously evaluated and determined eligible for listing on the National Register of Historic Places (NRHP); refer to Table 11-1, Designated or Eligible Properties. Five of the buildings are listed on the NRHP, including a veteran's clinic at 547 W. Lancaster Boulevard, and four buildings on Cedar Avenue contribute to a historic district. The Western Hotel has been proclaimed a California Historical Landmark.

Table 11-1
Designated or Eligible Heritage Properties

Name	Location	Status
Western Hotel	557 W. Lancaster Boulevard	CHL
Health Center/Veterans Clinic	547 W. Lancaster Boulevard	NRHP-L
Cedar Avenue Buildings	44855 Cedar Avenue	NRHP-L
Jail Building	44855 Cedar Avenue	NRHP-L
Sheriff's Substation	44855 Cedar Avenue	NRHP-L
Memorial Hall	44855 Cedar Avenue	NRHP-L

CHL – California Historic Landmark.
NRHP-L – Listed in the National Register of Historic Places.

Historical Research

Historic maps consulted for this study reveal that no man-made features were observed in the study area between 1850-1870 other than a short segment of a wagon road crossing the extreme northwest corner. Although it was not identified in the maps, this road is undoubtedly one of the wagon roads that connected the Antelope Valley to Los Angeles, the Tejon Pass, Tulare Valley, the Mojave River, and San Bernardino. Prior to the arrival of the Southern Pacific Railroad, these wagon roads were essentially the only notable cultural features present in the study area.

Later maps and historical literature reveal that early settlement and land development activities occurred in the study area during the late 19th and early 20th centuries, predominantly in today's downtown area. It was there, centered at the intersection of the Southern Pacific Railroad and Lancaster Boulevard, that the town of Lancaster began. A grid of roads was noted in the rest of the study area, laid out along section lines, and a number of other roads crisscrossed the grid, shortening the distance between the many homesteads and ranches in the valley. Agriculture, mainly dry-farming of alfalfa, wheat, and barley, was the main economic pursuit for early settlers in the area. The earliest streets in Lancaster were, from north to south, 8th (Avenue I), 9th, 10th (Lancaster Boulevard), 11th, and 12th Streets, and from east to west, Beech, Cedar, Date, Elm, and Fern Avenues. During the first quarter of the 20th century, one major automobile thoroughfare, Antelope Avenue (Sierra Highway/U.S. Route 6/State Route 138), gradually superceded the old wagon roads in the role of linking Lancaster to the outside world. Various local organizations are currently working to identify Route 6, which extends 3,652 miles across the nation as a historic highway similar to Route 66.

By the early 1930s, the town of Lancaster had expanded a little further to the north, east, and southwest from its original downtown core. Several very small satellite communities arose in the study area by the 1930s, situated around Esperanza School, south of Antelope Acres, Rogers School by Little Buttes, Rosamond School, Redman School, Del Sur, Quartz Hill, and a Japanese Church near Avenue D and 80th Street West. These areas formed mostly as small ranching and farming communities.

In 1933, on a dry lakebed nearly six miles to the northeast of downtown, the Muroc Bombing and Gunnery Range, later renamed the Muroc Army Air Field, was established (Edwards Air

Force Base). Military housing was available on the base, but its arrival brought a new development boom that spread to nearby Lancaster and Palmdale, providing for the numerous military and civilian employees that worked on the base. The post-WWII era brought about additional development to the Lancaster area, especially as the Muroc Army Air Field was transformed into the testing center for America's first jet aircraft. The airfield was renamed Edwards Air Force Base in 1950, and is the location of many major events in aviation history.

The Polaris War Eagle Flight Academy, now used as the Mira Loma Detention Facility, was located at the intersection of West Avenue I and 60th Street West, and is designated as a Historic California Post by the California State Military Museum (California State Military Department). The academy was in use by 1941 to train British Royal Air Force pilots and in 1942 was switched to train U.S. pilots for the war effort. The facility was closed in 1945 at the end of World War II and apparently remained vacant until 1954, when the Los Angeles County Sheriff's Department and Department of Hospitals opened the Mira Loma Custody Facility at the site for inmates with tuberculosis. The tuberculosis facility closed in 1979 and has been used for various operations since. Two of the original hangers are still in use, as well as other WWII-era buildings.

During the most recent decades, residential developments and the accompanying commercial districts have turned vacant land to the southwest and southeast of downtown Lancaster into a new population center. In contrast, much of the area to the north of Avenue H, east of 40th Street East, and west of 70th Street West have remained largely rural in character throughout the historic period and into modern times.

Ethnohistorical Research

Several Native American villages were noted within the vicinity of the study area that are of potential cultural significance. However, none of these villages are located within the study area. The nearest of these, Nakwalki-ve, was a Kitanemuk village located almost 30 miles to the northwest, at the northwestern edge of the Tehachapi Mountains near Tejon Creek. The other, Hihikeave, was a Kawaiisu village located even farther to the northwest, in the Sierra Nevada Mountains along Caliente Creek. An Alliklik village was identified near Barrel Springs, several miles to the southeast of the study area. The Serrano village of Maviajek, located to the south of the study area on Littlerock Creek, was visited by the Spanish soldier Francisco Palomares and his military expedition in 1808. All four of these known villages are located well outside the boundaries of the study area, but their presence nearby suggests the Antelope Valley and the study area was used by Native Americans.

Consultation With Local Community

Currently, the West Antelope Valley Historical Society maintains a list of properties of historic significance within the City. The City of Lancaster and the Lancaster Museum and Art Gallery reportedly has a copy of this list. At the present time, the City has not enacted a local historic preservation ordinance, conducted a citywide historical resources survey, or implemented any other systematic historic preservation program.

The City does not maintain an official register of local historic properties. The 1992 *General Plan* identifies a total of six heritage properties, including the Western Hotel, listed as an existing historical site, and five others as potential historical sites. The latter five include one of the

Homes of Judy Garland, the Bank of Lancaster, the Old Redman Schoolhouse, The Bell Ranch, and the Old Cedar Avenue Elementary School.

The Lancaster Museum and Art Gallery reported that a number of historic-period buildings located in the downtown area may be important heritage properties. These include several buildings located between Jackman Street on the north, Avenue J on the south, Yucca Street on the east, and Fern Street on the west. This area was identified as the oldest part of Lancaster. A few of the buildings that were mentioned included the Western Hotel; the bank on Lancaster Boulevard; the Varella General Store on Yucca Street; the Safeway building, and two post offices on Lancaster Boulevard; the stockyards on Sierra Highway; the three childhood homes of Judy Garland located on Cedar Street and Lancaster Boulevard; the Cedar Avenue School auditorium; an adobe house on Jackman Street near Beech Street; a circa-1904 residence on the northwest corner of Newgrove Street and Fern Avenue; a circa-1890s residence near the intersection of Avenue J and 10th Street West; a brick building on Sierra Highway near Newgrove Street that was occupied by the Antelope Valley Gazette; an old cemetery on East Lancaster Boulevard near Division Street; and a quanset hut near the intersection of Sierra Highway and Avenue I that was a dance studio where Judy Garland danced.

Field Survey

During the field survey, it was noted that the northeastern portion of the study area around the EAFB boundaries, and much of the eastern portion of the study area still retain much of the natural desert landscape that supports abundant wildlife, especially jackrabbits and hares, a few mesquite thickets, scattered Joshua trees, and evidence of small “saltpans” that formed when water puddled there during periodic rains. The Little Rock Wash is the largest drainage in the study area and would have carried water, in the form of periodic rainfall and snowmelt, through the eastern portion of the study area from higher elevations to the south. These areas, with seasonal water sources and a relative abundance of animal and presumably plant resources to be exploited, would have provided a favorable environment for habitation to prehistoric Native peoples. Because water in most areas of the valley was, in historic times, obtained by the excavation of shallow wells, and by rainfall that was collected in earthen reservoirs, and the soil and weather permitted successful agriculture, the vast majority of the study area apparently proved suitable for early settlers.

For built-environment features, it was observed that historic-period buildings, especially residences, can be found in most of the urbanized neighborhoods in the study area, either in relatively concentrated clusters or in isolated occurrences, except in the most recent developments in the southern portion of the study area. The most notable concentration of early 20th century buildings, both residential and commercial, is found in the downtown area around Lancaster’s traditional town center, situated between Jackman Street on the north, Avenue J on the south, Trevor Street on the east, and Genoa Street on the west. There are numerous buildings from the 1940s-1960s also included within this area. Some of the oldest buildings are found on Lancaster Boulevard between Yucca and Date Streets.

Besides many of the already-mentioned historic-period buildings that exist in the downtown area, a number of early and mid-20th century buildings were found scattered throughout the study area, including several farmhouses west of 60th Street West and east of 60th Street East. There are also a number of historic-period buildings and ruins located in and near the communities of Redman and Roosevelt, in the eastern portion of the study area. In the more rural sections of the study area, historic-period buildings were found scattered amongst modern

buildings. Most of these buildings tend to be relatively plain and utilitarian in appearance, lacking any particular architectural style or integrity.

PALEONTOLOGICAL RESOURCES

Records Search

The Natural History Museum of Los Angeles County indicated that no known fossil localities have been previously recorded within the study area boundaries. Fossil localities have been found nearby from sedimentary deposits that are similar to those that occur in the study area.

The southwestern corner of the study area, encompassing the edge of Portal Ridge, has exposures of metamorphic rocks, including Pelona Schist, and granitic igneous rocks. This formation will not contain fossils. The southern and western portions of the study area are gradually sloping alluvial fans of fine sediments that have been shed from higher elevations to the south and west. These sediments date from the Quaternary Period and many fossil localities have been found in similar sediments in the surrounding region. These fossil localities contained specimens of extinct mastodont (*Mammut* sp.) and horse (*Equus* sp.). Other fossils recovered from these localities include a diverse fauna with birds, carnivores, rabbits, and rodents. In the northeastern portion of the study area, in and around Rosamond and Buckhorn Dry Lakes, are surficial younger Quaternary Period lacustrine deposits. There are no recorded vertebrate fossil localities from these deposits, but the soils in and around these dry lakes do have the potential to produce significant remains of fossil vertebrates.

In the remainder of the study area, the surface deposits consist of younger Quaternary alluvial soils. Pipeline excavations in Quaternary alluvium soils nearby have recovered faunal remains from small vertebrates such as gopher snake (*Pituophis* sp.), kingsnake (*Lampropeltis* sp.), leopard lizard (*Gambelia* sp.), cottontail rabbit (*Sylvilagus* sp.), pocket mouse (*Chaetodipus* sp.), kangaroo rat (*Dipodomys* sp.), and pocket gopher (*Thomomys* sp.).

Based on the results of the record search, excavations in the metamorphic and igneous rocks in the southwestern corner of the study area will not encounter any fossils. Meanwhile, excavations in the Quaternary alluvial sediments located in the balance of the study area may well encounter significant vertebrate fossil remains. Therefore, any excavations into intact Quaternary-age alluvial sediments in the study area have a high potential to impact paleontological resources. The Natural History Museum of Los Angeles County recommends that, “any substantial excavations in the study area should be monitored by a professional paleontologist to quickly recover any fossil remains while not impeding development.”

