

**SINGLE-FAMILY RESIDENTIAL HAULED WATER INITIATIVE
FOR NEW DEVELOPMENT**

DRAFT ENVIRONMENTAL IMPACT REPORT

VOLUME V

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MAY 31, 2016

Appendix J

Cultural Resources Technical Report

**SINGLE-FAMILY RESIDENTIAL HAULED WATER INITIATIVE
FOR NEW DEVELOPMENT**

CULTURAL RESOURCES TECHNICAL REPORT

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SECTION 1.0 INTRODUCTION

This Cultural Resources Technical Report (CRTR) was prepared to characterize the proposed Single-Family Residential Hauled Water Initiative for New Development (proposed initiative) with regard to cultural resources and determine if the proposed initiative may have a significant impact to cultural resources, thus requiring the consideration of mitigation measures or alternatives in accordance with Section 15063 of the California Environmental Quality Act Guidelines (State CEQA Guidelines). Cultural resources in the general areas of Los Angeles County (County) where parcels that would potentially be eligible for the use of hauled water pursuant to the proposed initiative were assessed with regard to the Land Use Element and Conservation and Open Space Element of the existing adopted Los Angeles County General Plan;^{1,2} the Conservation and Natural Resources Element of the Draft Los Angeles County General Plan Draft 2035 Update;^{3,4} and the Los Angeles County Code of Ordinances – Title 22 Planning and Zoning.⁵ The characterization and analysis contained in the CRTR relies on information developed from literature reviews; agency coordination; consideration of applicable federal, state, and local statutes and guidelines; and cultural resources database searches.

1.1 PURPOSE OF THE PROPOSED INITIATIVE

The Los Angeles County Board of Supervisors has directed the preparation of a proposed ordinance (proposed initiative) that would allow hauled water as the primary source of potable water for new development of single-family residences on existing vacant legal lots, or lots that are eligible for a certificate of compliance, where the property owner has demonstrated that there is no other feasible source of private or municipal potable water, or capability of developing an on-site well to provide potable water to the property, and if the property lies outside of the boundaries of the local private and municipal water districts, and is not eligible for service by the nearest public or private water purveyor. The proposed initiative is proposed for parcels that are larger than 2,000 square feet in size, with slopes under 50 percent (26.6°). The term “vacant” is used as identified by the County Assessor.

¹ County of Los Angeles Department of Regional Planning. 25 November 1980. County of Los Angeles General Plan Land Use Element. Available online at http://planning.lacounty.gov/assets/upl/initiative/gp_web80-land-use.pdf

² County of Los Angeles Department of Regional Planning. 25 November 1980. County of Los Angeles General Plan Conservation and Open Space Element. Available online at http://planning.lacounty.gov/assets/upl/initiative/gp_web80-conservation-and-open-space.pdf

³ Los Angeles County Department of Regional Planning. January 2014. Los Angeles County General Plan Public Review Draft: Chapter 6: Land Use Element. Available online at: http://planning.lacounty.gov/assets/upl/initiative/gp_2035_Chapter6_2014.pdf

⁴ Los Angeles County Department of Regional Planning. January 2014. Los Angeles County General Plan Public Review Draft: Chapter 9: Conservation and Natural Resources Element. Available online at: http://planning.lacounty.gov/assets/upl/initiative/gp_2035_Chapter9_2014.pdf

⁵ Los Angeles County Department of Regional Planning. n.d. Los Angeles County Code of Ordinances – Title 22 Planning and Zoning. Available online at: https://library.municode.com/HTML/16274/level3/TIT22PLZO_DIV1PLZO_CH22.04INPR.html

1.2 PURPOSE OF THE CULTURAL RESOURCES TECHNICAL REPORT

This CRTR was prepared to characterize the cultural resources that would potentially be affected by the proposed initiative. The report provides the substantial evidence on which the required evaluation of feasibility, environmental analysis, and findings of fact in relation to cultural resources can be made.

1.3 INTENDED AUDIENCE

The information included in this CRTR documents the cultural resources that would potentially be affected by the proposed initiative. This information is intended to inform the decision-making process to be undertaken by the County Board of Supervisors. This information is also provided to responsible and trustee agencies; Tribal Historic Preservation Officers and other Native American representatives, the public, and other interested stakeholders so that they may provide the County with meaningful input in response to circulation of the Draft Environmental Impact Report (EIR) for public review and comment.

1.4 CONFIDENTIALITY OF ARCHAEOLOGICAL SITE INFORMATION

The location data for the archaeological resources will not be circulated for public review. To protect the sites from unauthorized excavation, looting, and/or vandalism, the locations of known archaeological resources will be kept confidential. Information concerning the nature and location of archaeological resources is protected under the Archaeological Resources Protection Act (16 U.S.C. 470 hh) and other statutes. Records in the information centers are exempt from the California Public Records Act (Government Code Section 6250 *et seq.*). Government Code Section 6254.10 states,

Nothing in this chapter requires disclosure of records that relate to archaeological site information and reports maintained by, or in the possession of, the Department of Parks and Recreation, the State Historical Resources Commission, the State Lands Commission, the Native American Heritage Commission, another state agency, or a local agency, including the records that the agency obtains through a consultation process between a California Native American tribe and a state or local agency.

Government Code Section 6254(r) explicitly authorizes public agencies to withhold information from the public relating to “Records of Native American graves, cemeteries, and sacred places and records of Native American places, features, and objects described in Sections 5097.9 and 5097.993 of the Public Resources Code maintained by, or in the possession of, the Native American Heritage Commission, another state agency, or a local agency.” Due to the sensitive nature of cultural resources described herein, the technical appendices to the report containing the archaeological site records and/or maps are confidential and meant for those parties that are in a “need to know” basis, such as the State Historic Preservation Officer (SHPO), Native American Heritage Commission (NAHC), and California Office of Historic Preservation (OHP).

1.5 SCOPE OF THE INVESTIGATION

The analysis of cultural resources consists of a summary of the regulatory framework that guides the decision-making process, a description of the methods employed to support the characterization and evaluation of cultural resources within the cultural resources study area, the results for baseline conditions for cultural resources, the potential for the proposed initiative to

affect cultural resources, and opportunities to avoid and minimize the potential effects of the initiative.

Each of the environmental issues considered in Appendix G of the State CEQA Guidelines for cultural resources is addressed through this analysis:

- Historical resources
- Archaeological resources
- Unique paleontological resources or unique geologic features
- Human remains and other potential Native American sacred sites

The area that would be subject to the proposed initiative consists of 42,867 parcels in the unincorporated territory of Los Angeles County. The combined proposed initiative study area consists of approximately 342,715 acres or approximately 535 square miles. Therefore, the characterization of historic resources, archeological resources, paleontological resources, and human remains and Native American sacred sites has been based on records and archival data and predicative modeling of the potential for impacts to occur based on the type and density or resources known from areas that have been the subject of Phase I and II investigations in comparable environments. The proposed initiative would not authorize construction of individual properties; rather, it would make individual properties potentially eligible for the use of hauled water as the primary source of potable water. Individual properties seeking to use hauled water as the primary source of potable water for new single-family residential development would still be required to apply for and obtain a building permit.

1.6 SOURCES OF RELEVANT INFORMATION

Information used in the preparation of this CRTR was derived from an extensive literature review, consultation with experts knowledgeable of the cultural resources identified as having the potential to occur within the cultural resources study area, consultation with responsible and trustee agencies, and coordination with special interests. This CRTR documents the coordination and consultation that has been undertaken with the California Native American Heritage Commission (NAHC) as well as individuals identified by the NAHC as having ancestral ties to the region. In addition, preparation of this report utilized the University of California Museum of Paleontology (UCMP) online database as well as the South Central Coastal Information Center (SCCIC) at California State University, Fullerton, one of 10 independent centers operated under contract to the Office of Historic Preservation (OHP), California Department of Parks and Recreation, for the purpose of maintaining the federally and state-mandated California Historic Resources Inventory (HRI). Sources of relevant information are cited in footnotes and compiled in Section 6, *References*.

1.7 WORKING DEFINITIONS

Alluvium is an unconsolidated accumulation of stream-deposited sediments, including sands, silts, clays or gravels.

Archaeological site is defined by the National Register of Historic Places (NRHP) as the place or places where the remnants of a past culture survive in a physical context that allows for the interpretation of these remains. Archaeological remains usually take the form of artifacts (e.g., fragments of tools, vestiges of utilitarian, or non-utilitarian objects), features (e.g., remnants of walls, cooking hearths, or midden deposits), and ecological evidence (e.g., pollen remaining from

plants that were in the area when the activities occurred). These can include prehistoric (pre-European contact), historic (post-contact), or combination thereof.

BP stands for “before present,” which is defined as before 1950 and is used by archaeologists in conjunction with the commonly used term, AD.

Cretaceous is defined as an interval of time relating to, or denoting the last period of the Mesozoic era, between the Jurassic and Tertiary periods.

Formation is defined as a laterally continuous rock unit with a distinctive set of characteristics that make it possible to recognize and map from one outcrop or well to another. The basic rock unit of stratigraphy.

Holocene is defined as an interval of time relating to, or denoting the present epoch, which is the second epoch in the Quaternary period, including the time period from approximately 11,000 years ago to the present.

Historic period is defined as the period that begins with the arrival of the first nonnative population and thus varies by area. In 1769, Gaspar de Portolá became the first European to enter the San Fernando Valley, initiating the historic period in the proposed initiative study area.

Historical resource is defined by CEQA as any object, building, structure, site (including archaeological sites), area, place, record, or manuscript that is listed in, or is eligible for listing in, the California Register of Historical Resources (CRHR); officially designated or recognized as historically significant by a local government pursuant to a local initiative or resolution; or identified as significant in a historic resource survey conducted in accordance with the requirements of the CRHR statute (Public Resources Code Section 5024.1(g)). Properties listed in, or determined eligible for listing in, the NRHP are automatically listed in the CRHR and are therefore historical resources under CEQA.

Isolate is defined as an isolated artifact or small group of artifacts that appear to reflect a single event, loci, or activity. It may lack identifiable context but has the potential to add important information about a region, culture, or person. Isolates are not considered under CEQA to be significant and, thus, do not require avoidance or mitigation under CEQA. All isolates located during the field effort, however, are recorded, and the data are transmitted to the appropriate California Historical Resources Information System (CHRIS) Information Center.

Miocene is defined as an interval of time relating to or denoting the fourth epoch of the Tertiary period, between the Oligocene and Pliocene epochs, from approximately 23 to 5.5 million years ago.

Oligocene is defined as an interval of time relating to or denoting the third epoch of the Tertiary period, between the Eocene and Miocene epochs, from approximately 34 to 23 million years ago.

Outcrop is defined as a rock formation that is visible on earth’s surface.

Paleocene is defined as an interval of time, relating to, or denoting the earliest epoch of the Tertiary period, between the Cretaceous period and the Eocene epoch.

Phase I archaeological resources survey consists of a literature review (background research), consultation with the NAHC, and fieldwork. Fieldwork consists of a physical inspection of the cultural resources survey area, generally through pedestrian surveys, or by other means when appropriate. The purpose of the Phase I survey is to identify the cultural resources known or likely to be present in the initiative's impact area and in the immediate vicinity.

Phase II archaeological investigation, consisting of testing and evaluation, is conducted when the results of a Phase I investigation indicate the presence of potentially significant cultural resources. Phase II investigations are intended to evaluate the historical significance of historic and prehistoric archaeological sites and require a comprehensive and detailed scope of work, a research design, and fieldwork. Surface and subsurface testing is conducted during Phase II investigations to collect the data necessary to establish historical significance of archaeological sites.

Phase III data recovery is implemented on those archaeological sites that are determined to be significant as a result of the Phase II investigations and that cannot feasibly be avoided or preserved with initiative implementation. Phase III efforts typically involve the collection of data intended to answer scientific or research questions that have been formulated during Phase II testing and formalized by a comprehensive Phase III research design. Most commonly, Phase III data collections are implemented on sites determined to be significant as a means of mitigating the effects of an initiative through salvage, recordation, and archiving of scientific data associated with the site.

Pleistocene is defined as an interval of time, relating to or denoting the first epoch of the Quaternary period, between the Pliocene and Holocene epochs, from approximately 2.6 million years ago to 11,000 years ago.