Literature Review

Most of the study area has been mapped as *Qa*, or alluvium of Holocene age. Also present in the western and northeastern portions are *Qs*, or windblown sands of Holocene age. In the very southwestern corner of the study area, along the hills of Portal Ridge, are outcrops of quartz monzonite and *scp,* Pelona Schist of probable Precambrian age, however, these outcrops are igneous and metamorphic in origin and will not contain fossils. The southwestern portion of the study area downslope of this metamorphic formation contains sediments of *Qoa*, older alluvium of Pleistocene age, that are overlain unconformably by alluvium of Holocene age. Most of the

underlying soils in the study area are mapped as *Qoa*, older terraces of gravel and sand that are Pleistocene in age.

Most of the alluvial soils that were mapped as Qa are identified as Rm, Ro, Rp, Rt, HgA, HkA, HkB, and HgA2 type soils. The Ro soils belong to the Rosamond Series, specifically the Rosamond fine sandy loam. The Rm, Rp, and Rt soils also belong to the Rosamond Series, specifically the Rosamond loamy fine sand, Rosamond loam, and Rosamond silty clay loam, respectively. These soils form on gentle sloping alluvial fans originating from a granitic source. The HgA, HkA, HkB, and HgA2 soils belong to the Hesperia Series, and are composed of fine sandy loam that develops on smooth alluvial fans with slopes of two to five percent. These soils form on long, smooth, gradually sloping alluvial fans.

The quartz monzonite in the southwest corner of the study area is mapped as soil type VsF2. The VsF2 soil belongs to the Vista coarse sandy loam that develops on eroded slopes of 30 to 50 percent grade. The coarse alluvium found in the southwest corner of the study area is mapped as soil type VsE2. The VsE2 soil belongs to the Vista coarse sandy loam that develops on eroded slopes of 15 to 30 percent grade. Both of these soils are found in areas where much of the original surface layer has been removed by erosion and is often found in areas cut by shallow to deep gullies.

Field Survey

During the field survey, it was noted that the extreme southwest corner of the study area contains a moderately sloping ridge formation that has eroded surface exposures of coarse-grained granitic soils. This formation, being igneous and metamorphic in origin, has a low potential to contain any paleontological resources. However, the gradually sloping area near the base of this formation contains alluvial sediments that developed over time by soils eroding down from the higher elevations. As these soils developed they may have buried plants and animals, preserving their remains at depth.

The balance of the study area, on the gentler sloping alluvial fans, are finer soils that have developed over time, possibly burying any hard organic materials that were deposited there and preserving them as fossils. The surface exposures in this portion of the study area are probably Holocene-age alluvium, but they may overlay Pleistocene-age alluvium at unknown depths. These Pleistocene-age alluvial soils have a high potential to contain fossil remains of extinct mammals from the last Ice Age.

Furthermore, EAFB, situated in the northern portion of the study area, surrounds several Quaternary-age lakes, two of which are partially situated within the study area and known today as Rosamond Dry Lake and Buckhorn Lake. Today these lakes are dry and only obtain moisture after periodic heavy rainfall or snowmelt. Thousands of years ago, when the climate was wetter and when the lakes were full, they would have provided water to a variety of mammals and migratory birds. These animals would have come to the shores to drink, and in some cases, could have been caught in the muddy banks along the receding shoreline, been attacked and eaten by predators who also frequented the water's edge, or died of other causes. In either event, their remains would have decayed along or near the water's edge, and then later would have been buried in the muddy lake sediments. The fossil remains of these animals may not be present on the surface, but rather, buried at an unknown depth below the surface. Therefore, any grading or other earth-moving activities in this portion of the study area would have a high potential for encountering paleontological resources during any future development.

SENSITIVITY ASSESSMENT

Historical/Archaeological Resources

The northeastern portion of the study area, and much of the southwestern and eastern portions appear to be highly sensitive for prehistoric resources. The Quartz Hill-Mira Loma areas and localities to the north of Portal Ridge and northwest of Quartz Hill have been found to contain sites located on former ephemeral drainages running northward and northeastward out of the southwest valley foothills. Some of these sites have yielded a substantial amount of artifacts.

The Amargosa Creek drainage would be a particularly well-developed case of a drainage zone that should be considered archaeologically sensitive. It passes from the south of Lancaster and runs through the city and to the northwest. The valley floor sites found in association with the ephemeral stream systems were formerly characterized by groundstone implements (manos and metates) used to grind hard seeds gathered from the desert, including Indian rice grass and sage. These sites, located to the southwest and west of Lancaster, were located in an extensive zone of Joshua-juniper woodland. This zone was originally even more dense to the west in the Quartz Hill area and further west, responding to the gradual increase in annual rainfall toward the west. The Joshua-juniper woodland environment provided edible blossoms from the Joshua Tree, juniper berries, a local staple, sage, and other plant foods.

It is expected that studies to the northeast of Lancaster's downtown will encounter a high frequency of prehistoric deposits as they move closer towards Rosamond Dry Lake. The Little Rock Wash and other drainages and springs on the desert floor would have provided a seasonal source of water for early inhabitants, and therefore, the areas near these drainages and springs are highly sensitive for archaeological resources. Meanwhile, the rest of the southern portion of the study area is considered to be low to moderate in sensitivity for prehistoric archaeological resources.

It can be expected that archaeological remains from both prehistoric and historic-period activities might be discovered anywhere in the study area that has not been disturbed by modern development activities, especially where fresh water was once available through run-off or at springs. Rosamond Dry Lake, located nearly seven miles to the northeast of downtown Lancaster, is of a vast, dry, saltpan that would have provided periodic, seasonal fresh water to prehistoric inhabitants. While very few prehistoric archaeological deposits have been found on the dry desert floor in the southern portion of the study area during past surveys, it is possible that some of these surveys were conducted using survey methods that are considered inadequate by today's standards, survey areas were obscured by dense vegetation, or were disturbed by past agricultural activities.

Historic-period archaeological deposits can be expected wherever early settlements occurred. The downtown Lancaster area is highly sensitive for the presence of unknown subsurface historic-period archaeological deposits dating to the City's early history. In addition, archaeological remains from the historic period have been found in the past scattered over the surface of the valley floor, and may occur virtually anywhere in the study area.

For historic-period buildings and other features of built environment, the downtown area bounded by Jackman Street on the north, Avenue J on the south, Trevor Street on the east, and Genoa Street on the west showcase the densest concentration of early 20th century residential and commercial buildings. The neighborhoods between Avenue H, Avenue K, 20th Street

West, and 10th Street East (Challenger Way) feature a relatively high percentage of mixed-vintage residences from the early and mid-20th century, including some buildings that are now approaching the age threshold to be considered potentially historic. In addition, a number of buildings in the communities of Redman and Roosevelt, as well as those associated with the Polaris War Eagle Flight Academy (now the Mira Loma Detention Facility) appear to be over, or approaching the age threshold, and these three areas should be considered historically sensitive. Sporadic historic-period buildings can be found throughout much of the study area, with the exception of where recent large subdivisions have been developed.

Paleontological Resources

The extreme southwest corner of the study area consists of a moderately sloping ridge formation that has eroded surface exposures of coarse-grained granitic soils. This formation, being igneous and metamorphic in origin, is not conducive to the preservation of fossils. Therefore, this portion of the study area is considered low in sensitivity for paleontological remains. Meanwhile, the area at the base of this formation has developed a thick layer of alluvial sediment that has, over time, eroded from the higher elevations. Because these soils may have buried plant and animal remains during their development, they have a moderate to high potential to contain paleontological resources.

The remainder of the study area contains gentler sloping alluvial sediments with finer soils that have developed over time, possibly burying any hard organic materials that were deposited there and preserving them as fossils. The surface exposures in this portion of the study area are probably Holocene-age alluvium that is low in sensitivity for paleontological resources, but may overlay older Pleistocene-age alluvium at unknown depth. These Pleistocene-age alluvial soils have a moderate to high potential to contain fossil remains of Pleistocene-age mammals. Areas near the shoreline of Rosamond and Buckhorn Dry Lakes may contain the remains of Holocene-age or Pleistocene-age mammals and migratory birds that once visited the lake when it was full and therefore also have a moderate to high potential to contain significant paleontological remains.

11.5 EXISTING HISTORIC PRESERVATION PROGRAMS

FEDERAL PROGRAMS AVAILABLE TO THE CITY

The National Historic Preservation Act (NHPA) of 1966, as amended, mandates that all federal agencies assume responsibility for the preservation of historic properties owned or controlled by the U.S. Government. Section 106 of NHPA requires federal agencies to take into account the effect of an undertaking on any historic properties prior to approval of the undertaking. When delegated the responsibility for Section 106 compliance, such as in some programs funded by the U.S. Department of Housing and Urban Development (HUD), a local government agency may also take the lead in the enforcement of NHPA.

In the Section 106 process, many federal agencies recognize an enhanced role for Certified Local Governments (CLG). The CLG program, a joint federal-state initiative administered by the National Park Service and the State Historic Preservation Officers (SHPO) of each state, provides technical assistance and small grants for historic preservation purposes to local governments that meet certain requirements. In California, CLGs are encouraged by the State Office of Historic Preservation (OHP) to play an active role in the Section 106 process within its

jurisdiction. In practice, a CLG can benefit from historic preservation expertise, professional and technical assistance, information exchange, and statewide preservation programs coordinated by the OHP and special grants from the SHPO.

In conjunction with NHPA, the Secretary of the Interior maintains the National Register of Historic Places, a nationwide inventory of districts, sites, buildings, structures, objects, or other features of national, state, or local historical significance. According to statutory definition, any property listed in or determined to be eligible for listing in the National Register constitutes a "historic property." Currently, there are five National Register-listed resources located within the City of Lancaster's study area.

In addition to NHPA, a number of other federal statutes also provide for programs aimed at the preservation of important cultural resources, including investment tax credits on certified rehabilitation of historic buildings, the Community Development Block Grant Program, and the historic building preservation program created by the Transportation Equity Act of 1998.

STATE PROGRAMS AVAILABLE TO THE CITY

The California Register of Historical Resources, established in 1992, is the State of California's counterpart to the National Register of Historic Places. Its listings include all properties listed in or officially determined eligible for listing in the National Register. Together with the California Register, the Office of Historic Preservation (OHP) maintains two other registers to promote historic preservation in the state: California Historical Landmarks, a designation for properties of statewide historic importance, and Points of Historical Interest, for properties of countywide or regional importance. At present, there is one site located within the study area, the Western Hotel, which is listed as a California Historical Landmark.

Properties included in any of these registers are eligible for a number of state historic preservation incentives, such as property tax reduction, benefits provided by the California Heritage Fund, alternative building regulations under the State Historic Building Code, special historic preservation bond measures, and seismic retrofit tax credits.

REGULATORY GUIDELINES ON CULTURAL RESOURCES MANAGEMENT

As mentioned above, Section 106 of the National Historic Preservation Act mandates that federal agencies or HUD-designated local agencies with jurisdiction over Federal or Federally assisted undertakings take into account the effect of the undertakings on any "historic properties" during the planning process (16 USC 470f). For projects with no federal involvement, the California Environmental Quality Act (CEQA) similarly requires lead agencies to take the necessary action to prevent substantial adverse changes to "historical resources" (PRC §21084.1). Although termed differently in NHPA and CEQA, "historic properties" and "historical resources" both refer to a special class of cultural resources that meet the definitions set forth in the statutes and their implementation regulations.