Pliocene is defined as an interval of time, relating to or denoting the last epoch of the Tertiary period, between the Miocene and Pleistocene epochs, from approximately 5.5 to 2.6 million years ago.

Plutonic igneous rocks are igneous rocks that have crystallized beneath the earth's surface.

Prehistoric period is defined as the era prior to AD 1769. The later part of the prehistoric period (post-AD 1542) is also characterized as the protohistoric period in some areas, which marks a transitional period during which native populations began to be influenced by European presence resulting in gradual changes to their lifeways.

Quaternary is defined as the most recent Period in geological time; includes the Pleistocene and Holocene Epochs.

Unique geologic feature is defined as an important and irreplaceable geological formation. Such features may have scientific and/or cultural values.

Unique paleontological resource is defined as a fossil that meets one or more of the following criteria:

- It provides information on the evolutionary relationships and developmental trends among organisms, living or extinct.

- It provides data useful in determining the age(s) of the rock unit or sedimentary stratum, including data important in determining the depositional history of the region and the timing of geologic events therein.
- It provides data regarding the development of biological communities or interaction between plant and animal communities.
- It demonstrates unusual or spectacular circumstances in the history of life.
- The fossils are in short supply and/or in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and are not found in other geographic locations.

SECTION 2.0

PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The area that would be subject to the proposed initiative consists of 42,867 parcels in the unincorporated territory of Los Angeles County (see Figure 2.1-1, *Proposed Initiative Study Area*, at the end of this section).¹ The combined proposed initiative study area consists of approximately 340,461 acres or approximately 532 square miles.

Although this is a Countywide initiative, the parcels that would potentially be affected by the proposed initiative are located entirely within the 5th Supervisorial District in the northern one-third of the County, including areas located in the San Gabriel Mountains, in the Antelope Valley; areas located northeast of the City of Santa Clarita, north and south of California State Route 14; areas that are southwest of the City of Palmdale in the communities of Agua Dulce and Acton. The subject parcels have been categorized into seven subareas:

1. **Lake Hughes/Gorman/West of Lancaster:** The Lake Hughes/Gorman/West of Lancaster subarea is located in an area generally located west of State Highway 14 and north of the Angeles National Forest. This subarea consists of 15,166 parcels and encompasses approximately 195.4 square miles (125,041.4 acres). State Highway 138 bisects the subarea in an east-west direction, and State Highway 14 forms the eastern boundary of this subarea. This subarea is adjacent to the northwestern edge of the incorporated City of Lancaster.
2. **Lancaster Northeast:** The Lancaster Northeast subarea is located in an area generally east of State Highway 14 and north of East Avenue J. This subarea consists of 6,794 parcels and encompasses approximately 55.2 square miles (35324.90 acres). State Highway 14 forms the western boundary and East Avenue J forms the southern boundary of this subarea. Edwards Air Force Base is located north of the study area. This subarea is adjacent to the northeastern edge of the incorporated City of Lancaster.
3. **Antelope Valley Northeast:** The Antelope Valley Northeast subarea is located in an area generally located north of East Avenue E and east of 165th Street East in the far northeastern portion of Los Angeles County. This subarea consists of 1,938 parcels and encompasses approximately 22.7 square miles (14,528.23 acres). This subarea is relatively isolated and is located in the northeastern area of Los Angeles County. This subarea is located approximately 10.9 miles northeast of the incorporated City of Palmdale and approximately 11.3 miles northeast of the incorporated City of Lancaster.
4. **Lake Los Angeles/Llano/Valyermo/Littlerock:** The Lake Los Angeles/Llano/Valyermo/Littlerock subarea is located in an area generally south of East Avenue J, east of 47th Street East. This subarea consists of 14,822 parcels and encompasses approximately 168.8 square miles (108067.33 acres). Avenue J forms the northern

¹ Assessor's Parcels Numbers for the referenced parcels are on file at the Los Angeles County Department of Regional Planning.

boundary, the Cities of Palmdale and Lancaster form the western boundary, and the San Bernardino County line forms the eastern boundary of this subarea. This subarea is adjacent to the eastern edge of the incorporated City of Palmdale.

5. **Acton:** The Acton subarea is located in an area generally east of Hubbard Road and West of 47th Street East. This subarea consists of 1,246 parcels and encompasses approximately 28.2 square miles (18,067.22 acres). The Angeles National Forest is located to the north and south of the subarea. This subarea is adjacent to the southwestern edge of the incorporated City of Palmdale.
6. **Castaic/Santa Clarita/Agua Dulce:** The Castaic/Santa Clarita/Agua Dulce subarea is located generally west of Hubbard Road and north of the 210 Freeway excluding Kagel Canyon. This subarea consists of 2,243 parcels and encompasses approximately 55.2 square miles (35,340.2 acres). This subarea is adjacent to the northern, western, and southern edges of the incorporated City of Santa Clarita and the northern edge of the incorporated City of Los Angeles.
7. **East San Gabriel Mountains:** The East San Gabriel Mountains subarea consists of parcels generally located within the Angeles National Forest east of State Highway 14, north of the 210 freeway, south of the Pearblossom Highway, and west of the San Bernardino County line. This subarea consists of 658 parcels and encompasses approximately 6.4 square miles (4092.26 acres). This subarea is adjacent to the northern edges of the San Gabriel and San Fernando Valleys.

The proposed initiative study area is located within 53 USGS 7.5-minute quadrangle maps (see Figure 2.1-2, *USGS 7.5-Minute Quadrangle Index*, at the end of this section):

- Acton
- Adobe Mountain
- Agua Dulce
- Alpine Butte
- Azusa
- Black Mountain
- Burnt Peak
- Chilao Flat
- Condor Peak
- Crystal Lake
- Del Sur
- El Mirage
- Fairmont Butte
- Frazier Mountain
- Glendora
- Green Valley
- Hi Vista
- Jackrabbit Hill
- Juniper Hills
- La Liebre Ranch
- Lake Hughes
- Lovejoy Buttes
- Mescal Creek
- Mint Canyon
- Mount Baldy
- Mount San Antonio
- Mount Wilson
- Neenach School
- Newhall
- Oat Mountain
- Pacifico Mountain
- Palmdale
- Pasadena
- Redman
- Ritter Ridge
- Rogers Lake South
- Rosamond
- Rosamond Lake
- San Fernando
- Simi Valley East
- Sleepy Valley
- Sunland

- Lancaster East
- Lancaster West
- Lebec
- Liebre Mountain
- Little Buttes
- Littlerock
- Val Verde
- Valyermo
- Warm Springs Mountain
- Waterman Mountain
- Whitaker Peak

The elevation of the overall proposed initiative study area ranges from 7,409 feet above sea level in the East San Gabriel Mountains subarea to 862 feet above sea level also in the East San Gabriel Mountains subarea (see Figure 2.1-3, *Topographic Map*, at the end of this section).

2.2 EXISTING CONDITIONS

2.2.1 Lake Hughes/Gorman/West of Lancaster

The Lake Hughes/Gorman/West of Lancaster subarea is located in an area generally west of State Highway 14 and north of the Angeles National Forest; however, there are also several National Forest inholding parcels located along San Francisquito Canyon and Lake Hughes Road. The topography of this subarea is generally flat, except for the parcels located along San Francisquito Canyon and Lake Hughes Road, which are located in mountainous terrain. The highest elevation within this subarea is approximately 4,768 feet above mean sea level (MSL), and the lowest elevation is approximately 2,315 feet above MSL. State Highway 14 provides access to the subarea from the east, and Interstate 5 provides access to the subarea from the west. The main existing land uses in this subarea are agriculture and rural residential uses. The established communities of Del Sur, Gorman, Lake Hughes, Leona Valley, and Quartz Hill are located in this subarea.

2.2.2 Lancaster Northeast

The Lancaster Northeast subarea is located in an area generally east of State Highway 14 and north of East Avenue J. The topography of this subarea is generally flat; the highest elevation within this subarea is approximately 2,688 feet above MSL, and the lowest elevation is approximately 2,298 feet above MSL. State Highway 14 provides access to the subarea from the west. The predominant existing land uses in this subarea consist of agricultural, recreation, and rural residential uses. The established communities of Hi Vista and a small portion of Del Sur are located in this subarea.

2.2.3 Antelope Valley Northeast

The Antelope Valley Northeast subarea is located in an area generally north of East Avenue E and east of 165th Street East in the far northeastern portion of Los Angeles County. The topography of this subarea is mainly flat, with a few hills to the north. The highest elevation within this subarea is approximately 3,296 feet above MSL, and the lowest elevation is approximately 2,547 feet above MSL. There are no existing primary access roads to the area; however, East Avenue G provides access to the area from the Lancaster area. Presently, the entirety of this subarea is vacant. Saddleback Butte State Park is located to the south of the subarea. A small portion of the established community of Hi Vista is located in this subarea.

2.2.4 Lake Los Angeles/Llano/Valyermo/Littlerock

The Lake Los Angeles/Llano/Valyermo/Littlerock subarea is located in an area generally south of East Avenue J, east of 47th Street East. The topography of this subarea is generally flat, except for several parcels that are located on slopes of the San Gabriel Mountains to the south. The highest elevation within this subarea is approximately 5,626 feet above MSL, and the lowest elevation is approximately 2,443 feet above MSL. State Highways 138 and 18 provide the primary access to this subarea. Predominant existing land uses within this subarea consist of vacant land, single-family residential subdivisions, agricultural uses, and scattered rural residential uses. The Angeles National Forest forms the southern border of this subarea. The established communities of Llano, Valyermo, Pearblossom, Littlerock, Lake Los Angeles and portions of Hi Vista are located within this subarea.

2.2.5 Acton

The Acton subarea is located in an area generally east of Hubbard Road and West of 47th Street East. The topography of the subarea is mainly mountainous and hilly. The highest elevation within this subarea is approximately 4,900 feet above MSL, and the lowest elevation is approximately 2,290 feet above MSL. State Highway 14 provides the primary access to this subarea. Predominant existing land uses consist of rural residential uses, single-family residential uses, and scattered agricultural uses. The Angeles National Forest forms the southern border of this subarea. The established communities of Acton, South Antelope Valley, and portions of Agua Dulce are located in this subarea.

2.2.6 Castaic/Santa Clarita/Agua Dulce

The Castaic/Santa Clarita/Agua Dulce subarea is located generally west of Hubbard Road and north of the 210 Freeway excluding Kagel Canyon. The topography of this subarea is generally mountainous. The highest elevation within this subarea is approximately 4,430 feet above MSL, and the lowest elevation is approximately 994 feet above MSL. Interstate 5 and State Highway 14 are the primary access roads for this subarea. Additionally, State Highway 126 provides access to areas in the western portion of the subarea. Predominant existing land uses consist of rural residential, single-family residential, and scattered agricultural. The Angeles National Forest forms the northern and southern borders of this subarea. The established communities of Agua Dulce, Castaic Val Verde, Stevenson Ranch, Newhall, Canyon Country, and portions of Acton are located within this subarea.

2.2.7 East San Gabriel Mountains

The East San Gabriel Mountains subarea consists mainly of private inholding parcels located within the eastern San Gabriel Mountain range and is generally located east of State Highway 14, north of the 210 freeway, south of the Pearblossom Highway, and west of the San Bernardino County line. The topography of the subarea is very mountainous. The highest elevation within this subarea is approximately 7,409 feet above MSL, and the lowest elevation is approximately 862 feet above MSL. Primary access to this subarea is provided by Mount Baldy Road, San Gabriel Canyon Road (Highway 39), Angeles Crest Highway (Highway 2), Big Tujunga Canyon Road, and Little Tujunga Canyon Road from the 210 freeway to the south and Soledad Canyon Road and Big Pines Road from the north. Predominant existing land uses consist of national forest recreation, open space, and resource uses, widely scattered residential uses exist in places such as Wrightwood and Mt. Baldy Village. Communication infrastructure uses are located on Mount Wilson. The Angeles

National Forest surrounds all 658 private inholding parcels within this subarea, which have been designated in the 2005 update to the Angeles National Forest Land Management Plan as Non-Forest System Land Ownership and therefore are not subject to the national land management plan.^{2,3} The established communities of Angeles National Forest, Altadena, Sylmar, and portions of Acton, Valyermo, Pearblossom, Llano, and Littlerock are located in this subarea.

2.3 PROJECT DESCRIPTION

The Los Angeles County Board of Supervisors has directed the preparation of a proposed ordinance that would allow hauled water as the primary source of potable water for new development of single-family residences on existing vacant legal lots, or lots that are eligible for a certificate of compliance, where the property owner has demonstrated that there is no other feasible source of private or municipal potable water, or capability of developing an on-site well to provide potable water to the property, and only if the property lies outside of the boundaries of the local private and municipal water districts, and is not eligible for service by the nearest public-community water purveyor. The proposed initiative is proposed for parcels that consists of at least 2,000 square feet net parcel size of land under 50 percent average slope (26.6 degrees). The term vacant is used as identified by the County Assessor.

In order to determine which areas would be subject to the proposed initiative, Los Angeles County developed a geographic information system (GIS) suitability model in 2012 based on five criteria defined by the Task Force:

- Parcels located in the unincorporated territory of Los Angeles County
- Vacant parcels
- Parcels located in areas where there is no designated water purveyor
- Zoning and General Plan designation that allow for development of a single-family residence
- Parcel size > 2,000 net square feet with slopes under 50 percent (26.6 degrees)

2.4 CONSTRUCTION SCENARIO

The proposed initiative would not authorize construction of single-family residential development per se. It simply provides for the use of hauled water as an allowable source of potable water during the building permit application process where the property is not located within a public or private water district and where potable water for domestic and fire protection requirements cannot be provided by an on-site groundwater well. To determine historical development trends, 17 years of building permit application data from 1997 through 2014 were reviewed to determine the average number of building permits issued per year for single-family residential development not associated with subdivision development.⁴ An anticipated growth factor of 25 percent has been

² United States Department of Agriculture Forest Service, Angeles National Forest. April 2006. Record of Decision, Angeles National Forest Land Management Plan. Available at: <http://www.fs.usda.gov/detail/angeles/landmanagement/planning/?cid=stelprdb5324056#1>.

³ United States Department of Agriculture Forest Service. September 2005. Final Land Management Plan Alternative 4a Selected: Land Use Zones [Map]. Available at: http://www.fs.usda.gov/Internet/FSE_MEDIA/stelprdb5311720.pdf

⁴ County Building and Safety Division building permit records have been digitally tracked since 1997; records were not readily available from before 1997.

applied based on Southern California Association of Governments (SCAG) projections for the unincorporated area of Los Angeles County from 2008 to 2035.⁵

The reasonable worst-case scenario assumes the annual average rate of issuance of building permits over the 20-year 2015 to 2035 planning horizon would be approximately 32 per year in the Santa Clarita Valley and approximately 151 per year in the Antelope Valley for a total of 184 permits per year for both areas. The total anticipated building permits issued over the 20-year 2015 to 2035 planning horizon would be approximately 3,680. As a result, it is anticipated that the disturbance area for the single-family residences constructed on these parcels would be approximately 5,299 acres (Table 2.4-1, *Estimated Number of Parcels to Be Developed and Disturbance Area in the Unincorporated Antelope Valley and Santa Clarita Valley, 2015–2035*).

**TABLE 2.4-1
ESTIMATED NUMBER OF PARCELS TO BE DEVELOPED AND
DISTURBANCE AREA IN THE UNINCORPORATED ANTELOPE VALLEY AND
SANTA CLARITA VALLEY, 2015–2035***

| Estimated Annual Santa Clarita Valley Building Permits | Estimated Annual Antelope Valley Building Permits | Total Estimated Annual Building Permits** in Unincorporated Santa Clarita and Antelope Valleys ¹ | Total Estimated Building Permits over 20-Year Planning Horizon | Total Estimated Disturbance Area over 20-Year Planning Horizon (acres)*** |
|--|---|---|--|---|
| 32 | 151 | 184 | 3,680 | 5,299 |

NOTES:

* Includes a 25 percent growth factor based on SCAG population projections.²

** Including mobile homes.

*** Based on an average parcel size of four acres with 36 percent disturbance.³

SOURCE:

¹ Los Angeles County Department of Public Works, Building and Safety Division. Electronic Building Permit Data from January 1, 1997 to June 30, 2014.

² Southern California Association of Governments. 12 March 2012. 2012 Adopted RTP Growth Forecast. Available online at: <http://www.scag.ca.gov/Documents/2012AdoptedGrowthForecastPDF.pdf>

³ Sapphos Environmental, Inc. 27 August 2014. Memorandum for the Record. Subject: "Analysis of Residential Development and Existing Disturbance for Parcels within or near the Proposed Hauled Water Initiative Study Area." Prepared for: Los Angeles County Hauled Water Task Force.

An analysis of a small subset of parcels in each subarea was performed in order to determine potential impacts from hauled water infrastructure including a storage tank, a septic leach field, and access for hauled water delivery vehicles. Based on the analysis it was determined that the average area of disturbance for each parcel was approximately 36 percent. The average size of lots analyzed was four gross acres (Table 2.4-1).

⁵ Southern California Association of Governments. 12 March 2012. 2012 Adopted RTP Growth Forecast. Available online at: <http://www.scag.ca.gov/Documents/2012AdoptedGrowthForecastPDF.pdf>