The term "cultural resource" refers to any physical evidence of human activities that possesses potential historical, archaeological, or traditional cultural value. Among the examples that are most frequently noted as cultural resources are buildings, structures, historic districts, archaeological sites, and such objects as statues and street fixtures. In recent years, cultural resources also began to include non-traditional property types, including historical landscapes and natural features that have acquired cultural significance in history. In order to be

considered potentially significant, cultural resources usually need to meet a certain age criterion. In the State of California, the age threshold is generally set at 50 years from the present time.

"Historic properties," as defined by the Advisory Council on Historic Preservation, include "prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior" (36 CFR 800.16(l)). The eligibility for inclusion in the National Register is determined by applying the following criteria:

> *The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and*
>
> *(a) that are associated with events that have made a significant contribution to the broad patterns of our history; or*
>
> *(b) that are associated with the lives of persons significant in our past; or*
>
> *(c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or*
>
> *(d) that have yielded, or may be likely to yield, information important in prehistory or history. (36 CFR 63).*

"Historical resources," according to PRC §5020.1(j), "includes, but is not limited to, any object, building, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California." More specifically, *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, included in a local register of historical resources, or determined to be historically significant by the Lead Agency (Title 14 CCR §15064.5(a)(1)-(3)).

Regarding the proper criteria of historical significance, *CEQA Guidelines* mandate that "a resource shall be considered by the lead agency to be 'historically significant' if the resource meets the criteria for listing on the California Register of Historical Resources" (Title 14 CCR §15064.5(a)(3)). A resource may be listed in the California Register if it meets any of the following criteria:

> *(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.*
>
> *(2) Is associated with the lives of persons important in our past.*
>
> *(3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.*

(4) Has yielded, or may be likely to yield, information important in prehistory or history. (PRC §5024.1(c))

A local register of historical resources, as defined by PRC §5020.1(k), "means a list of properties officially designated or recognized as historically significant by a local government pursuant to a local ordinance or resolution." As mentioned above, the City of Lancaster does not maintain a list of designated historic sites at the present time. However, if a list of designated historic sites located within the city limits is or becomes officially endorsed by the City of Lancaster, as a matter of policy, the sites or buildings on the list would be "presumed to be historically or culturally significant... unless the preponderance of the evidence demonstrates [otherwise]" (PRC §21084.1).

In summary, any property that meets one or more of the criteria for listing in the National Register or the California Register, or that is officially designated a historical resource by a local government agency, falls under the protection of NHPA and/or CEQA. Depending on the nature, significance, integrity, and current condition of the property, the proper form of protection may range from on-site preservation to project effect mitigation, such as in-depth documentation for historic buildings and data recovery excavation for archaeological sites.

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12.0 Scenic Resources

12.0 SCENIC RESOURCES

12.1 INTRODUCTION

Scenic resources within the City of Lancaster and the General Plan study area (study area) are those unique visual features that provide attractive views either into or from the study area. Major visual resources are topographic features, which are shown in Figure 12-1, Scenic Resources.

The most well-known desert plant in the Antelope Valley is the Joshua Tree. This and other endemic plants are primarily associated with the "desert" and "desert woodland" plant communities. The south-central portions of the study area, both in and outside of the City, contain "desert woodland" communities. This plant assemblage has significant local and regional value, based on data available from the California Department of Fish and Game. The Prime Desert Woodland Preserve, located on West Avenue K-8 and 35th Street West, was acquired by the City to preserve these plant communities. Section 3.0, Biological Resources, provides greater discussion on these and other plant communities located in the Lancaster study area.

12.2 TOPOGRAPHY

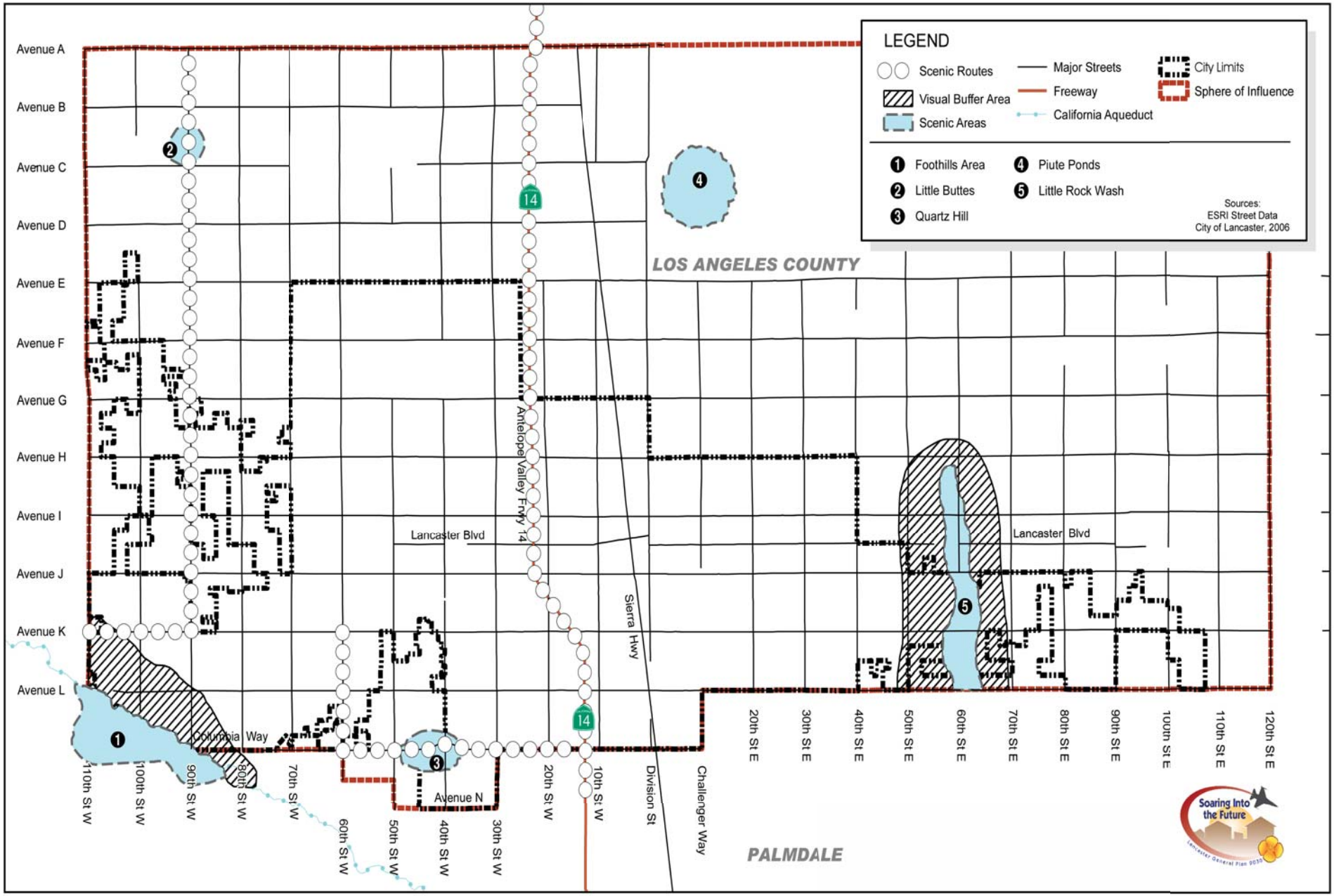
Lancaster and surrounding lands are part of the Mojave desert basin, and are relatively flat. Within the central portions of the study area, the mountains to the south provide significant view-sheds, especially for the southwest corner of the study area. However, these resources are not in the study area.

The most prominent local topographic feature within the City is Quartz Hill, located in the southwestern area of Lancaster. This landform rises over 200 feet above the nearby unincorporated community of Quartz Hill, immediately south of the City of Lancaster. This community has long had the atmosphere and characteristics of a small town. Over the past few years, large areas surrounding the Quartz Hill community have been developed, primarily with residential subdivisions and custom homes.

12.3 DESERT ENVIRONMENT

Scenic views of the desert are available throughout much of the study area, particularly in the undeveloped eastern portions.

Long-range views of the rugged San Gabriel mountains to the south, the Sierra Pelonas to the southwest and west and the Tehachapi Mountains to the northwest are available from the City and surrounding area, including the Antelope Valley freeway. The unique desert "scene" of Lancaster is directly associated with Joshua Trees and Juniper shrubs, which are most plentiful in the eastern and southern portions of the study area. Most of the north central and eastern portions of the study area consist of low desert scrub plants, or active/inactive farmland, which do not provide particularly aesthetic views. Much of the western portions of the study area consist of large areas of flat, vacant, or formerly cultivated agricultural lands.



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LANCASTER GENERAL PLAN 2030

Scenic Resources

Figure 12-1

The desert flora of the Antelope Valley region provides a significant visual resource during various times of the year. In the spring, the valley exhibits brilliant displays of orange, yellow, and purple wildflowers. The California Poppy Reserve, located approximately 15 miles west of the City near 130th Street West and Avenue G, is a State Park created to preserve these sensitive wildflowers. The Reserve contains nature and hiking trails and an interpretive center where tourists can observe and learn more about some of the more colorful residents of the valley. The Arthur B. Ripley Desert Woodland is located west of the Poppy Reserve on Lancaster Road at 210th Street West. The park protects and preserves a stand of native Joshua trees and junipers. The park features a picnic table and self-guided nature trail with information about the desert wildflowers and animals of the Ripley Desert Woodlands.

12.4 POINT OF INTEREST

The study area contains several cultural sites or points of interest that represent visual landmarks. As discussed in Section 11.0, Cultural and Paleontological Resources, 152 prehistoric sites and 287 historic-period sites have been recorded into the California Historical Resource Information System. The most prominent historical landmark in the City is the Western Hotel, built in the 1880s, which is a designated California Historical Landmark. The building has been renovated and now serves as a museum of local history.

There are no officially designated scenic routes or highways within the study area at present; however, Los Angeles County's Antelope Valley Community Plan identifies local roadways, which could potentially serve as scenic routes. These local roadways are listed below and are depicted in Figure 12-1, Scenic Resources:

- Antelope Valley Freeway. Within the study area (Avenues A to M), this route has long-range views of the San Gabriel Mountains to the southwest, south, and southeast, and far-off views of the San Bernardino Mountains to the southeast and the Tehachapi Mountains to the northwest. Where it runs at grade, views from the freeway provide travelers with their primary introduction to the character of the Lancaster area. To the north, this route provides close in views of open desert lands.

- Avenue K. This route has views of the San Gabriel Mountains to the south and the Portal Ridge foothills to the southwest, from the Antelope Valley freeway west to 110th Street West.

- Avenue M. Between the Antelope Valley Freeway and 60th Street West, this route passes by Quartz Hill and has views of the San Gabriel Mountains to the south.

- 60th Street West. Between Avenues K and M, this route has views of the Portal Ridge to the west and the San Gabriel foothills to the south.

- 90th Street West. This route has long-range views of the San Gabriel Mountains to the south and southwest. In the northern portion of the study area, this route provides close-in views of open desert and the Tehachapi Mountains to the northwest.

One major development, as discussed in Section 4.0, Land Use, is the future Rancho Del Sur project located generally between 90th Street West, Avenue H-8, 105th Street West, and

Avenue G. When it is developed, the project will add an additional 1,925 homes and associated amenities in the Antelope Acres area and may reduce scenic views along 90th Street West.

12.5 REFERENCES

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13.0 Fiscal Resources

13.0 FISCAL RESOURCES

13.1 INTRODUCTION

The Fiscal Resources section describes the existing economic and fiscal characteristics and trends for the City of Lancaster. Economic and fiscal issues and options facing the City are also discussed as they relate to the *General Plan* update.

This section examines important background socio-economic and urban development conditions. Socio-economic characteristics consider changes to the population, households and incomes for residents and urban development considers the conditions and trends of residential, commercial and industrial growth in Lancaster. Socio-economic and urban development characteristics provide background information and findings helpful for the discussion of the economic and fiscal issues.

13.2 SOCIO-ECONOMIC CHARACTERISTICS

The City of Lancaster is a rapidly growing community in the Antelope Valley subregion of northern Los Angeles County. It is adjacent to the City of Palmdale that together comprise nearly all of the urbanizing area in the Antelope Valley.

Population and households are important considerations for understanding both the economic and fiscal issues because they are so closely related to the local labor force, disposable household income and the provision of municipal fiscal services.

POPULATION AND HOUSEHOLDS

The rapidly growing population of Lancaster reached 138,392 persons by January 1, 2006, which is an increase of 17,567 residents (14.5 percent) since 2001; refer to Table 13-1, Lancaster Population, Household Size and Income. Excluding the special place population, which remains stable at approximately 7,100 to 7,400 persons, Lancaster's household population numbered 131,134 persons as of January 1, 2006.

Table 13-1
Lancaster Population, Household Size and Income

Type	1996	2001	2002	2003	2004	2005	2006
Population	122,973	120,825	123,202	126,063	129,011	132,951	138,392
Household Population	114,598	113,656	116,268	119,112	121,713	125,366	131,134
Households	38,271	38,409	38,778	39,310	39,908	41,004	42,844
Housing Units	41,419	41,947	42,350	42,931	43,584	44,781	46,790
Single-Family	27,110	28,425	28,693	29,178	29,691	30,890	32,823
Multi-Family	14,309	13,522	13,657	13,753	13,893	13,891	13,967
Persons/DU	2.99	2.96	3.00	3.03	3.05	3.06	3.06
Household Income							
Average		$53,054			$55,187	$56,490	$55,955
Median					$43,749	$45,042	$44,686
Family (Avg.)			$62,565	$63,425	$60,134	$61,298	$60,604

Source: Agajanian & Associates; Department of Finance; Greater Antelope Valley Economic Alliance.
Note: "Person/DU" based on occupied housing.

The household population forms the 42,844 households, or occupied housing units, in Lancaster. Households increased by 4,435 new households (11.6 percent), since 2001. Households grew at a slower rate than the population because the number of persons per occupied house (or household) increased from 2.96 in 2001 to 3.06 in 2006. This indicates that Lancaster households are getting larger, most likely due to larger families with children.

Annual household population growth rates are presented in Table 13-2, Annual Growth Rate for Lancaster Population and Housing. As indicated in Table 13-2, Lancaster experienced an annual growth rate of 1.93 percent between 2001 and 2005. The 2001 to 2005 period grew faster than the 1996 to 2005 period (0.78 percent) indicating that the bulk of population growth in Lancaster occurred during the 2001 to 2005 period.

Table 13-2
Annual Growth Rate for Lancaster Population and Housing

Type	1996-2005			2001-2005		
	Lancaster	Palmdale	Los Angeles County	Lancaster	Palmdale	Los Angeles County
Population	0.78%	1.95%	0.81%	1.93%	2.53%	1.02%
Household Population	0.90%	1.95%	0.83%	1.98%	2.53%	1.04%
Housing Units	0.78%	0.91%	0.31%	1.32%	1.87%	0.38%
Single-Family	1.31%	1.24%	0.48%	1.68%	2.38%	0.30%
Multi-Family	-0.30%	-0.34%	0.09%	0.54%	-0.04%	0.47%

Source: Agajanian & Associates; Department of Finance.

Lancaster population growth rates for the 2001-2005 period are below the rate for Palmdale (2.53 percent) but substantially higher that the rate for Los Angeles County (1.04 percent). This indicates that Lancaster and Palmdale are rapidly growing Antelope Valley communities in Los Angeles County.

Housing growth in Lancaster (1.32 percent), Palmdale (1.87 percent) and Los Angeles County (0.38 percent) parallel the population growth, as indicated by the growth rates in Table 13-2. Therefore, Lancaster and Palmdale are rapidly growing Antelope Valley housing markets in Los Angeles County, as well.

HOUSEHOLD INCOME AND EXPENDITURE

Households in Lancaster earned an average of $55,955 in 2006, which is an increase from an average household income of $53,054 in 2001; refer to Table 13-1. Currently, average family income, (households with children), is $60,604 while median household income is $44,686.

Current potential annual household income for Lancaster is estimated at $2,397,000,000. This household income will be converted into household expenditures for goods and services purchased at businesses both within and outside of Lancaster. Household expenditure is a major source of local and regional economic activity.

13.3 URBAN DEVELOPMENT

The rate of urban development in Lancaster and the Antelope Valley has historically increased during robust economic cycles and decreased during weak economic cycles. Lancaster experienced a high rate of urban development through the late 1980s and early 1990s. This was followed by a period of slow urban development through the 1990s. The rate of urban development has again increased since 2000. This cycle of slow and rapid urban development places special fiscal challenges in anticipating and budgeting for public infrastructure and municipal services.

Urban development occurs as private sector residential, commercial and industrial properties are improved in conjunction with the development of the needed public infrastructure and provision of public services. The Lancaster Redevelopment Agency (RDA) is a major public agency active in urban redevelopment.

URBAN DEVELOPMENT

Lancaster's residential, commercial and industrial development increased sharply since 2001. Residential permits issued for residential units increased from 767 permits in 2001 to 2,875 permits in 2005; refer to Table 13-3, Annual Permits Issued. Only 639 of the permits (8.9 percent), of the 7,162 permits issued were for multi-family housing between 2001 and 2005. Of the 46,790 housing units in Lancaster (January 1, 2006), 32,823 units (70.2 percent) are single-family.

Table 13-3
Annual Permits Issued

Permit Type	2001	2002	2003	2004	2005
Residential (DU)					
Single-Family	573	437	974	1,742	2,797
Multi-Family	194	0	0	367	78
Subtotal Residential	*767*	*437*	*974*	*2,109*	*2,875*
Commercial (SF)					
New Office	345,873	1,440	182,111	247,872	72,143
New Retail	171,316	190,081	43,476	46,135	32,921
New Other	156,418	19,302	121,178	163,050	33,110
Subtotal Commercial	*673,607*	*210,823*	*346,765*	*457,057*	*138,174*
Industrial (SF)					
Industrial	416,639	150,432	325,202	202,994	648,296

Source: Agajanian & Associates; City of Lancaster.

Commercial development permits were issued for 1,826,426 square feet (SF) of office, retail and other commercial projects in Lancaster between 2001 and 2005. Office permits, at 849,439 SF, was the largest share of commercial development accounting for 46.5 percent of all commercial development in the period. The balance of the commercial permits were issued to retail development (483,929 SF) and other commercial development (493,058 SF).

Industrial development permits were issued for 1,743,563 SF of space. The rate of industrial growth was highest in 2005 when 648,296 SF of industrial development permits were issued. Lancaster has an estimated 6,401,000 SF of industrial space as of January 1, 2006.

The Fox Field Specific Plan area and Lancaster Business Park have accommodated much of the industrial development in Lancaster. The development of industrial land has seriously diminished the local supply of buildable industrial sites.

It can be observed that residential development is the largest share of urban development in Lancaster since 2001. Commercial and industrial developments are roughly equivalent in the amount of new space added to the existing inventory since 2001.

DEVELOPMENT VALUATION

The amount of urban development occurring in Lancaster since 2001 is also reflected in the valuation of permits issued for residential, commercial and industrial development. Table 13-4, Annual Permit Valuation, indicates the annual valuation of development permits. The total value of development permits between 2001 and 2005 issued is $1,265,596,470.

Table 13-4
Annual Permit Valuation

Development Type	2001	2002	2003	2004	2005
Residential (DU)					
Single-Family	$81,592,551	$67,161,520	$152,699,615	$302,674,189	$504,661,914
Multi-Family	$3,355,358	$0	$0	$19,632,065	$5,090,950
Subtotal Residential	*$84,947,909*	*$67,161,520*	*$152,699,615*	*$322,306,254*	*$509,752,864*
Commercial (SF)					
New Office	$15,236,776	$79,344	$10,203,935	$12,659,159	$420,801
New Retail	$22,925,024	$10,682,595	$2,319,185	$8,539,576	$1,629,590
New Other	$163,767	$35,652	$1,809,112	$6,562,800	$132,240
Subtotal Commercial	*$38,325,567*	*$10,797,591*	*$14,332,232*	*$27,761,535*	*$2,182,631*
Industrial (SF)					
Industrial	$838,000	$1,996,659	$11,365,812	$5,098,590	$16,029,691
Total Valuation	**$124,111,476**	**$79,955,770**	**$178,397,659**	**$355,166,379**	**$527,965,186**

Source: Agajanian & Associates; City of Lancaster.
Note: "New Other" includes other new commercial and commercial additions. Valuation not adjusted for inflation.

The value of residential development has been rising rapidly as the prices of new homes and sold homes increases. Table 13-5, Lancaster Home Price Trends, indicates that the median price for a home in Lancaster increased from $120,787 in 2001 to $267,096 in 2005. New home average sales prices increased also, rising from $178,302 in 2002 to $364,704 in 2005.

Residential permits issued in Lancaster between 2001 and 2005 were valued at $1,136,868,162. Multi-family projects accounted for just 2.5 percent, or $28,078,737, of all residential valuation in the period. Residential valuations have grown steadily, and sometimes dramatically, every year since 2001.

Table 13-5
Lancaster Home Price Trends

Year	Median Home Prices		Average New Home Prices	
	Amount	% Increase	Amount	% Increase
2005	$276,096	10.2%	$364,704	20.8%
2004	$250,566	46.1%	$302,024	31.2%
2003	$171,506	22.9%	$230,187	29.1%
2002	$139,539	15.5%	$178,302	
2001	$120,787	23.5%		
2000	$97,837	10.6%		
1999	$88,470			

Sources: Agajanian & Associates; and North LA County Real Estate Economic Outlook 2005.

Commercial Retail projects accounted for 49.3 percent, or $46,095,970, of all commercial valuation in the period. Office projects accounted for 41.4 percent, or $38,600,015, of all commercial valuation in the period. Other retail projects were negligible at 0.9 percent, or $8,703,571, of all commercial valuation in the period. The pattern of commercial development valuation has varied with some high valuation years (i.e., 2001 and 2004) and some average valuation years (i.e., 2002 and 2003) indicating that commercial development is occurring at a steady rate.

Industrial permits issued in Lancaster between 2001 and 2005 were valued at $35,328,752. Industrial permits issued for 2003 and 2005 alone account for $27,395,503, or 77.5 percent of all industrial valuations between 2001 and 2005. By comparison, industrial permits issued for the 2001 – 2003 period accounted for 22.5 percent of the 2001 to 2005 period. This indicates that industrial development can fluctuate rapidly.

The share of residential, commercial and industrial valuation in Lancaster for the 2001 to 2005 period is 89.8 percent, 7.4 percent and 2.8 percent respectively. This indicates that the dominant share of Lancaster urban development is in the residential sector, and more precisely, in the single-family housing sector.