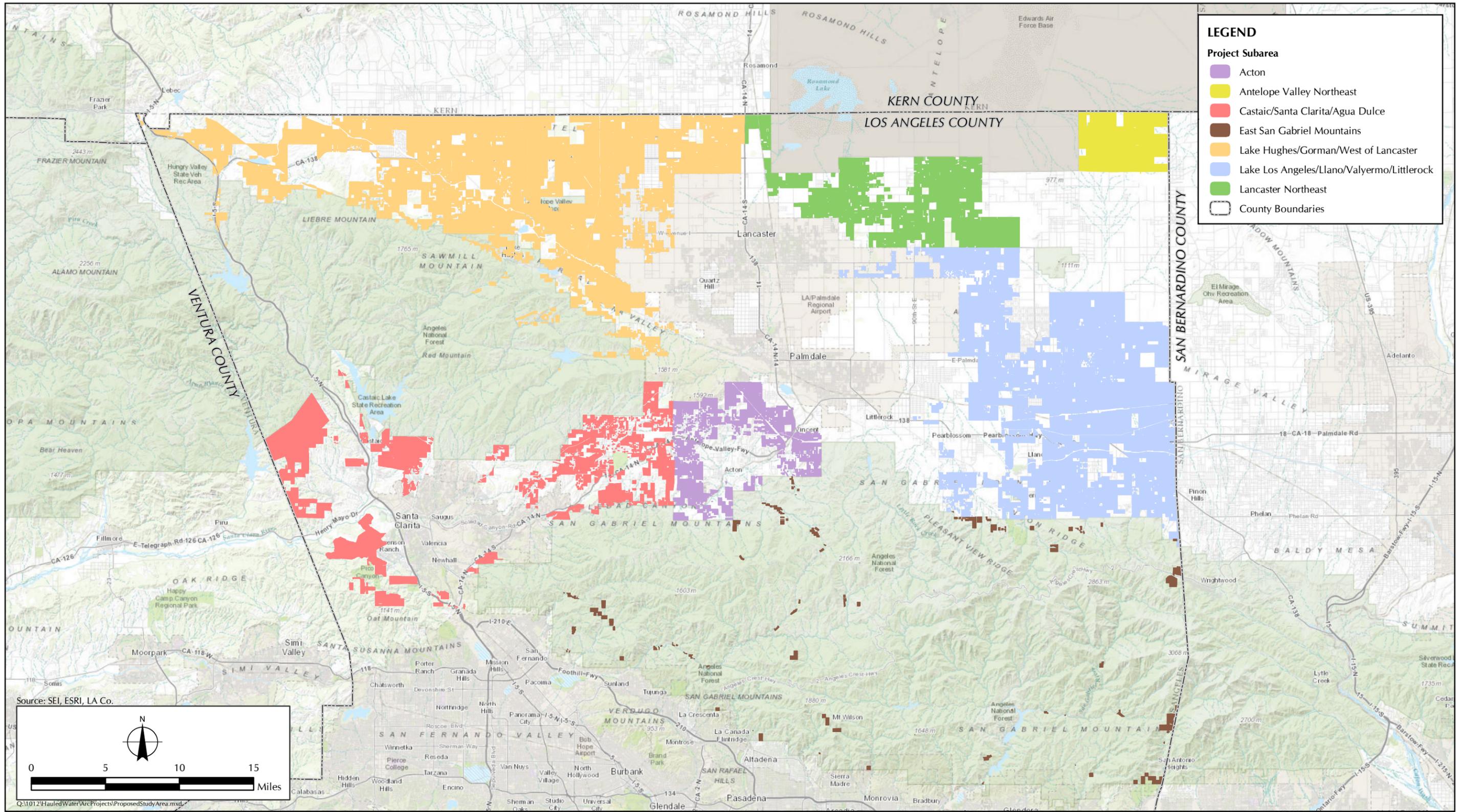


FIGURE 2.1-1
Proposed Initiative Study Area

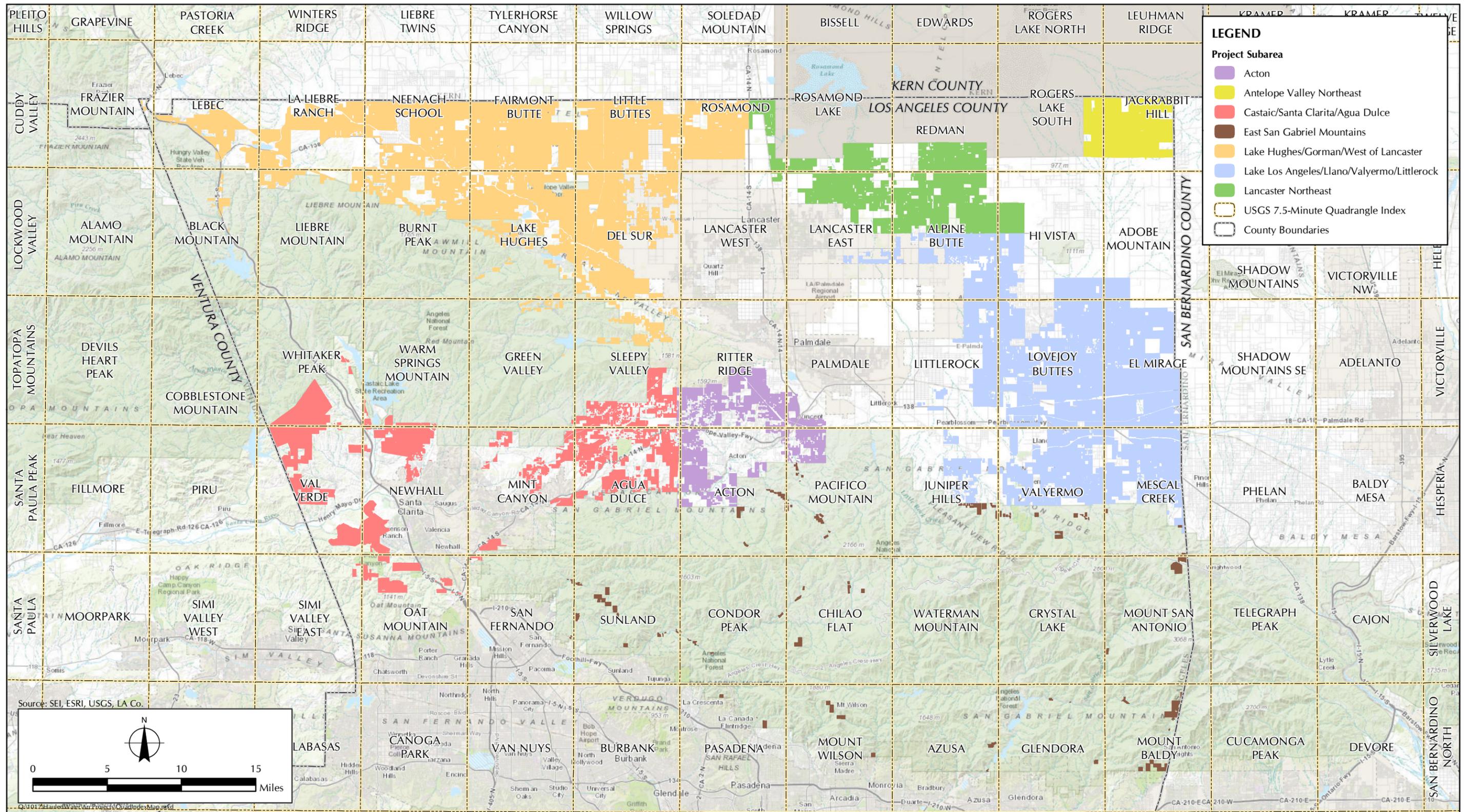


FIGURE 2.1-2
USGS 7.5-Minute Quadrangle Index

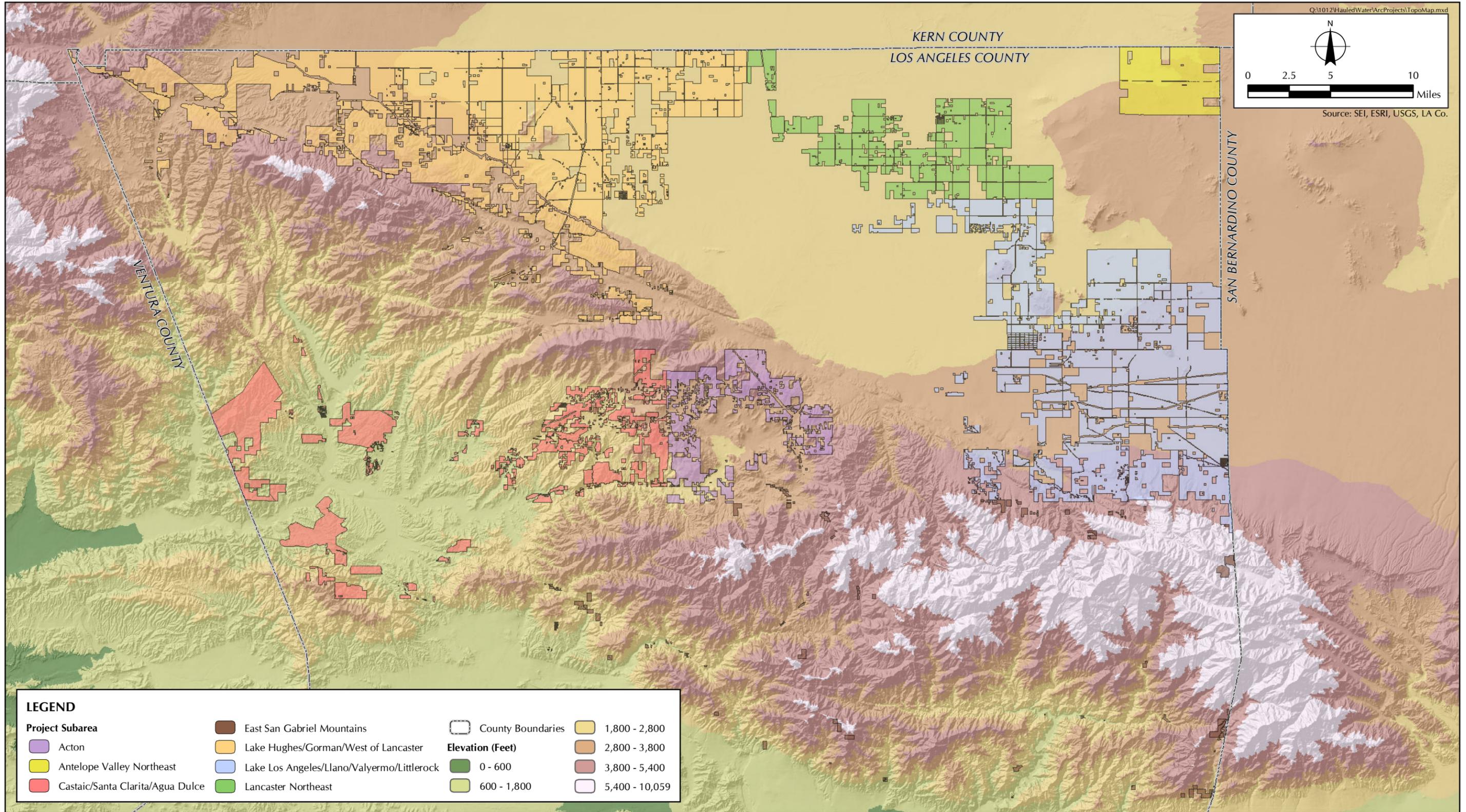


FIGURE 2.1-3
Topographic Map

SECTION 3.0

REGULATORY FRAMEWORK

This regulatory framework identifies the federal, state, and local statutes, ordinances, or policies that govern the conservation and protection of cultural resources that will be considered by the County during the decision-making process for the proposed initiative.

3.1 FEDERAL

3.1.1 National Historic Preservation Act of 1966 (NHPA)¹

Enacted in 1966, the NHPA declared a national policy of historic preservation and instituted a multifaceted program, administered by the National Parks Service, to encourage the achievement of preservation goals at the federal, state, and local levels. The NHPA authorized the expansion and maintenance of the NRHP, established the position of State Historic Preservation Officer and provided for the designation of State Review Boards, set up a mechanism to certify local governments to carry out the purposes of the NHPA, assisted Native American tribes to preserve their cultural heritage, and created the Advisory Council on Historic Preservation (ACHP). Section 106 of the NHPA states that federal agencies with direct or indirect jurisdiction over federally funded, assisted, or licensed undertakings must take into account the effect of the undertaking on any historic property that is included in, or eligible for inclusion in, the NRHP, and that the ACHP must be afforded an opportunity to comment, through a process outlined in the ACHP regulations at 36 Code of Federal Regulations (CFR) Part 800, on such undertakings.

National Register of Historic Places

The NRHP was established by the NHPA of 1966 as “an authoritative guide to be used by federal, state, and local governments, private groups, and citizens to identify the Nation’s cultural resources and to indicate what properties should be considered for protection from destruction or impairment.”² The NRHP recognizes properties that are significant at the national, state, and local levels. To be eligible for listing in the NRHP, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures, and objects of potential significance must also possess integrity of location, design, setting, materials, workmanship, feeling, and association. A property is eligible for the NRHP if it is significant under one or more of the following criteria:³

- Criterion A: It is associated with events that have made a significant contribution to the broad patterns of our history.
- Criterion B: It is associated with the lives of persons who are significant in our past.
- Criterion C: It embodies the distinctive characteristics of a type, period, or method of construction; represents the work of a master; possesses high artistic values; or represents a significant and distinguishable entity whose components may lack individual distinction.

¹ United States Code, 16 USC 470.

² Code of Federal Regulations, 36 CFR 60.2.

³ Code of Federal Regulations, 36 CFR 60.4.

Criterion D: It has yielded, or may be likely to yield, information important in prehistory or history.

Cemeteries, birthplaces or graves of historic figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, and properties that are primarily commemorative in nature are not considered eligible for the NRHP unless they satisfy certain conditions. In general, a resource must be at least 50 years of age to be considered for the NRHP, unless it satisfies a standard of exceptional importance.

3.1.2 Native American Graves Protection and Repatriation Act of 1990 (NAGPRA)

The NAGPRA of 1990 sets provisions for the intentional removal and inadvertent discovery of human remains and other cultural items from federal and tribal lands. It clarifies the ownership of human remains and sets forth a process for repatriation of human remains and associated funerary objects and sacred religious objects to the Native American groups claiming to be lineal descendants or culturally affiliated with the remains or objects. It requires any federally funded institution housing Native American remains or artifacts to compile an inventory of all cultural items within the museum or with its agency and to provide a summary to any Native American tribe claiming affiliation.

3.2 STATE

3.2.1 California Environmental Quality Act⁴

Pursuant to CEQA, a *historical resource* is a resource listed in, or eligible for listing in, the CRHR. In addition, resources included in a local register of historic resources or identified as significant in a local survey conducted in accordance with state guidelines are also considered historical resources under CEQA, unless a preponderance of the facts demonstrates otherwise. According to CEQA, the fact that a resource is not listed in or determined eligible for listing in the CRHR or is not included in a local register or survey shall not preclude a Lead Agency, as defined by CEQA, from determining that the resource may be a historical resource as defined in California Public Resources Code (PRC) Section 5024.1.⁵

CEQA applies to archaeological resources when (1) the archaeological resource satisfies the definition of a historical resource or (2) the archaeological resource satisfies the definition of a “unique archaeological resource.” A *unique archaeological resource* is an archaeological artifact, object, or site that has a high probability of meeting any of the following criteria:⁶

1. The archaeological resource contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information.

⁴ California Public Resources Code, Division 13, Sections 21083.2, 21084.1.

⁵ California Code of Regulations, Title 14, Chapter 3. Amended 6 October 2005. Guidelines for the Implementation of the California Environmental Quality Act, Section 15064.5(a).

⁶ California Public Resources Code, Division 13, Section 21083.2(g).

2. The archaeological resource has a special and particular quality such as being the oldest of its type or the best available example of its type.
3. The archaeological resource is directly associated with a scientifically recognized important prehistoric or historic event or person.

Appendix G of the State CEQA Guidelines provides a set of sample questions that guide the evaluation of potential impacts with regard to cultural resources.

Would the project:

- (a) Cause a substantial adverse change in the significance of an historical resource as defined in §15064.5?
- (b) Cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5?
- (c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?
- (d) Disturb any human remains, including those interred outside of formal cemeteries?⁷

3.2.2 California Register of Historical Resources

Created in 1992 and implemented in 1998, the CRHR is “an authoritative guide in California to be used by state and local agencies, private groups, and citizens to identify the state’s historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change.”⁸ Certain properties, including those listed in or formally determined eligible for listing in the NRHP and California Historical Landmarks (CHLs) numbered 770 and higher, are automatically included in the CRHR. Other properties recognized under the California Points of Historical Interest program, identified as significant in historic resources surveys, or designated by local landmarks programs may be nominated for inclusion in the CRHR. A resource, either an individual property or a contributor to a historic district, may be listed in the CRHR if the State Historical Resources Commission determines that it meets one or more of the following criteria, which are modeled on NRHP criteria:⁹

- Criterion 1: It is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage.
- Criterion 2: It is associated with the lives of persons important in our past.
- Criterion 3: It embodies the distinctive characteristics of a type, period, region, or method of construction; represents the work of an important creative individual; or possesses high artistic values.

⁷ California Code of Regulations, Title 14, Chapter 3. Amended 6 October 2005. Guidelines for the Implementation of the California Environmental Quality Act, Appendix G.

⁸ California Public Resources Code, Section 5024.1(a).

⁹ California Public Resources Code, Section 5024.1(c).

Criterion 4: It has yielded, or may be likely to yield, information important in history or prehistory.

Resources nominated to the CRHR must retain enough of their historic character or appearance to be recognizable as historic resources and to convey the reasons for their significance.¹⁰ It is possible that a resource whose integrity does not satisfy NRHP criteria may still be eligible for listing in the CRHR. A resource that has lost its historic character or appearance may still have sufficient integrity for the CRHR if, under Criterion 4, it maintains the potential to yield significant scientific or historical information or specific data. Resources that have achieved significance within the past 50 years also may be eligible for inclusion in the CRHR, provided that enough time has lapsed to obtain a scholarly perspective on the events or individuals associated with the resource.¹¹

3.2.3 California Historical Landmarks Registration Program¹²

CHLs are buildings, structures, sites, or places that have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value and that have been determined to have statewide historical significance by meeting at least one of the criteria listed below. The resource must also be approved for designation by the County Board of Supervisors (or the City or Town Council in whose jurisdiction it is located), be recommended by the State Historical Resources Commission, and be officially designated by the Director of California State Parks. The specific standards in use now were first applied in the designation of CHL No. 770. CHLs No. 770 and above are automatically listed in the CRHR.

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

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

¹⁰ Office of Historic Preservation. n.d. Technical Assistance Bulletin 6: California Register and National Register, A Comparison (for Purposes of Determining Eligibility for the California Register). Available online at: www.ohp.parks.ca.gov

¹¹ Office of Historic Preservation. n.d. Technical Assistance Bulletin 6: California Register and National Register, A Comparison (for Purposes of Determining Eligibility for the California Register). Available online at: www.ohp.parks.ca.gov

¹² Office of Historic Preservation, Department of Parks and Recreation, State of California. n.d. California Historical Landmarks Registration Programs. Available online at: www.ohp.parks.ca.gov

3.2.4 California Points of Historical Interest¹³

California Points of Historical Interest are sites, buildings, features, or events that are of local (city or county) significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value. Points of Historical Interest designated after December 1997 and recommended by the State Historical Resources Commission are also listed in the CRHR. No historic resource may be designated as both a Landmark and a Point. If a Point is later granted status as a Landmark, the Point designation will be retired. In practice, the Point designation program is most often used in localities that do not have a locally enacted cultural heritage or preservation ordinance.