URBAN REDEVELOPMENT

Urban redevelopment is taking place in Lancaster in addition to the new urban development described above. The City established the Lancaster RDA in 1979 to assist in the elimination of blighting conditions in the City as a means to promote economic development in the community.

Seven RDA project areas have been established in Lancaster since 1979, as indicated in Table 13-6, RDA Profile. The RDA has been conducting redevelopment and revitalization programs in each of the project areas. These project areas cover 27,702 acres of land, or more than 43 square miles. The project terms for the six project areas will expire by the General Plan Update horizon year of 2030. This indicates that the City will need to consider how best to use the valuable redevelopment tools available to the RDA before they expire.

Table 13-6
RDA Profile

RDA Project Area	Adopted			Size (acres)	Assessed Valuation (in $000's)		
	Adopted	Project Term	Last TI		Base Year (adopted)	Current Year (2004-05)	TI to 9/04
Residential Project	1979	2020	2030	600	$6.8	$390.4	$24.5
CBD Project	1981	2022	2032	438	$49.1	$120.1	$7.5
Fox Field Project	1982	2023	2033	3,290	$15.0	$113.7	$7.1
Amargosa Project	1983	2024	2034	4,599	$90.9	$933.6	$43.1
Project No. 5	1984	2025	2035	4,523	$347.1	$1,374.9	$51.7
Project No. 6	1989	2030	2040	12,748	$596.8	$1,894.9	$51.2
Project No. 7	1992	2033	2043	1,504	$219.2	$300.3	$0.6
Total				**27,702**	**$1,324.9**	**$5,127.9**	**$185.7**
Source: Agajanian & Associates; Lancaster RDA Five Year Implementation Plan (12/2004).							
Note: Tax Increment revenues through 9/04.							

The Lancaster RDA has increased the assessed valuation of its redevelopment project areas from $1.32 billion to $5.13 billion in 2005. These valuation increases have come as a result of the agency's programs to acquire and dispose of land, assist development, develop infrastructure, promote business attraction, promote labor force development, provide assisted housing and assist local business development in the project areas. This valuation increase has generated over $185,700,000 in RDA tax increment revenues to assist in the redevelopment and economic revitalization of Lancaster.

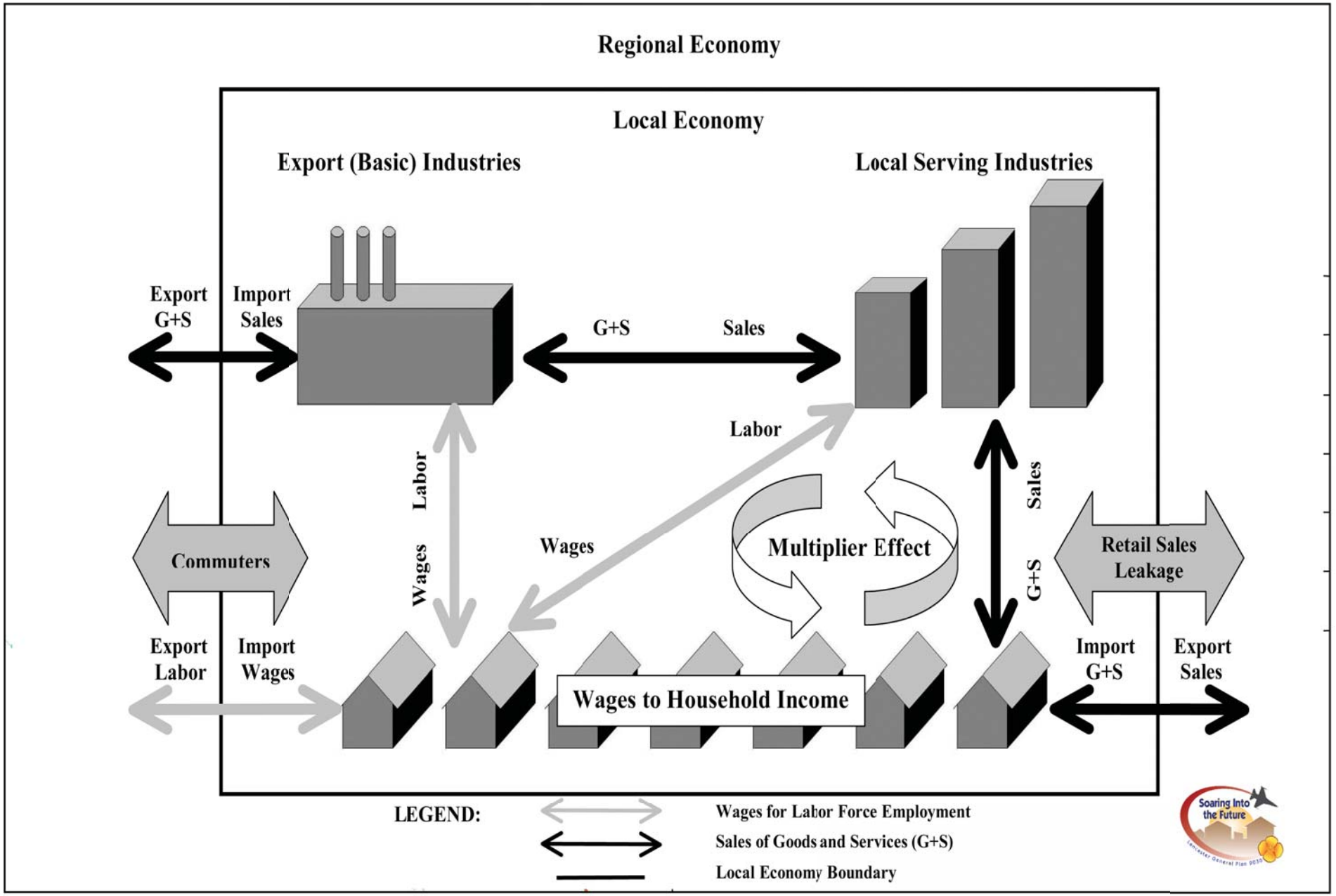
The Lancaster RDA continues to assist in the redevelopment and revitalization of the project areas. The agency assisted in the development of public facilities including the municipal baseball stadium, library, City Hall, Museum Art Gallery/Performing Arts Center, new sheriff's station, community center as well as street, drainage and beautification projects. The agency also stimulates development by assisting businesses with public/private projects to develop new residential, commercial and industrial sites. RDA activities related to economic development are discussed below.

13.4 ECONOMIC DEVELOPMENT

The economy of Lancaster is closely linked with the Palmdale economy to form a single Antelope Valley subregional economy, defined as the "North Los Angeles" subregion by the Southern California Association of Governments (SCAG). This section focuses upon the economy of Lancaster, except where the Antelope Valley subregion is more appropriate.

LOCAL ECONOMY

A local economy can be conceived of as a movement of dollars between households and businesses. Dollars move in (import) and out (export) of the local economy from the regional economy; refer to Figure 13-1, Local Economy Dynamics. Dollars also move between households and businesses (industries).


Regional Economy
Local Economy
Export (Basic) Industries
Local Serving Industries
Export G+S
Import Sales
G+S
Sales
Labor
Wages
Labor
Wages
Commuters
Multiplier Effect
Sales
G+S
Retail Sales Leakage
Export Labor
Import Wages
Wages to Household Income
Import G+S
Export Sales
LEGEND:
Wages for Labor Force Employment
Sales of Goods and Services (G+S)
Local Economy Boundary
Soaring Into the Future

Households convert wage income into household expenditures. Industries convert goods and services for sales. Some industries in the local economy serve clients outside the local economy. They are referred to as "basic" industries because they mainly import sales income into the local economy. Other industries in the local economy serve mainly local clients. Both basic and local serving industries provide employment to the resident labor force.

A local economy can grow in a number of ways. Increasing basic industries is an important way to stimulate local economic growth since they import sales to support local employment and local serving industries. Another way is to increase the movement of dollars within the local economy that moves between local serving industries and local households and creates a multiplier effect. The effect of the circulation of dollars within the local economy is to multiply local economic activity.

The local labor force seeks employment in the regional economy when there are not enough jobs available in the local economy. They commute to their jobs and export labor and import wage income for their household.

The multiplier effect is diminished when local household goods and services are purchased in the regional economy. This movement of dollars out of the local economy is referred to a "sales leakage."

The Antelope Valley subregional economy is characterized by its peripheral location to the Los Angeles basin. Based largely on residential growth, peripheral economies are less mature than larger regional economies. A less mature economy is characterized by a lack of local jobs, a large commuting labor force and consumer expenditure leakage. These features reflect the current performance of the Antelope Valley subregional economy.

EMPLOYMENT

Industries located in Lancaster help provide local employment and wages. The type and amount of local industries reflects the industrial structure of the local economy.

The major employers located in the Lancaster area are identified in Table 13-7, Major Employers in Lancaster – 2005. Edwards Air Force Base continues to be the largest employer with 12,970 jobs. This is less than its peak of 15,367 in July of 1994. Lockheed Aircraft employs 4,000 workers. Combined with other aerospace research industries in the Antelope Valley, the sector constitutes the largest non-public employer in the subregional economy.

As indicated in Table 13-7, government, school and medical sectors also play a significant role in the local economy. These local serving industries provide goods and services to local households.

Employment in Antelope Valley amounted to 68,019 jobs in 2004; refer to Table 13-8, Antelope Valley Employment – 2004. Manufacturing industries are considered basic industries because they export their products provided to the regional economy. They provide 12.6 percent of the local jobs. By comparison, local serving industries provide 87.4 percent of the jobs.

Table 13-7
Major Employers in Lancaster – 2005

Employer	Products	April 2005
Edwards Air Force Base	Aerospace Research	12,970
Lockheed Aircraft Co.	Commercial Aircraft	4,000
Antelope Valley Union High School District	High Schools	2,235
Antelope Valley Hospital	Healthcare Services	2,210
Antelope Valley Hospital Medical Center	Hospital (341 Beds)	2,210
Antelope Valley College	Education	1,749
Lancaster School District	Elementary Schools	1,420
California State Prison	Correctional Facility	1,200
Countrywide Corporation	Mortgage Lending	1,100
Rite Aid Distribution Center	Retail Distribution	1,000
Westside Union School District	Education	905
Federal Aviation Administration	Air Traffic Control	700
Lancaster Community Hospital	Hospital (135 Beds)	560
High Desert Hospital	Hospital (192 Beds)	450
City of Lancaster	Government	400
Starwood Hotels	Hotel	390
Antelope Valley Convalescent Hospital	Hospital	375
Eastside Union School District	Education	350
High Desert Medical Group	Healthcare Services	335

Source: Agajanian & Associates; California Economic Forecast (2005).

Table 13-8
Antelope Valley Employment – 2004

Industry	Employees	Percent Distribution
Agriculture	627	0.9%
Construction/Mining	5,639	8.3%
Manufacturing/Aerospace	8,597	12.6%
Trans/Comm/Utilities	1,918	2.8%
Wholesale/Retail Trade	12,579	18.5%
Fire	3,463	5.1%
Services	21,667	31.9%
Civilian Government	13,529	19.9%
Total Civilian Employment	**68,019**	**100.0%**

Source: Agajanian & Associates; 2005 North Los Angeles County Real Estate and Economic Outlook.

The largest local serving industries in the Antelope Valley subregional economy are services (31.9 percent), civilian government (19.9 percent) and wholesale/retail trade (18.5 percent). This large share of local serving industries characterizes peripheral economies with large and rapidly growing populations.

LABOR FORCE

The labor force in the Antelope Valley subregion is employed in mainly the services, trade and civilian government sectors of the economy; refer to Table 13-9, Antelope Valley Labor Force by Industry. The largest single sector of labor force employment is in services comprising at 49

percent of the labor force. This has increased from 27 percent in 1990. Manufacturing has declined from 22 percent of the labor force in 1990 to 7 percent in 2003. This is a significant trend since the decreasing manufacturing labor force will make it more difficult to attract basic industries.

Table 13-9
Antelope Valley Labor Force by Industry

Industry	Percentage Distribution				
	1990	1993	1997	2000	2003
Agriculture	2%	1%	1%	1%	1%
Construction/Mining	11%	7%	7%	6%	7%
Manufacturing/Aerospace	22%	23%	14%	8%	7%
Trans/Comm/Utilities	8%	9%	10%	12%	8%
Wholesale/Retail Trade	11%	14%	11%	13%	11%
Fire	8%	6%	2%	5%	6%
Services	27%	27%	47%	46%	49%
Civilian Government	9%	11%	6%	7%	9%
Total Civilian Employment	**98%**	**98%**	**98%**	**98%**	**98%**
Military Employment	2%	2%	2%	2%	2%
Total All Employment	**100%**	**100%**	**100%**	**100%**	**100%**

Source: Agajanian & Associates; 2004 Antelope Valley Labor Base Analysis.

The 2004 occupational profile of Antelope Valley labor force by occupation is presented in Table 13-10, Antelope Valley Labor Force by Occupation. As indicated in Table 13-10, the largest occupational category is professional/technical, accounting for 32 percent of the labor force. Services (21 percent), Managers/official (12 percent) and sales workers (12 percent) are the other larger occupational categories of the labor force. This indicates that the Antelope Valley subregional labor force is both diversified and capable.

Table 13-10
Antelope Valley Labor Force by Occupation

Occupation	% of Total	% Full Time	% Part Time
Professional/Technical	32%	92%	8%
Managers/Officials	12%	94%	6%
Sales Workers	12%	73%	27%
Clerical	6%	78%	22%
Crafts Workers	10%	88%	12%
Operatives	4%	86%	14%
Services	21%	70%	30%
Laborers/Farmers	3%	80%	20%
Total	**100%**	**83%**	**17%**

Source: Agajanian & Associates; 2004 Antelope Valley Labor Base Analysis.

Approximately 32 percent of Antelope Valley workers commute to Santa Clarita and Los Angeles basin for employment. Based upon the Antelope Valley Labor Base Analysis, the majority of the commuters are from households that earn over $55,569 annually; are between the ages of 35 and 54; live in single-family homes and have some college education. Commuters are a capable work force that would benefit from more jobs in the local economy. The percentage of the labor force that commutes remains at approximately one-third indicating that local job growth is keeping up with labor force growth since the early 1990s.

The commuting labor force has changed since 1993, as indicated in Table 13-11, Percent of Antelope Valley Commuters by Industry. Similar to the occupational profile for the subregion, commuters are now mostly employed by businesses in the service sector. About 27 percent of commuters worked in service industries in 1993 while 50 percent of commuters did in 2003. Commuters working in the manufacturing/aerospace industries declined from 26 percent in 1993 to 7 percent in 2003. This indicates that the commuter labor force is a changing group adjusting to the availability of regional employment market.

Table 13-11
Percent of Antelope Valley Commuters by Industry

Industry	1993	1997	2000	2003
Agriculture	0.0%	1.5%	0.7%	2.1%
Construction/Mining	9.4%	9.6%	10.4%	6.9%
Manufacturing/Aerospace	26.3%	15.7%	9.1%	6.6%
Trans/Comm/Utilities	11.1%	12.6%	21.1%	11.2%
Wholesale/Retail Trade	13.8%	6.1%	8.3%	7.0%
Finance, Insurance, Real Estate	6.2%	3.1%	4.5%	5.9%
Services	26.7%	47.6%	41.0%	50.0%
Civilian Government	6.5%	3.8%	4.9%	10.3%
Total Civilian Employment	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Source: Agajanian & Associates; 2004 Antelope Valley Labor Analysis.

RETAIL SALES

Consumer expenditures from local households are reflected in the retail sales of local stores and outlets. Retail sales for Lancaster from 1996 to 2005 are presented in Table 13-12, 1996-2005 Lancaster Taxable Retail Sales. The inflation adjusted retail sales indicate that there has been a continuous increase in the amount of annual sales from $863 million in 1996 to an estimated $1.791 billion in 2005. The growth of total retail sales increases with the growth in households and household income.

Retail sales in Lancaster are expressed in per capita in comparison to other areas in Table 13-13, 2005 Per Capita Taxable Retail Sales. Certain categories of retail sales in Lancaster appear lower than other areas including apparel, food stores and home furnishings. Other retail categories in Lancaster appear higher than other areas including auto dealers, service stations and building materials. The difference between Lancaster retail sales and other areas is also expressed as a percentage in Table 13-14, 2005 Distribution of Taxable Retail Sales by Jurisdiction.

Table 13-12
1996-2005 Lancaster Taxable Retail Sales (in $000's of Inflation Adjusted 2006 dollars)

Type of Retail Establishment	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Apparel Stores	$34,205	$32,033	$25,356	$24,471	$22,572	$24,195	$23,062	$22,320	$22,082	$22,913
General Merchandise	$143,563	$150,266	$158,829	$166,209	$176,067	$184,384	$212,343	$247,356	$268,131	$290,165
Food Stores	$60,513	$58,975	$58,278	$60,177	$60,101	$62,729	$61,508	$63,145	$63,977	$68,321
Eating and Drinking	$80,784	$84,297	$91,590	$95,669	$99,090	$105,497	$109,741	$116,450	$128,268	$145,000
Home Furnishings and Appliances	$37,859	$35,887	$39,061	$40,956	$44,516	$45,043	$47,014	$51,916	$39,323	$41,571
Building Materials	$48,572	$50,633	$63,882	$89,357	$89,749	$99,232	$90,035	$96,508	$122,883	$168,077
Auto Dealers and Supplies	$160,222	$154,042	$178,673	$212,167	$230,498	$234,607	$258,448	$282,269	$332,256	$365,595
Service Stations	$91,285	$90,900	$82,124	$118,219	$148,995	$144,295	$133,057	$154,118	$168,161	$172,732
Other Retail Stores	$74,980	$79,549	$80,805	$88,514	$89,176	$91,672	$92,784	$94,046	$101,530	$128,634
All Retail Stores	**$731,983**	**$736,602**	**$778,598**	**$895,739**	**$960,764**	**$991,654**	**$1,027,992**	**$1,128,128**	**$1,246,611**	**$1,403,503**
All Other Outlets	$131,086	$139,922	$145,998	$168,090	$167,212	$170,973	$179,756	$234,928	$308,908	$392,313
Total All Outlets	**$863,069**	**$876,524**	**$924,596**	**$1,063,829**	**$1,127,976**	**$1,162,627**	**$1,207,748**	**$1,363,056**	**$1,555,519**	**$1,790,845**
Annual Growth Rate		1.56%	5.48%	15.06%	6.03%	3.07%	3.88%	12.86%	14.12%	15.13%

Source: Agajanian & Associates; California Board of Equalization.

Note: Lancaster 2005 annual taxable retail sales are estimated based on first two quarters of actual retail sales.

Table 13-13
2005 Per Capita Taxable Retail Sales

Type of Establishment	Lancaster	Palmdale	Los Angeles County	California
Apparel Stores	$182.77	$657.42	$523.87	$519.88
General Merchandise	$2,314.54	$2,585.91	$1,157.72	$1,421.27
Food Stores	$544.98	$662.98	$632.39	$762.39
Eating and Drinking	$1,156.61	$1,172.52	$1,347.50	$1,357.25
Home Furnishings and Appliances	$331.60	$524.66	$428.70	$487.81
Building Materials	$1,340.69	$1,108.62	$785.87	$1,123.69
Auto Dealers and Supplies	$2,916.22	$2,312.53	$1,751.50	$2,235.07
Service Stations	$1,377.82	$990.89	$987.88	$1,027.33
Other Retail Stores	$1,026.07	$1,372.63	$1,374.39	$1,440.99
All Retail Stores	**$11,195.25**	**$11,372.24**	**$8,950.13**	**$10,374.19**
All Other Outlets	$3,129.34	$1,580.97	$3,833.51	$4,454.66
Total All Outlets	**$14,284.93**	**$12,946.27**	**$12,782.47**	**$14,846.87**

Source: Agajanian & Associates; California Board of Equalization.

Table 13-14
2005 Distribution of Taxable Retail Sales by Jurisdiction

Type of Retail Establishment	Lancaster	Palmdale	Los Angeles County	California
Apparel Stores	1.3%	5.1%	4.1%	3.5%
General Merchandise	16.2%	20.0%	9.1%	9.6%
Food Stores	3.8%	5.1%	4.9%	5.1%
Eating and Drinking	8.1%	9.1%	10.5%	9.1%
Home Furnishings and Appliances	2.3%	4.1%	3.4%	3.3%
Building Materials	9.4%	8.6%	6.1%	7.6%
Auto Dealers and Supplies	20.4%	17.9%	13.7%	15.1%
Service Stations	9.6%	7.7%	7.7%	6.9%
Other Retail Stores	7.2%	10.6%	10.8%	9.7%
All Retail Stores	**78.4%**	**87.8%**	**70.0%**	**69.9%**
All Other Outlets	21.9%	12.2%	30.0%	30.0%
Total All Outlets	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Source: Agajanian & Associates; California Board of Equalization.

Note: All 2005 annual taxable retail sales are estimated based on first two quarters of actual retail sales.

Changes in Lancaster retail sales are presented in Table 13-15, Growth in Taxable Retail Sales by Type. Retail sales increased by 107 percent in Lancaster since 1996, faster that Palmdale and Los Angeles County. The fastest growth of retail sales in Lancaster was over the 2001 to 2005 period. Only apparel sales have witnessed a drop in retail sales since 1996. Building material sales and auto dealer sales have increased by 246 percent and 128 percent, respectively since 1996, reflecting the recent building boom.

Table 13-15
Growth in Taxable Retail Sales by Type

Type of Establishment	Lancaster			Palmdale	Los Angeles County	California
	1996-2000	2001-2005	1996-2005	1996-2005	1996-2005	1996-2005
Apparel Stores	-34.01%	-5.30%	-33.01%	174.75%	45.09%	68.45%
General Merchandise	22.64%	57.37%	102.12%	47.68%	65.66%	69.28%
Food Stores	-0.68%	8.92%	12.90%	27.19%	29.39%	35.72%
Eating and Drinking	22.66%	37.44%	79.49%	72.75%	68.55%	70.72%
Home Furnishings and Appliances	17.58%	-7.71%	9.80%	690.87%	69.81%	79.82%
Building Materials	84.78%	69.38%	246.04%	141.81%	117.32%	122.35%
Auto Dealers and Supplies	43.86%	55.83%	128.18%	145.65%	85.16%	112.75%
Service Stations	63.22%	19.71%	89.22%	44.98%	79.52%	93.51%
Other Retail Stores	18.93%	40.32%	71.56%	86.44%	58.20%	65.14%
All Retail Stores	**31.25%**	**41.53%**	**91.74%**	**87.16%**	**68.01%**	**80.87%**
All Other Outlets	27.56%	129.46%	199.28%	116.91%	30.62%	38.56%
Total All Outlets	**30.69%**	**54.03%**	**107.50%**	**90.24%**	**54.72%**	**65.87%**

Source: Agajanian & Associates; California Board of Equalization.