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

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

3.2.5 Public Resources Code Sections 5097.9–5097.991

Section 5097.91 of the PRC established the NAHC, whose duties include the inventory of places of religious or social significance to Native Americans and the identification of known graves and cemeteries of Native Americans on private lands. Under Section 5097.9 of the PRC, a state policy of noninterference with the free expression or exercise of Native American religion was articulated along with a prohibition of severe or irreparable damage to Native American sanctified cemeteries, places of worship, religious or ceremonial sites, or sacred shrines located on public property. Section 5097.98 of the PRC specifies a protocol to be followed when the NAHC receives notification of a discovery of Native American human remains from a county coroner. Section 5097.5 states that it is a misdemeanor to knowingly and willfully excavate, disturb, destroy, deface, or remove any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological sites, on public lands, except with the express permission of the public agency holding jurisdiction over the lands.

3.2.6 California Native American Graves Protection and Repatriation Act of 2001

Codified in the California Health and Safety Code Sections 8010–8030, the California Native American Graves Protection and Repatriation Act (Cal NAGPRA) is consistent with the federal NAGPRA. Intended to “provide a seamless and consistent state policy to ensure that all California Indian human remains and cultural items be treated with dignity and respect,” Cal NAGPRA also encourages and provides a mechanism for the return of remains and cultural items to lineal descendants. Section 8025 established a Repatriation Oversight Commission to oversee this

¹³ Office of Historic Preservation, Department of Parks and Recreation, State of California. n.d. California Points of Historical Interest Registration Programs. Available online at: www.ohp.parks.ca.gov

process. The Act also provides a process for non–federally recognized tribes to file claims with agencies and museums for repatriation of human remains and cultural items.

3.2.7 Health and Safety Code, Sections 7050 and 7052

Health and Safety Code Section 7050.5 declares that, in the event of the discovery of human remains outside a dedicated cemetery, all ground disturbance must cease and the county coroner must be notified. Section 7052 establishes a felony penalty for mutilating, disinterring, or otherwise disturbing human remains, except by relatives.

3.2.8 Penal Code, Section 622.5

Penal Code Section 622.5 provides misdemeanor penalties for injuring or destroying objects of historic or archaeological interest located on public or private lands but specifically excludes the landowner.

3.3 LOCAL

3.3.1 Southern California Association of Governments Growth Management Policy No. 3.21

The Southern California Association of Governments (SCAG) Growth Management Chapter (GMC) has instituted policies regarding the protection of cultural resources. SCAG GMC Policy No. 3.21 “encourages the implementation of measures aimed at the preservation and protection of recorded and unrecorded cultural resources and archaeological sites.”¹⁴

3.3.2 County of Los Angeles General Plan

The areas that would be potentially affected by the proposed initiative are located within seven subareas in the unincorporated areas of Los Angeles County and subject to the County of Los Angeles General Plan. The 1980 County of Los Angeles General Plan and the Los Angeles County General Plan 2035 have both been referenced below.^{15,16}

The Conservation, Open Space, and Recreation element of the County General Plan¹⁷ establishes goals and policies for conservation of cultural resources in the County. The General Plan recognizes that the County has numerous archaeological and historical sites from the Native American, Hispanic, and American periods of California’s history, as well as paleontological sites and important geological formations that predate human occupation, and are nonrenewable and irreplaceable.

¹⁴ Southern California Association of Governments. 2001. SCAG Growth Management Chapter (GMC) Policy No. 3.21. Los Angeles, CA.

¹⁵ County of Los Angeles Department of Regional Planning. 1980. County of Los Angeles General Plan. Conservation and Open Space Element. Available online at: http://planning.lacounty.gov/assets/upl/project/gp_web80-conservation-and-open-space.pdf

¹⁶ County of Los Angeles Department of Regional Planning. 2014. Draft Los Angeles County General Plan 2035. Conservation and Natural Resources Element. Available online at: http://planning.lacounty.gov/assets/upl/project/gp_2035_Chapter9_2014.pdf

¹⁷ County of Los Angeles Department of Regional Planning. January 1993. County of Los Angeles Streamlined General Plan, page CA2.

- **Policy 20** states the County's intention to "protect cultural heritage resources, including historical, archaeological, paleontological, and geological sites, and significant architectural structures."¹⁸

The County's cultural resources objective, found in the Conservation and Natural Resources Element of the General Plan 2035, is to preserve and protect cultural resources including historic, archaeological, and paleontological resources. Under this objective, the County has established the following policies:¹⁹

- **Policy C/NR 14.1:** Mitigate all impacts from new development on or adjacent to historic, cultural, and paleontological resources to the greatest extent feasible.
- **Policy C/NR 14.2:** Support an inter-jurisdictional collaborative system that protects and enhances historic, cultural and paleontological resources.
- **Policy C/NR 14.3:** Support the preservation and rehabilitation of historic buildings.
- **Policy C/NR 14.4:** Ensure proper notification procedures to Native American tribes in accordance with Senate Bill 18 (2004).
- **Policy C/NR 14.6:** Ensure proper notification and recovery processes are carried out for development on or near historic, cultural, and paleontological resources.

3.3.3 Los Angeles County Historical Landmarks and Records Commission

The Los Angeles County Board of Supervisors established and has maintained the Los Angeles County Historical Landmarks and Records Commission (Commission) pursuant to Los Angeles County Code Chapter 3.30. Pursuant to Section 26490 of the California Government Code, the Commission is designated as a historical records commission to foster and promote the preservation of historical records. The Commission considers and recommends to the Board of Supervisors local historical landmarks defined to be worthy of registration by the State of California, either as CHLs or as Points of Historical Interest. The Commission may also comment for the Board on applications relating to the NRHP. The Commission is also charged with fostering and promoting the preservation of historical records. In its capacity as the memorial plaque review committee of the County of Los Angeles, the Commission screens applications for donations of historical memorial plaques and recommends to the Board plaques worthy of installation as County property.²⁰

¹⁸ County of Los Angeles Department of Regional Planning. January 1993. County of Los Angeles Streamlined General Plan, page OS-11.

¹⁹ Los Angeles County Department of Regional Planning. January 2014. Los Angeles County General Plan Public Review Draft: Chapter 9: Conservation and Natural Resources Element. Available online at: http://planning.lacounty.gov/assets/upl/project/gp_2035_Chapter9_2014.pdf

²⁰ County of Los Angeles Department of Auditor-Controller (J. Tyler McCauley, Auditor-Controller). 21 October 2002. Sunset Review for the Los Angeles County Historical Landmarks and Records Commission. Accessed 17 July 2006. Available online at: http://auditor.co.la.ca.us/cms1_003345.pdf

SECTION 4.0 METHODS

This section of the CRTR describes the methods employed in the characterization and evaluation of cultural resources within the seven subareas. The study methods were designed to provide the substantial evidence required to address the scope of analysis recommended in Appendix G of the State CEQA Guidelines, as well as the Land Use Element and Conservation and Open Space Element of the existing adopted Los Angeles County General Plan;^{1,2} the Conservation and Natural Resources Element of the Los Angeles County General Plan 2035;^{3,4} and the Los Angeles County Code of Initiatives – Title 22 Planning and Zoning goals and policies related to paleontological resources, archaeological resources, Native American sacred sites and human remains, and historical resources.

4.1 LOS ANGELES COUNTY EXISTING ADOPTED GENERAL PLAN AND ORDINANCES

All seven subareas are within the County, which has primary decision-making authority for discretionary land uses. An evaluation was undertaken to assess the consistency of the proposed initiative with the Los Angeles County Adopted General Plan and Los Angeles County General Plan 2035 goals and policies. The Conservation and Natural Resource Element of the Adopted Los Angeles County General Plan and Los Angeles County General Plan 2035 were reviewed to identify goals, policies, and compliance measures related to cultural resources for integration into the regulatory framework and study methods for prehistoric, and historic resources.^{5,6} Also considered was the potential presence of any local conservation plans in place for any or all of the seven subareas.

4.2 PALEONTOLOGICAL RESOURCES

The following sections describe the resource inventory methods used for the paleontological assessment, the resource assessment criteria applied to the assessment, and the results of the resource inventory.

¹ County of Los Angeles Department of Regional Planning. 25 November 1980. County of Los Angeles General Plan Land Use Element. Available online at http://planning.lacounty.gov/assets/upl/initiative/gp_web80-land-use.pdf

² County of Los Angeles Department of Regional Planning. 25 November 1980. County of Los Angeles General Plan Conservation and Open Space Element. Available online at http://planning.lacounty.gov/assets/upl/initiative/gp_web80-conservation-and-open-space.pdf

³ Los Angeles County Department of Regional Planning. January 2014. Los Angeles County General Plan Public Review Draft: Chapter 6: Land Use Element. Available online at: http://planning.lacounty.gov/assets/upl/initiative/gp_2035_Chapter6_2014.pdf

⁴ Los Angeles County Department of Regional Planning. January 2014. Los Angeles County General Plan Public Review Draft: Chapter 9: Conservation and Natural Resources Element. Available online at: http://planning.lacounty.gov/assets/upl/initiative/gp_2035_Chapter9_2014.pdf

⁵ Los Angeles County. 25 November 1980. Los Angeles County General Plan, Land Use Element. Los Angeles, CA. Available at: http://planning.lacounty.gov/assets/upl/project/gp_web80-land-use.pdf

⁶ Los Angeles County. 25 November 1980. Los Angeles County General Plan, Conservation, and Open Space Element. Los Angeles, CA. Available at: http://planning.lacounty.gov/assets/upl/project/gp_web80-conservation-and-open-space.pdf

4.2.1 Resource Inventory Methods

These procedures follow guidelines from the Society of Vertebrate Paleontology (SVP) and include both a paleontological records search and literature search.⁷ The following methods were used to characterize the paleontological sensitivity of the seven subareas.

Published and unpublished literature concerning area paleontological and geological topics was consulted. As part of the inventory methods, surface distribution of the formations in the study area was defined to estimate their subsurface distribution and thereby approximate the paleontological productivity of these units from the literature. The paleontological records search of pertinent paleontological collections is another important source of data concerning distribution area of known paleontological localities and productivity. To obtain this information, an archival database search was conducted of the UCMP online archival database.

4.2.2 Paleontological Resource Assessment Criteria

It is the position of the SVP that a vertebrate fossil is considered scientifically important unless otherwise demonstrated.⁸ This position is based on the relative rarity of vertebrate fossils. Vertebrate fossils are so uncommon that, in many cases, each recovered specimen will provide additional important information about the morphological variation or the geographic distribution of its species. The SVP recommendations also mention that certain invertebrate or botanical fossils are considered important paleontological resources.

A geological unit is considered “sensitive” to adverse impacts if there is a high probability that grading, excavation, or other earth-moving activities would jeopardize important fossil remains. Using criteria published by the SVP, the paleontological importance or sensitivity (high, low, or undetermined) of each geological unit exposed in a project site or surrounding area is the measure most amenable to assessing the significance of paleontological resources because the area distribution of each geological unit can be delineated on a topographic or geologic map.⁹ The paleontological sensitivity of a stratigraphic unit reflects its potential paleontological productivity and sensitivity, as well as the scientific significance of the fossils it has produced. This method of paleontological resource assessment is the most appropriate because discrete levels of paleontological importance can be delineated on a topographic or geologic map.

Reasons for considering an individual fossil specimen scientifically important include:

1. If it is well preserved
2. If it can be identified
3. If it is more complete than most specimens for that species
4. If it preserves one or more elements not known in most specimens of that species
5. If it is indicative of a particular time period
6. If it has not been recorded from that sedimentary unit
7. If it provides information concerning the environment in which it lived

⁷ Society of Vertebrate Paleontology (SVP). 1995. Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontological Resources: Standard Guidelines. Society of Vertebrate Paleontology News Bulletin 163: 22–27.