Retail sales leakage expresses the net amount of retail sales exported from the local economy to the regional economy. Retail sales surplus expresses the net amount of imported retail sales to the local economy. Table 13-16, 2005 Lancaster Taxable Retail Sales Leakage, indicates that in comparison to Los Angeles County, Lancaster is experiencing retail sales leakage of 10.5 percent, or about $188 million in 2005, which is largely unchanged since the early 1990s.

Table 13-16
2005 Lancaster Taxable Retail Sales Leakage

Type of Establishment	Lancaster	Los Angeles County	Leakage	
	Per Capita	Per Capita	%	Amount
Apparel Stores	$182.77	$523.87	**-186.6%**	-$42,762,361
General Merchandise	$2,314.54	$1,157.72	50.0%	$145,026,080
Food Stores	$544.98	$632.39	**-16.0%**	-$10,959,059
Eating and Drinking	$1,156.61	$1,347.50	**-16.5%**	-$23,930,644
Home Furnishings and Appliances	$331.60	$428.70	**-29.3%**	-$12,173,949
Building Materials	$1,340.69	$785.87	41.4%	$69,556,352
Auto Dealers and Supplies	$2,916.22	$1,751.50	39.9%	$146,015,918
Service Stations	$1,377.82	$987.88	28.3%	$48,884,824
Other Retail Stores	$1,026.07	$1,374.39	**-33.9%**	-$43,667,080
All Retail Stores	$11,195.25	$8,950.13	20.1%	$281,461,548
All Other Outlets	$3,129.34	$3,833.51	**-22.5%**	-$88,278,608
Total All Outlets	$14,284.93	$12,782.47	10.5%	$188,357,077

Source: Agajanian & Associates; California Board of Equalization.

The largest categories of Lancaster sales leakage are apparel (-$42,762,261), eating and drinking (-$23,930,644), home furnishings (-$12,173,949), other retail store ($43,667,080) and all other outlets (-$88,278,608). Lancaster also has retail categories that have a net surplus of retail sales including general merchandise ($146,026,080), auto dealers ($146,015,918), building materials ($69,566,352) and service stations ($48,884,824). This indicates that attracting more apparel, home furnishings and eating and drinking establishments can reduce Lancaster's retail sales leakage.

13.5 FISCAL IMPACTS OF DEVELOPMENT

The rapid growth of population and households in Lancaster since 2001 has placed considerable strain on the City's ability to continue providing quality municipal services and fund timely infrastructure. This section examines the impact of this rapid population growth and urban development on the Lancaster municipal budget.

The Lancaster municipal budget is composed of funds, revenues, expenditures and capital improvements. The budget contains many funds, but the General Fund (GF) is the core of the operating budget since it contains unrestrained revenues and expenditures for municipal administration, recreation, safety, public works, planning and economic development/ redevelopment services. Budget revenues, expenditures and capital improvements are examined separately.

MUNICIPAL BUDGET OVERVIEW

Lancaster experienced considerable growth in both budget revenues and expenditures. The GF revenues for fiscal year (FY) 04-05 amounted to $45,144,673 while GF expenditures amounted to $48,631,512; refer to Table 13-17, 1998-2005 Lancaster Budget Statement (by Fiscal Year). GF revenues have increased by 29.9 percent since FY 98-99 while GF expenditures have increased by 56.6 percent. This trend indicates the Lancaster's continuing challenge to keep revenues in pace with necessary expenditures.

Table 13-17
1998-2005 Lancaster Budget Statement (by Fiscal Year)

Revenues by Source	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005
Revenues							
General Funds	$34,762,539	$38,887,034	$37,264,327	$39,668,774	$41,278,907	$44,349,051	$45,144,673
Special Revenues	$16,388,519	$23,404,351	$41,887,904	$22,295,377	$26,850,452	$35,984,101	$18,234,285
Agencies and Special Reserves	$4,638,478	$3,279,568	$4,021,008	$4,669,343	$7,454,399	$7,780,432	$6,827,609
Other Funds and Foundations	$4,969,982	$3,384,167	$1,674,980	$1,356,500	$5,744,462	$11,426,877	$9,840,627
Total Revenues	$60,759,518	$68,955,120	$84,848,219	$67,989,994	$81,328,220	$99,540,461	$80,047,194
Expenditures							
General Funds	$31,053,872	$32,856,672	$35,647,118	$41,690,352	$39,552,065	$44,948,532	$48,631,512
Special Revenues	$20,429,808	$17,873,985	$58,836,225	$41,597,743	$31,763,561	$24,645,308	$63,687,366
Lancaster Housing Authority	$1,871,500	$1,871,500	$1,871,500	$1,980,500	$1,369,085	$1,912,016	$1,294,082
Redevelopment Agency Funds	$32,727,270	$38,313,596	$33,626,539	$32,676,980	$37,056,731	$82,272,099	$94,535,457
Transfers Elimination	-$748,848	-$540,000	-$540,000	-$4,981,000	-$4,747,425	-$5,106,481	-$4,736,166
Total Expenditures	**$85,333,602**	**$90,375,753**	**$129,441,382**	**$112,964,575**	**$104,994,017**	**$148,671,474**	**$203,412,251**

Source: Agajanian & Associates; City of Lancaster Budgets.

Note: "Other Funds and Foundations" comprised of Community Services Foundation and Developer Fee Fund.

Total budget revenues and expenditures for FY 04-05 are $80,047,194 and $203,412,251 respectively. This difference is due to major capital expenditures; internal budget transfers between funds and major RDA project expenditures and can be overemphasized by peaking in some years and shrinking in others. RDA fund expenditures increased substantially in FY's 03-04 and 04-05, as did earmarked "special revenue" expenditures for FY 04-05.

BUDGET REVENUE SOURCES

The two sources of budget revenue are the GF and Special Revenues. The GF derives nearly half of annual revenues from taxes in general and retail sales tax in particular; refer to Table 13-18, 1998-2005 Total Lancaster Revenue by Source (by Fiscal Year). Despite a loss of revenue from recent budget adjustments to fund the state budget, GF tax revenue grew modestly from FY 98-99. Sales and use tax revenue, other tax revenue and development fees were the only revenue categories to see increases. All other GF revenue sources have remained level since FY 98-99. This indicates that not all GF funds trend upward with population growth and urban development.

Special revenue sources vary widely from year to year because they are accounts that accumulate revenues as they arrive. Many of these funds receive both annual and one-time revenues for programs and projects. Since FY 98-99 the annual road fund revenue stream varied from a low of $9.7 million to a high of $33.1 million. Similarly, annual grant revenues

varied from a low of $5.6 million to a high of $14.3 million. This variability of annual special revenues makes it difficult to assess trends.

Budget revenue sources for RDA Capital Projects, Economic Development and Housing Redevelopment Bonds issued in 2002 – 2003, 2003 – 2004 and 2004 – 2005 resulted in net proceeds of $21.0 million Economic Development Funds and $40.3 million Housing Funds. These funds, in addition to land sales of land acquired primarily through the elimination of blighted conditions, have provided the funding for the RDA Capital Improvement Projects.

Table 13-18
1998-2005 Total Lancaster Revenue by Source (by Fiscal Year)

Revenues by Sources	1998-1999	1999-2000	2001-2001	2001-2002	2002-2003	2003-2004	2004-2005
General Fund							
Taxes							
Property Taxes	$2,372,569	$2,355,020	$2,450,000	$2,550,000	$2,395,158	$2,368,246	$2,391,655
Sales and Use Taxes	$10,643,357	$11,800,000	$12,400,000	$12,900,000	$13,819,915	$15,800,000	$15,391,655
Other Taxes	$3,808,524	$3,991,000	$4,327,000	$4,672,000	$5,035,698	$5,572,500	$5,524,245
Development Fees	$1,995,881	$1,870,000	$1,935,000	$1,520,000	$3,235,916	$6,022,000	$6,000,000
State Subventions	$6,049,232	$6,519,459	$6,615,950	$6,320,168	$7,596,768	$5,738,300	$6,003,300
Vehicle Code Fines	$848,929	$1,008,000	$1,008,000	$1,015,000	$1,476,522	$953,000	$1,055,000
Local Charges and Fees	$1,625,409	$1,802,300	$1,418,250	$1,536,625	$1,526,741	$1,438,650	$1,418,650
Grants	$333,986	$583,087	$1,251,047	$1,092,352	$563,146	$896,770	$636,000
Use of Money and Property	$555,099	$700,000	$650,000	$450,000	$271,463	$200,000	$200,000
Transfers and Other Agencies	$6,245,531	$7,811,667	$5,143,080	$7,476,129	$5,198,502	$4,950,411	$6,193,194
Other	$284,022	$446,500	$66,000	$156,500	$413,228	$409,174	$330,974
Total General Fund	***$34,762,539***	***$38,887,033***	***$37,264,327***	***$39,688,774***	***$41,533,057***	***$44,349,051***	***$45,144,673***
Special Revenues							
Transportation/Roads Funds	$9,727,842	$15,525,938	$33,061,679	$16,083,908	$12,058,347	$22,144,581	$9,882,209
Grants	$6,215,898	$7,383,413	$8,311,225	$5,561,469	$14,261,634	$13,104,996	$7,578,076
Performing Arts Performers Fund	$444,779	$495,000	$515,000	$650,000	$480,780	$734,524	$774,000
Community Services Foundation	$139,039	$120,000	$145,000	$125,000	$250,781	$205,000	$205,000
Developer Fee Fund	$4,830,943	$3,264,168	$1,529,980	$1,231,500	$5,493,681	$11,221,877	$9,635,627
Capital Replacement Fund	$16,000	$16,000	$16,000	$16,000	$573,033	$581,481	$461,166
Maintenance Districts	$2,542,362	$2,338,568	$2,580,008	$3,098,343	$3,831,366	$4,477,951	$4,841,443
Special Reserves	$2,080,116	$925,000	$1,425,000	$1,555,000	$3,050,000	$2,721,000	$1,525,000
Total Special Revenues	***$25,996,979***	***$30,068,087***	***$47,583,892***	***$28,321,220***	***$39,999,622***	***$55,191,410***	***$34,902,521***
Total All Revenues	**$60,759,518**	**$68,955,120**	**$84,848,219**	**$68,009,994**	**$81,532,679**	**$99,540,461**	**$80,047,194**
Source: Agajanian & Associates; City of Lancaster Budgets.							
Note: "Special Fees" are included as part of "Special Revenue Grants."							

BUDGET EXPENDITURES

Budget expenditures pay for annual municipal services (operations) and multi-year capital projects. The GF includes the key operational aspect of municipal governance including administration, planning, parks, recreation, arts, public works, community safety and RDA operations. GF expenditures have increased to $48.6 million in FY 04-05 from $34.7 million in FY 98-99; refer to Table 13-19, 1998-2005 Total Lancaster Expenditure by Source (by Fiscal Year).