⁸ Society of Vertebrate Paleontology (SVP). 1995. Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontological Resources: Standard Guidelines. Society of Vertebrate Paleontology News Bulletin 163: 22–27.

⁹ Society of Vertebrate Paleontology (SVP). 1995. Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontological Resources: Standard Guidelines. Society of Vertebrate Paleontology News Bulletin 163: 22–27.

8. If it could be the basis for description of a new species or comes from a site that produced the type (definitive) specimen of its species
9. If it belongs to a species rarely encountered

For specimens meeting the above criteria, the following criteria were considered in establishing the importance and paleontological sensitivity of each rock unit exposed within each of the seven subareas:

1. Estimation of the potential paleontological productivity of each geological unit on the evidence of fossil localities in or near the seven subareas, on the basis of published and unpublished sources
2. Consideration of the scientific significance of fossils from each of the rock units exposed within the seven subareas

4.2.3 Categories of Sensitivity

The SVP established three categories of sensitivity for paleontological resources in its standard guidelines for assessment and mitigation of adverse impacts to paleontological resources.¹⁰ The three categories are low, high, and undetermined.

- Low sensitivity paleontological resources are categorized as geological units that are not sedimentary in origin. Likewise, sedimentary rock units that have been well examined and have not produced paleontological resources are considered to have low sensitivity.
- High sensitivity paleontological resources are categorized as geological units older than recent for which vertebrate or significant invertebrate fossils or a significant suite of plant fossils have been recovered.
- Paleontological resources with undetermined sensitivity are categorized as sedimentary geological units for which little information is available. It is often possible for an experienced paleontologist to determine whether such a rock unit should be assigned a high or low sensitivity after he or she has performed a pedestrian survey and has made detailed observations of both natural and artificial exposures of the rock unit.

4.3 ARCHAEOLOGICAL AND HISTORICAL RESOURCES

4.3.1 Record Search and Literature Review

A literature review was undertaken to determine if the proposed initiative would have the potential to cause a substantial adverse change to the significance of an archaeological (prehistoric and historic) and/or historic resources within each of the seven subareas, thus requiring the consideration of avoidance and minimization, in accordance with Section 15063 of the State CEQA Guidelines. A sample archaeological and historic resources records search was conducted at the SCCIC, housed at California State University, Fullerton, on April 29, 2014. The sample records search included a spatial review of all known relevant cultural resource investigation (including survey and excavation) report locations as well as the location of known prehistoric and historic archaeological resources and historic resources within the seven subareas of the proposed

¹⁰ Society of Vertebrate Paleontology (SVP). 1995. Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontological Resources: Standard Guidelines. Society of Vertebrate Paleontology News Bulletin 163: 22–27.

initiative. In addition, the California Historic Resources Inventory, California Points of Historical Interest, CHLs, CRHR, and NRHP were searched to determine whether known cultural resources (archaeological and/or historical) are located within the seven subareas.

4.3.2 Agency Consultation

Informal consultation was also undertaken with the County, and a review of the Conservation and Natural Resources Element of the Los Angeles County Existing General Plan and Los Angeles County General Plan 2035 was conducted to determine if the County provides regulatory protection for archaeological and historical resources.^{11,12,13,14}

4.4 NATIVE AMERICAN SACRED SITES AND HUMAN REMAINS

4.4.1 Record Search and Literature Review

The NAHC was requested to conduct a records search from their Sacred Lands File for the presence of Native American sacred sites or human remains within each of the seven subareas on April 21, 2014. A written response received by Sapphos Environmental, Inc. on May 7, 2014, advised that the Sacred Lands File did not indicate the presence of Native American cultural resources within the Lake Hughes/Gorman/West of Lancaster, Lancaster Northeast, and Lake Los Angeles/Llano/Valyermo/Littlerock subareas.¹⁵ Sapphos Environmental, Inc. sent second requests for the Acton subarea on September 24, 2014, and for the Antelope Valley Northeast, Castaic/Santa Clarita/Agua Dulce, and East San Gabriel Mountains subareas on October 9, 2014. A written response for the Acton subarea was received October 1, 2014, and did not indicate the presence of Native American cultural resources within the subarea.¹⁶ A written response for the Antelope Valley Northeast subarea was received October 15, 2014, and did not indicate the presence of Native American cultural resources within the subarea.¹⁷ A written response for the Castaic/Santa Clarita/Agua Dulce subarea was received October 21, 2014, and did not indicate the presence of Native American cultural resources within the subarea.¹⁸ As of May 8, 2015, Sapphos Environmental, Inc. has not received a NAHC response for the East San Gabriel Mountains subarea.

¹¹ Los Angeles County. 25 November 1980. Los Angeles County Existing Adopted General Plan, Land Use Element. Los Angeles, CA. Available at: http://planning.lacounty.gov/assets/upl/project/gp_web80-land-use.pdf

¹² Los Angeles County. 25 November 1980. Los Angeles County Existing Adopted General Plan, Conservation, and Open Space Element. Los Angeles, CA. Available at: http://planning.lacounty.gov/assets/upl/project/gp_web80-conservation-and-open-space.pdf

¹³ City of Calabasas Planning Division. 2008. 2030 City of Calabasas General Plan. Accessed March 31, 2014. Available at: <http://www.cityofcalabasas.com/pdf/documents/gpac/CalabasasFinalGeneralPlan.pdf>

¹⁴ City of Calabasas Land Use and Development Code, 17.36.010-250. Available at: <http://www.cityofcalabasas.com/departments/planning/pdf/Historic-Preservation-Ordinance.pdf>

¹⁵ Singleton, Dave, Native American Heritage Commission, Sacramento, CA. 7 May 2014. Letter response to Roberta Thomas, Sapphos Environmental, Inc., Pasadena, CA.

¹⁶ Sanchez, Katy, Native American Heritage Commission, Sacramento, CA. 1 October 2014. Letter response to Karl Holland, Sapphos Environmental, Inc., Pasadena, CA.

¹⁷ Sanchez, Katy, Native American Heritage Commission, Sacramento, CA. 15 October 2014. Letter response to Karl Holland, Sapphos Environmental, Inc., Pasadena, CA.

¹⁸ Sanchez, Katy, Native American Heritage Commission, Sacramento, CA. 21 October 2014. Letter response to Karl Holland, Sapphos Environmental, Inc., Pasadena, CA.

4.4.2 Agency Consultation

Coordination was initiated with the NAHC in association with the proposed initiative on April 21, 2014. On the recommendation of the NAHC, Sapphos Environmental, Inc. sent letters to eight Native American contacts classified by the NAHC as potential sources.¹⁹ The letters advised the Tribes and specific individuals of the proposed initiative and its geographic area and requested information regarding cultural resources in the study area, as well as feedback or concerns related to the proposed initiative. No responses have been received.

¹⁹ Nixon, Rachael, Sapphos Environmental, Inc., Pasadena, CA. 20 March 2014. Letter to Dave Singleton, Native American Heritage Commission, Sacramento, CA.

SECTION 5.0

RESULTS

This section of the CRTR characterizes the baseline conditions for cultural resources; evaluates the potential for the proposed initiative to result in significant direct, indirect, and cumulative impacts; and identifies feasible mitigation measures for avoiding and reducing these impacts. The results described in this section provide the substantial evidence required to address the scope of analysis recommended in Appendix G of the State CEQA Guidelines related to cultural resources, paleontological resources, prehistoric resources, historic resources, Native American sacred sites, and human remains.

5.1 PALEONTOLOGICAL RESOURCES

5.1.1 Paleontological Setting

The results of the paleontological resources literature and records search show the study area is dominated by 12 geologic units that were reviewed to determine their known potential to yield unique or significant paleontological resources:

- Holocene and Pleistocene Quaternary alluvium
- Quaternary landslide deposits
- The Pleistocene Saugus and Harold Formations
- The Pliocene Pico and Anaverde Formations
- The Late Miocene Towsley, Ridge Basin Group, Sisquoc Formation, and Punch Bowl Formations
- The Middle to Late Miocene Castaic, Monterey, Quail Lake, and Mint Canyon Formations
- The early to Middle Miocene Tick Canyon Formation
- The Miocene Fiss Fanglomerate and Crowder Formation
- The Oligocene to Early Miocene Vasquez Formation
- The Eocene Llajas Formation
- The Paleocene (Cretaceous?) San Francisquito Formation
- Plutonic igneous rocks and metamorphic rocks of Cenozoic, Mesozoic, and Paleozoic ages

Many of the sedimentary units and Formations have produced significant vertebrate and plant fossils within Los Angeles County (Table 5.1-1, *Geologic Units with the Potential to Yield Paleontological Resources*).

**TABLE 5.1-1
GEOLOGIC UNITS WITH THE POTENTIAL TO
YIELD PALEONTOLOGICAL RESOURCES**

| Initiative Subarea | Potential for Significant Paleontological Resources | Geological Units with Paleontological Resource Potential |
|---|---|--|
| Acton | Yes | Pleistocene Quaternary alluvium |
| Antelope Valley Northeast | Yes | Pleistocene Quaternary alluvium |
| Castaic/Santa Clarita/Agua Dulce | Yes | Pleistocene older alluvium, Saugus Formation; Pliocene marine Pico Formation; Pliocene to Late Miocene marine Towsley Formation; Late Miocene marine Ridge Basin Group and Sisquoc Formations; Late to Middle Miocene marine, Monterey and Castaic Formations; Middle Miocene Mint Canyon Formation; Early to Middle Miocene Tick Canyon Formation |
| East San Gabriel Mountains | Yes | Quaternary older alluvium (Pleistocene); Plio-Pleistocene Saugus Formation; Pliocene marine Pico Formation; Pliocene to Late Miocene marine Towsley Formation; Miocene marine Ridge Basin Group and Sisquoc Formations; Late to Middle Miocene marine Monterey Formation; Middle Miocene Mint Canyon Formation; Eocene Lajas Formation |
| Lake Los Angeles/Llano/Valyermo/Little Rock | Yes | Pleistocene alluvium and Harold Formation; Pliocene Anaverde Formation; Late Miocene Punchbowl Formation; Miocene Crowder Formation; Cretaceous San Francisquito Formation |
| Lake Hughes/Gorman/West of Lancaster | Yes | Late Pleistocene older playa deposits and older fan deposits; Oligocene to Middle Miocene Gem Hill Formation? |
| Lancaster Northeast | Yes | Pleistocene channel deposits, eolian sands, and beach bar deposits |

Because the proposed initiative includes a large geographic area with complex geology indicative of tectonic plate boundaries, the geology and paleontology of each subarea has been described individually below. All sedimentary units are terrestrial unless otherwise noted.

Acton. The literature review did not yield any fossil localities within the Acton subarea; however, there is potential for Pleistocene Quaternary alluvium to yield significant paleontological resources.¹ Beginning in the mid-1990s and continuing into the early years of the 21st century, Diblee mapped the surficial geology within the Acton subarea, including Holocene Quaternary alluvium, Quaternary landslide deposits, the Vasquez Formation, plutonic igneous rocks, and metamorphic rocks are considered to have low paleontological sensitivity.^{2,3,4}

¹ Jefferson, G. T. 1991 A Catalogue of Late Quaternary Vertebrates from California, Part Two, Mammals. Natural History Museum of Los Angeles County Technical Reports No. 7.

² Diblee, T. W., Jr. 1996. Geologic map of the Acton quadrangle, Los Angeles County, California. Diblee Geological Foundation Map DF-59 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored, two cross-sections.

³ Diblee, T. W., Jr. 1997. Geologic map of the Sleepy Valley and Ritter Ridge quadrangles, Los Angeles County, California. Diblee Geological Foundation Map DF-66 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored, four cross-sections.

Castaic/Santa Clarita/Agua Dulce. The surficial geology of the Castaic/Santa Clarita/Agua Dulce subarea was mapped by Dibblee.^{5,6,7,8,9,10,11} The following rock units/formations have the potential to yield significant paleontological resources based on previous collections and/or age and lithology and are given high paleontological sensitivity: Pleistocene alluvial deposits;¹² the Saugus Formation;¹³ the Pliocene marine, Pico Formation;^{14,15} the Towsley Formation;¹⁶ the Ridge Basin Group; the Sisquoc Formation; the Castaic Formation;^{17,18,19} the Monterey Formation; the Mint Canyon Formation;^{20,21,22} and the Tick Canyon Formation.²³ Igneous and metamorphic rocks and

⁴ Dibblee, T. W., Jr. 2001. Geologic map of the Pacifico Mountain and Palmdale (south half) quadrangles, Los Angeles County, California. Dibblee Geological Foundation Map DF-76 (Ehrenspeck, H.E., ed.), scale 1:24,000.

⁵ Dibblee, T. W., Jr. 1991. Geologic Map of the San Fernando and Van Nuys (North 1/2) quadrangles, Los Angeles County, California. Dibblee Geological Foundation DF-33 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

⁶ Dibblee, T. W., Jr. 1992. Geologic Map of the Oat Mountain and Canoga Park (North 1/2) Quadrangles, Los Angeles County, California. Dibblee Geological Foundation DF-36 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored, one cross-section. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

⁷ Dibblee, T. W., Jr. 1993. Geologic Map of the Val Verde Quadrangle, Los Angeles and Ventura Counties, California. Dibblee Geological Foundation DF-50 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored, one cross-section. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

⁸ Dibblee, T. W., Jr. 1996a. Geologic Map of the Newhall Quadrangle, Los Angeles County, California. Dibblee Geological Foundation Map DF-56 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored, two cross-sections. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

⁹ Dibblee, T. W., Jr. 1996b. Geologic Map of the Mint Canyon Quadrangle, Los Angeles County, California. Dibblee Geological Foundation Map DF-57 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored, three cross-sections. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

¹⁰ Dibblee, T. W., Jr. 1997a. Geologic Map of the Warm Springs Mountain Quadrangle, Los Angeles County, California. Dibblee Geological Foundation Map DF-64 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored, three cross-sections. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

¹¹ Dibblee, T. W., Jr. 1997b. Geologic Map of the Whitaker Peak Quadrangle, Los Angeles and Ventura Counties, California. Dibblee Geological Foundation Map DF-63 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored, three cross-sections. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

¹² Jefferson, G. T., 1991 A catalogue of Late Quaternary vertebrates from California, Part Two, mammals. Natural History Museum of Los Angeles County Technical Reports, no. 7, 129 p.

¹³ Jefferson, G. T., 1991 A catalogue of Late Quaternary vertebrates from California, Part Two, mammals. Natural History Museum of Los Angeles County Technical Reports, no. 7, 129 p.

¹⁴ Squires, R. L., Groves, L.T., and J. T. Smith. 2006. New information on molluscan paleontology and depositional environments of the Upper Pliocene Pico Formation, Valencia Area, Los Angeles County, Southern California. Los Angeles County Museum of Natural History Contributions in Science 511.

¹⁵ Fierstine, H.L., Huddleston, R.W, and G.T. Takeuchi. 2012. Catalog of Neogene Bony Fishes of Southern California: A Systematic Inventory of all Published Accounts. Occasional Papers of the California Academy of Sciences, 206 p.

¹⁶ Kern, J. P. 1973. Early Pliocene marine climate and environments of eastern Ventura Basin, southern California. University of California Publications in Geologic Sciences 96:1-117.

¹⁷ Kellogg, R., 1925. Additions to the Tertiary history of the pelagic mammals on the Pacific coast of North America. Contributions to Paleontology, Carnegie Institution of Washington, No. 348: 1-120.

¹⁸ Kellogg, R., 1929. A new cetothere from southern California. University of California Publications, Bulletin of the Department of Geological Sciences 18: 449-457.

¹⁹ Repenning, C. A. and R. H. Tedford. 1977. Otarioid seals of the Neogene. U.S. Geological Survey Professional Paper 992: 1-93.

²⁰ Maxson, J. H. 1930. A Tertiary mammalian fauna from the Mint Canyon Formation of southern California. Carnegie Institution of Washington Publications 404:77-112.

the Vasquez Formation have a low potential for yielding significant paleontological resources, and are therefore assigned low paleontological sensitivity within the subarea.

Antelope Valley Northeast. Surficial geological mapping covering the Antelope Valley Northeast subarea was completed by Dibblee²⁴ and Dixon and Ward.²⁵ Research for this subarea revealed no previously known, significant paleontological resources; however, Late Pleistocene alluvium has yielded significant vertebrate fossils in other areas of Los Angeles County.²⁶ Quaternary fanglomerates and Pleistocene alluvial fan deposits are usually coarse-grained and do not often produce significant paleontological resources. Because of this, Late Pleistocene alluvium within this subarea is determined to have a high sensitivity for paleontological resources, and Quaternary fanglomerates and Pleistocene alluvial fan deposits have moderate sensitivity for significant paleontological resources. Igneous rocks have a low potential to yield significant paleontological resources.

East San Gabriel Mountains. The geology of the East San Gabriel Mountains subarea was mapped by Dibblee.^{27,28,29,30,31,32,33,34,35,36,37,38} The following rock units/formations have the potential to yield

²¹ Axelrod, D. I. 1940. The Mint Canyon flora of southern California: a preliminary statement. *American Journal of Science* 238: 577-585.

²² Mount, J. D. 1971. A late Miocene flora from the Solemint Area, Los Angeles County, California. *Bulletin of the Southern California Paleontological Society* 3:1-4.

²³ Whistler, D.P., 1967. Oreodonts of the Tick Canyon Formation, southern California, *Paleobios*, v. 1: 1-14.

²⁴ Dibblee, T. W., Jr. 1953. *Geologic Map of the Rogers Lake and Kramer Quadrangles, Los Angeles County, California*. U. S. Department of the Interior, Bulletin 1089, Plate 8, scale 1:62,500.

²⁵ Dixon, G.L. and A.W. Ward, 2002, Preliminary geologic map of the Rogers Lake South quadrangle, Los Angeles and Kern Counties, California. US Geological Survey, Open-File Report OF-93-696, Scale 1:24,000.

²⁶ Jefferson, G. T. 1991 A catalogue of Late Quaternary vertebrates from California, Part Two, mammals. *Natural History Museum of Los Angeles County Technical Reports*, no. 7, 129 p.

²⁷ Dibblee, T. W., Jr. 1991. *Geologic Map of the San Fernando and Van Nuys (North 1/2) quadrangles, Los Angeles County, California*. Dibblee Geological Foundation DF-33 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

²⁸ Dibblee, T. W., Jr. 1991a. *Geologic Map of the Sunland and Burbank (North 1/2) Quadrangles, Los Angeles County, California*. Dibblee Geological Foundation DF-32 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

²⁹ Dibblee, T. W., Jr. 1992. *Geologic Map of the Oat Mountain and Canoga Park (North 1/2) Quadrangles, Los Angeles County, California*. Dibblee Geological Foundation DF-36 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored, one cross-section. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

³⁰ Dibblee, T. W., Jr. 2002. *Geologic Map of the Mount San Antonio Quadrangle, Los Angeles and San Bernardino Counties, California*. Dibblee Geological Foundation DF-88, scale 1:24,000, colored. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

³¹ Dibblee, T. W., Jr. and Minch, J.A. 2002. *Geologic Map of the Black Mountain Quadrangle, Los Angeles and Ventura Counties, California*. Dibblee Geological Foundation DF-92, scale 1:24,000, colored. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

³² Dibblee, T. W., Jr. and Minch, J.A. 2002. *Geologic Map of the Mount Baldy Quadrangle, Los Angeles and San Bernardino Counties, California*. Dibblee Geological Foundation DF-90, scale 1:24,000, colored. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

³³ Dibblee, T. W., Jr. 2002. *Geologic Map of the Glendora Quadrangle, Los Angeles County, California*. Dibblee Geological Foundation DF-89, scale 1:24,000, colored. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

³⁴ Dibblee, T. W., Jr. 1998. *Geologic Map of the Mt. Wilson and Azusa Quadrangles, Los Angeles County, California*. Dibblee Geological Foundation DF-67, scale 1:24,000, colored. Available online at:

significant paleontological resources based on previous collections and/or age and lithology and are given high paleontological sensitivity: Pleistocene alluvial deposits; the Saugus Formation; the Pliocene marine, Pico Formation; the Towsley Formation; the Ridge Basin Group; the Sisquoc Formation; the Monterey Formation; the Mint Canyon Formation; and the Eocene Lajas Formation.³⁹ Igneous and metamorphic rocks mapped in the subarea have low paleontological sensitivity.

Lake Hughes/Gorman/West of Lancaster. The surficial geology of the Lake Hughes/Gorman/West of Lancaster subarea was mapped by Dibblee,^{40,41,42,43,44} Dibblee and Minch,^{45,46,47} Hernandez and

http://www.sbnature.org/dibblee/newweb/maps_catalog.html

³⁵ Dibblee, T. W., Jr. 1989. Geologic Map of the Pasadena Quadrangle, Los Angeles County, California. Dibblee Geological Foundation DF-23, scale 1:24,000, colored. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

³⁶ Dibblee, T. W., Jr. 2002. Geologic Map of the Condor Peak Quadrangle, Los Angeles County, California. Dibblee Geological Foundation DF-84, scale 1:24,000, colored. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

³⁷ Dibblee, T. W., Jr. 1992. Geologic Map of the Santa Susana Quadrangle, Ventura and Los Angeles Counties, California. Dibblee Geological Foundation DF-38, scale 1:24,000, colored. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

³⁸ Dibblee, T. W., Jr. 2002. Geologic Map of the Chilao Flat Quadrangle, Los Angeles County, California. Dibblee Geological Foundation DF-85, scale 1:24,000, colored. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

³⁹ R. L. Squires. 2001. Additions to the Eocene megafossil fauna of the Lajas Formation, Simi Valley, southern California, in Contributions in Science (Natural History Museum of Los Angeles County) 489:1-40 [A. Miller/A. Hendy/A. Hendy]

⁴⁰ Dibblee, T. W., Jr. 1959. Geologic Map of Rosamond/Willow Springs Quadrangle, Los Angeles and Kern Counties, California. U.S. Geological Survey Open-File Map 59-30, scale 1:62,500. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

⁴¹ Dibblee, T. W., Jr. 1959a. Geologic Map of the Lancaster/Alpine Butte Quadrangle, Los Angeles County, California. U. S. Geological Survey Mineral Investigations Field Studies Map MF-222, scale 1:62,500. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

⁴² Dibblee, T. W., Jr. 1997c. Geologic Map of the Green Valley Quadrangle, Los Angeles County, California. Dibblee Geological Foundation Map DF-65 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored, two cross-sections. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

⁴³ Dibblee, T. W., Jr. 2006. Geologic Map of the Frazier Mountain & Lebec Quadrangles, Los Angeles, Ventura, & Kern Counties, California. Dibblee Geological Foundation Map DF-198 (Minch, J.A., ed.), scale 1:24,000. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

⁴⁴ Dibblee, T. W., Jr. 2008. Geologic Map of the Neenach & Willow Springs 15-minute Quadrangles: Kern & Los Angeles Counties, California. Dibblee Geological Foundation Map DF-198 (Minch, J.A., ed), scale 1:62,500. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

⁴⁵ Dibblee, T. W., Jr. 2002. Geologic Map of the Burnt Peak Quadrangle, Los Angeles County, California. Dibblee Geological Foundation Map DF-83 (Minch, J.A., ed.), scale 1:24,000. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

⁴⁶ Dibblee, T. W., Jr. 2002a. Geologic Map of the Lake Hughes and Del Sur Quadrangles, Los Angeles County, California. Dibblee Geological Foundation Map DF-82 (Minch, J.A., ed.), scale 1:24,000. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

⁴⁷ Dibblee, T. W., Jr. 2002b. Geologic Map of the Liebre Mountain Quadrangle, Los Angeles County, California. Dibblee Geological Foundation Map DF-93 (Minch, J.A., ed.), scale 1:24,000. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

Lancaster,⁴⁸ and Lancaster and Holland.⁴⁹ The research for this subarea revealed no previously known significant paleontological resources within the proposed initiative boundaries; however, the following sediments have the potential to yield significant paleontological resources: older Quaternary sediments,⁵⁰ fine-grained sedimentary units,⁵¹ the Pliocene Anaverde Formation,⁵² and the Santa Margarita Formation.^{53,54} Igneous and metamorphic rocks do not normally yield significant paleontological resources, and therefore are considered to have low paleontological sensitivity.