Table 13-19
1998-2005 Total Lancaster Expenditure by Source (by Fiscal Year)

Expenditures by Source	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005
General Fund	$34,705,589	$35,700,672	$41,728,118	$41,690,352	$39,552,065	$44,948,532	$48,631,512
General Government	$3,783,358	$4,043,872	$3,901,396	$4,546,926	$5,071,878	$5,222,568	$5,574,514
Planning	$1,016,969	$1,103,399	$1,056,553	$1,046,834	$1,054,614	$1,401,156	$1,878,392
Redevelopment Operations	$1,107,590	$1,131,668	$1,129,186	$1,166,092	$1,081,512	$1,326,603	$1,408,378
Park, Recreation, and Arts	$6,191,674	$6,620,932	$7,554,653	$7,993,268	$8,316,709	$8,702,251	$9,064,256
Public Works	$6,086,658	$7,142,672	$7,176,724	$7,772,060	$8,254,532	$10,392,703	$12,184,729
Community Safety	$12,023,082	$12,372,403	$12,452,164	$12,218,522	$11,410,750	$12,964,957	$13,880,642
Operating Transfers	$3,380,116	$1,365,000	$2,045,000	$1,675,000	$3,230,000	$2,710,000	$1,725,000
Non-Operating Transfers	$255,601	$1,463,000	$4,020,000	$2,750,000	$444,392	$1,415,000	$2,150,000
Capital Projects	$860,541	$457,726	$2,392,442	$2,521,650	$687,678	$813,294	$765,601
Special Revenues Fund	$12,040,534	$13,076,255	$48,774,926	$41,597,743	$21,708,790	$15,221,485	$35,077,474
Lancaster Community Services Foundation	$142,479	$120,000	$140,000	$140,000	$203,363	$200,000	$200,000
Developer Fee Funds	$4,607,398	$1,902,847	$4,706,215	$4,343,241	$5,116,984	$3,599,144	$18,190,983
Total Operational Expenditures	***$51,496,000***	***$50,799,774***	***$95,349,259***	***$87,771,336***	***$66,581,202***	***$63,969,161***	***$102,099,969***
Capital Replacement	$234,687	$60,900	762838	$310,225	$421,750	$336,310	$517,464
Maintenance Districts	$1,971,007	$2,113,983	$3,610,691	$4,193,937	$2,954,181	$3,142,859	$6,251,445
Special Reserves	$1,433,703	$600,000	$841,555	$1,110,000	$1,358,493	$2,145,510	$3,450,000
Total Other Funds/Reserves	$3,639,397	$2,774,883	$5,215,084	$5,614,162	$4,734,424	$5,624,679	$10,218,909
Total City of Lancaster	***$55,135,397***	***$53,574,657***	***$100,564,343***	***$93,385,498***	***$71,315,626***	***$69,593,840***	***$112,318,878***
Lancaster Housing Authority	$1,871,500	$1,871,500	$1,871,500	$1,980,500	$1,369,085	$1,912,016	$1,294,082
Lancaster Redevelopment Agency	$32,727,270	$38,313,596	$33,626,539	$32,676,980	$37,056,731	$82,272,099	$94,535,457
Transfers in Capital Projects	-$748,848	-$540,000	-$540,000	-$4,981,000	-$4,747,425	-$5,106,481	-$4,736,166
Total Combined City/Agency	**$88,985,319**	**$93,219,753**	**$135,522,382**	**$123,061,978**	**$104,994,017**	**$148,671,474**	**$203,412,251**

Source: Agajanian & Associates; City of Lancaster Budgets.

Of these municipal services, public works has had the greatest increase (104.2 percent) since FY 98-99. Similarly, planning and community safety expenditures increased by 84.7 percent and 49.0 percent, respectively. These rapidly growing municipal service expenditures parallel the population growth and the urban development growth experienced in Lancaster since 1998 and particularly since 2003.

Expenditures for the RDA have risen sharply since FY 03-04. These increases are related to special projects including land acquisition, infrastructure funding, revitalization projects and economic development assistance for each of the seven RDA project areas. The need for RDA assisted projects has increased with the growth of urban development.

CAPITAL EXPENDITURES

The City provides for the construction of public roads and facilities to serve the growing resident population, local businesses and urbanization. The capital improvements budget for FY 04-05 is $118,107,500 and has risen sharply in the last two fiscal years; refer to Table 13-20, 1998-2005 Lancaster Capital Improvement Allocations (by Fiscal Year). Lancaster has budgeted over $602 million in capital improvements since FY 98-99, of which 40 percent has occurred in the last two fiscal years.

Table 13-20
1998-2005 Lancaster Capital Improvement Allocations (by Fiscal Year)

Expenditures by Source	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005
Recreation	$6,900,628	$5,525,205	$3,018,699	$3,440,917	$3,859,765	$4,318,143	$6,785,677
Streets	$14,878,218	$18,635,503	$37,938,554	$31,024,180	$28,041,314	$24,419,373	$27,205,272
Utilities	$2,903,721	$1,993,448	$2,608,805	$1,781,468	$3,434,369	$3,845,422	$15,801,133
Planning	$1,261,222	$543,116	$419,486	$9,249,249	$10,271,543	$7,375,710	$7,296,529
Redevelopment Agency Projects	$32,727,270	$38,313,596	$33,626,539	$32,676,980	$37,056,731	$82,272,099	$61,018,847
Total	$58,671,059	$65,010,868	$77,612,083	$78,172,794	$82,663,722	$122,230,747	$118,107,458

Source: Agajanian & Associates; City of Lancaster Budgets.

The RDA is the source for over half of the budgeted capital improvement budget in FY 03-04 and FY 04-05. This indicates that Lancaster is allocating half of all capital expenditures toward the RDA project area. The RDA capital improvements budget for FY 03-04 peaked at $82,272,100.

Other non-RDA capital improvements are directed toward recreation facilities, streets, utilities and community development projects. Streets account for more than a quarter of all capital improvement expenditures in FY 04-05 at $27,205,300. Capital expenditures for utilities amounted to $15,801,100 in FY 04-05. All capital improvement expenditures for municipal public infrastructure have increased significantly since FY 03-04 to keep up with the rapid growth of local population and urban development.

13.6 ISSUES AND OPTIONS

The previous sections described the existing development, economic and fiscal conditions and trends in Lancaster. In addition, the discussion highlighted the relationships between new development, the local economy and municipal fiscal performance. This section considers the fiscal and economic issues, opportunities and constraints associated with the General Plan Update in light of these recent changes and relationships.

Lancaster continues to face the essential economic and fiscal issues associated with a rapidly developing peripheral community. Economically, the City confronts the need to continue the expansion and diversification of the local economy to approach greater self-sufficiency. The issue for the Lancaster economy is how to continue to expand and diversify the economy within available opportunities and unavoidable constraints.

Fiscally, the City needs to manage new development for fiscal sustainability. The General Plan Update issue for fiscal sustainability is how to better balance new development with the City's capacity to provide quality municipal services and timely infrastructure within available opportunities and unavoidable constraints.

ECONOMIC DEVELOPMENT

The central economic development issue is how Lancaster can continue to expand and diversify the economy within available opportunities and unavoidable constraints. More specifically, the economic development issues include: the jobs/housing balance, work force development, revitalization of local commerce and promoting a new sense of community.

The RDA principally implements current economic development activities in Lancaster. The City also cooperates with the Greater Antelope Valley Economic Alliance (GAVEA), which leads the economic development programs for the subregional area.

Economic development in Lancaster has successfully kept up with the jobs/housing demand of a growing population. The number of jobs added to the local economy has kept pace with the growing population, as indicated by the stable rate of labor force commuting at approximately one third since the early 1990s. The jobs/housing balance has not diminished, nor has it improved. However, as available sites for industrial and commercial development continue to diminish, it will become more difficult in the future to attract new businesses.

There are opportunities to attract new businesses, particularly those industries that can benefit from the relatively low cost of land in the area. The RDA has successful programs to attract new businesses to the local economy. But to continue to attract industrial development without a diverse supply of prepared industrial sites would be difficult.

Opportunities for commercial development are better since local serving businesses increase as local consumer expenditures increase. The demand for additional office, retail and other commercial development will grow with the population. Commercial development is also being stimulated in the RDA project areas with site preparation and development assistance programs.

The most significant constraint to attract new industrial development is the peripheral location of Lancaster. Only select types of industry would benefit from Lancaster's peripheral location, close to a major metropolitan area. This limits the choices available to attract industrial development to Lancaster.

There are ongoing economic development activities that seek to attract more basic industries, increase local serving businesses, diversify the industrial base, increase employment, upgrade work force skills, reduce commuters and reduce retail sales leakage. These activities have successfully expanded and diversified the local economy.

The economic development options available for further expanding and diversifying the Lancaster economy are limited to slowing the effort, maintaining the effort or intensifying the effort. Slowing the effort on economic development is not a viable option since it would deteriorate the local economy jobs/housing balance.

Lancaster is maintaining and intensifying the economic development effort to help stay even with the jobs/housing balance. Clearly, the City will need to intensify the economic development effort in order to get ahead of the jobs/housing balance and reduce the commuting.

The RDA plays a central role in economic development in Lancaster. All of the development and redevelopment assistance it provides is essential to the continuing expansion of the local economy. The special tools that the RDA uses to stimulate development will end with the sunset of the RDA project areas, some before the General Plan Update horizon. It will be important to continue to use the RDA until project sunset and consider the option of renewing the termination years.

FISCAL SUSTAINABILITY

The General Plan Update issue for fiscal sustainability is how to better balance new development with the City's capacity to provide quality municipal services and timely infrastructure within available opportunities and unavoidable constraints. This will necessitate greater efforts to find new revenue sources, constrain expenditures and better program public infrastructure funding.

The search for new revenue sources is a difficult and tedious one. Revenue growth does not keep up with expenditures because many revenue sources do not increase with population and development growth. The available option is to increase revenues that better recover municipal expenditures. This is best applied to new development since capital costs constitute a significant municipal expenditure.

Constraining expenditures is also difficult without degrading the quality of local services. The only options available are to provide more efficient services, reduce service standards or eliminate the service. Clearly, providing better services at less cost through greater efficiency is the most desirable option.

More intensive programming of public infrastructure funding can better anticipate and provide timely implementation of capital improvements. The cyclical nature of development in the Antelope Valley necessitates budget planning that is able to adjust to and transition between normal and rapid development growth. The six-year Capital Improvement Program and the five-

year Financial Forecast, currently being completed, are means to achieve more intensive programming of public capital improvements.

Managing urban development can help level out the impacts of development on the municipal budget. This option is outside the budget itself, but seeks to manage new development for fiscal sustainability. This could involve more intensively managing new development locations to reduce long-term infrastructure costs, managing land use mix to balance fiscal revenues to service costs and maintaining a more complete new development infrastructure cost recovery.

The new development management options are currently embodied in the Lancaster Urban Structure Program. This program considers how new development cost recovery can be best used to guide new development to reduce the fiscal impact on the municipal budget. The Urban Structures Program was implemented in 1992 and has remained the City's primary method for assessing new development impact fees since that time. However, changing conditions have made it necessary to examine the Urban Structure Program as part of the current General Plan Update.

Intensification of the Urban Structure Program, or some alternative approach to new development cost recovery, may assist the municipal budgeting process to adequately address the fiscal impacts associated with new development. The City continues to explore innovative and effective methods that can be applied to address this problem.

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