Lake Los Angeles/Llano/Valyermo/Littlerock. The geology of the Lake Los Angeles, Llano, Valyermo, Littlerock subarea was mapped by Dibblee^{55,56,57} and Dibblee and Minch.^{58,59,60} Research for this subarea did not reveal any previously document paleontological localities within the proposed initiative boundaries; however, the following geological units and formations are considered to have high paleontological sensitivity: the Harold Formation, Pleistocene alluvium,⁶¹

⁴⁸ Hernandez, J.L., and J.T. Lancaster. 2011. Geologic Map of the Fairmont Butte 7.5' Quadrangle, Los Angeles County, California. A digital database: California Geological Survey, Preliminary Geologic Maps, scale 1:24,000. Available online at: http://www.conservation.ca.gov/cgs/rghm/rgm/Pages/preliminary_geologic_maps.aspx

⁴⁹ Lancaster, J.T. and P.J. Holland. 2011. Preliminary Geologic Map of the Little Buttes 7.5' Quadrangle Los Angeles and Kern Counties, California. California Department of Conservation, scale 1:24,000. Available online at: http://www.conservation.ca.gov/cgs/rghm/rgm/Pages/preliminary_geologic_maps.aspx

⁵⁰ Jefferson, G. T., 1991 A catalogue of Late Quaternary vertebrates from California, Part Two, mammals. Natural History Museum of Los Angeles County Technical Reports, no. 7, 129 p

⁵¹ Dibblee, T. W., Jr. 1997c. Geologic Map of the Green Valley Quadrangle, Los Angeles County, California. Dibblee Geological Foundation Map DF-65 (Ehrenspeck, H. E., ed.), scale 1:24,000, colored, two cross-sections. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

⁵² Axelrod, D. I. 1950. The Anaverde Flora of southern California. Carnegie Institution of Washington Publications 590:119-158.

⁵³ Durham, D. L. and W.O. Addicot, 1964. Upper Miocene and Pliocene marine stratigraphy in southern Salinas Valley, California. Contributions to Stratigraphy, U.S. Geological Survey Bulletin 1194-E. 7p.

⁵⁴ Boessenecker, R.W. 2011. Herpetocetine (Cetacea: Mysticeti) dentaries from the Upper Miocene Santa Margarita Sandstone of Central California. Paleobios 30(1):1-12

⁵⁵ Dibblee, T. W., Jr. 1959a. Geologic Map of the Alpine Butte Quadrangle, Los Angeles County, California. U. S. Geological Survey Mineral Investigations Field Studies Map MF-222, scale 1:62,500. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

⁵⁶ Dibblee, T. W., Jr. 1960. Preliminary Geologic Map of the Shadow Mountains Quadrangle, Los Angeles and San Bernardino Counties, California. U.S. Geological Survey Mineral Investigations Field Studies Map MF-227, scale 1:62,500. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

⁵⁷ Dibblee, T. W., Jr. 1960a. Geology Map of the Lancaster Quadrangle, Los Angeles County, California. U.S. Geological Survey Mineral Investigations Field Studies Map MF-76, scale 1:62,500. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

⁵⁸ Dibblee, T.W., and J.A. Minch. 2002. Geologic Map of the Mescal Creek Quadrangle, Los Angeles and San Bernardino Counties, California. Dibblee Geological Foundation, Dibblee Foundation Map DF-81, scale 1:24,000. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

⁵⁹ Dibblee, T.W., and J.A. Minch. 2002a. Geologic Map of the Valyermo Quadrangle, Los Angeles County, California. Dibblee Geological Foundation, Dibblee Foundation Map DF-80, scale 1:24,000. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

⁶⁰ Dibblee, T.W., and J.A. Minch. 2002b. Geologic Map of the Juniper Hills Quadrangle [and Southern Littlerock Quadrangle], Los Angeles County, California. Dibblee Geological Foundation, Dibblee Foundation Map DF-79, scale 1:24,000. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

⁶¹ Jefferson, G. T., 1991 A catalogue of Late Quaternary vertebrates from California, Part Two, mammals. Natural History Museum of Los Angeles County Technical Reports, no. 7, 129 p.

the Anaverde Formation,⁶² the Punchbowl Formation,⁶³ the Crowder Formation,⁶⁴ and the San Francisquito Formation. Igneous and metamorphic rocks have a low potential for yielding significant paleontological resources, and are therefore assigned low paleontological sensitivity within the subarea.

Lancaster Northeast. Surficial geological mapping of areas within the Lancaster Northeast subarea was conducted by Dibblee^{65,66,67} and Ward and Dixon.⁶⁸ Research revealed no previously known significant paleontological resources from the Lancaster Northeast subarea; however, Pleistocene channel deposits, eolian sands, and beach bar deposits mapped in the area have the potential to yield significant paleontological resources. Because of this, these deposits are considered to have high sensitivity to paleontological resources. Quaternary alluvium recent playa clay, sand bars, windblown sand are too young to contain significant paleontological resources and are considered to have low paleontological sensitivity.

5.2 ARCHAEOLOGICAL RESOURCES

5.2.1 Regional Ethnography and Prehistoric Period

5.2.1.1 *Ethnographic Context*

The proposed initiative study areas are located at the convergence of several cultural spheres of influence. Traditional utilization of these areas likely varied over time but included the Kitanemuk, Serrano, Tataviam, and Vanyume groups. Brief ethnographic reviews of each group are provided below.

⁶² Axelrod, D. I. 1950. The Anaverde Flora of southern California. Carnegie Institution of Washington Publications 590:119-158.

⁶³ Pagnac, D.C. 2009. Revised Large Mammal Biostratigraphy and Biochronology of the Barstow Formation (Middle Miocene), California. *Paleobios*. 29(2):48-59.

⁶⁴ Reynolds, R.E., Reynolds R.L., and E.H. Lindsay. 2008. Biostratigraphy of the Miocene Crowder Formation, Cajon Pass, southwestern Mojave Desert, California; pp.237-253, in X. Wang and L. G. Barnes (eds.), *Geology and vertebrate paleontology of western and southern North America, Contributions in honor of David P. Whistler*, Natural History Museum of Los Angeles County Science Series 41:i-viii, 1-388.

⁶⁵ Dibblee, T. W., Jr. 1959. Geologic Map of Rosamond Quadrangle, Los Angeles and Kern Counties, California. U.S. Geological Survey Open-File Map 59-30, scale 1:62,500. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

⁶⁶ Dibblee, T. W., Jr. 1959a. Geologic Map of the Alpine Butte Quadrangle, Los Angeles County, California. U. S. Geological Survey Mineral Investigations Field Studies Map MF-222, scale 1:62,500. Available online at: http://www.sbnature.org/dibblee/newweb/maps_catalog.html

⁶⁷ Dibblee, T.W., Jr. 1960. Geology of the Rogers Lake and Kramer quadrangles, California. U. S. Geological Survey Bulletin 1089-B, p. 73-139, map scale 1:62,500, colored. http://www.sbnature.org/dibblee/newweb/maps_catalog.html

⁶⁸ Dixon, G.L. and A.W. Ward. 2002. Preliminary Geologic Map of the Rogers Lake South Quadrangle, Los Angeles and Kern Counties, California. U.S. Geological Survey, Open-File Report OF-93-696, Scale 1:24,000. Available online at: <http://pubs.er.usgs.gov/>

The Kitanemuk

The Kitanemuk have been referred to as the main inhabitants of the Antelope Valley, but they are nonetheless one of the least known groups in California.^{69,70} Although the exact range of the Kitanemuk is unknown, the Kitanemuk are thought to have inhabited the north and south faces of the Tehachapi Mountains, the Antelope Valley, and the westernmost extent of the Mojave Desert.⁷¹ Kitanemuk territory included portions of the Lake Hughes/Gorman/West of Lancaster, Lancaster Northeast, and possibly Antelope Valley Northeast initiative subareas.

In contrast with the Kawaiisu to the north, the Kitanemuk culture shared more similarities with southern coastal groups such as the Chumash than with the Great Basin and Central Valley groups.⁷² Chumash influences on the Kitanemuk are observed in Kitanemuk burial practices and religion. However, certain aspects of Kitanemuk culture reflected Great Basin and Central Valley groups, such as communal tule houses and basketry similar to the Central Valley Yokuts.⁷³ The Kitanemuk spoke a Serrano language of the Takic branch of Uto-Aztecan language family that was shared by groups living as far as Yucca Valley and Twentynine Palms. Kitanemuk buried their dead along with personal valuables. Like other Takic-speaking groups, the Kitanemuk had a patrilineal social organization.⁷⁴

The Kitanemuk lived in permanent village sites that functioned as year-round base camps. During the spring, summer, and fall months, gathering expeditions were sent to satellite villages or temporary camps in pursuit of available seasonal resources.⁷⁵

The Serrano

The term “Serrano” has been used to describe linguistic similarities between the Kitanemuk, Vanyume, Tataviam, and Serranos groups; however, the Serrano group refers to a small ethnic nationality that primarily inhabited the San Bernardino Mountains.⁷⁶ The word “Serrano” is from the Spanish term for “mountaineer,” and the group’s core inhabited lands are thought to have been the San Bernardino Mountains. Although it is difficult to determine the boundary of Serrano territory beyond the San Bernardino Mountains, the Transverse Mountains east of the Cajon Pass, the western Mojave Desert and the area from the Tehachapi Mountains to the northern Colorado Desert have all been attributed to Serrano territory.⁷⁷ Serrano territory included portions of the Lake

⁶⁹ Sutton, Mark Q. 1979. “Some Thoughts of the Prehistory of the Antelope Valley.” Paper presented at the 1979 Annual Meeting of the Society for California Archaeology, San Luis Obispo, CA.

⁷⁰ Sutton, Mark Q. 1987. “Some Aspects of Kitanemuk Prehistory.” In *Prehistory of the Antelope Valley, California: An Overview*. Occasional Paper No. 1. Lancaster, CA: Antelope Valley Archaeological Society.

⁷¹ Kroeber, A.L. 1925. *Handbook of the Indians of California*. New York: Dover Publications, Inc., p. 611.

⁷² Blackburn, T.C., and L.J. Bean. 1978. “Kitanemuk.” In *Handbook of North American Indians*, Vol. 8, ed. William C. Sturtevant. Washington, DC: Smithsonian Institution Press, p. 564.

⁷³ Kroeber, A.L. 1925. *Handbook of the Indians of California*. New York: Dover Publications, Inc., p. 612.

⁷⁴ Blackburn, Thomas C., and Lowell J. Bean. 1978. “Kitanemuk.” In *Handbook of North American Indians*, Volume 8: California, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 564-569.

⁷⁵ Earle, D. 1997. *Ethnohistoric Overview of the Edwards Air Force Base Region and the Western Mojave Desert*. Prepared for: AFFTC/EMXR, Edwards Air Force Base, CA. Prepared by: Earle and Associates, Palmdale, CA, p. 10.

⁷⁶ Bean, Lowell J., and Charles R. Smith. 1978. “Serrano.” In *Handbook of North American Indians*, Volume 8: California, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 570-574.

⁷⁷ Kroeber, A.L. 1925. *Handbook of the Indians of California*. New York: Dover Publications, Inc., p. 611.

Angeles/Llano/Valyermo/Littlerock, Lancaster Northeast, and Antelope Valley Northeast initiative subareas.

Related groups of the Serrano include the Gabrieliño and Luiseño to the west at the Pacific Coast and the Cahuilla inhabiting the Colorado Desert. For much of the Late Prehistoric Complex, the Serrano band likely inhabited the western Mojave Desert, in what is now the Cajon Pass and Barstow area. Little is known about early Serrano social organization because the band was not studied until the 1920s, and by that time enculturation had seriously compromised their native lifeway.⁷⁸ The Serrano were a hierarchically ordered society with a chief who oversaw social and political interactions both within their own culture and with other groups. Like other local groups, the Serrano had multiple villages ranging from seasonal satellite villages to larger, more permanent villages.

The primary food staple varied depending on locality. Groups located in the mountain and foothill regions gathered acorns and piñon; desert groups gathered honey mesquite, piñon nuts, yucca roots, mesquite, and cacti fruits.⁷⁹ In addition to this, deer, mountain sheep, antelope, rabbits, small rodents, and birds were hunted by the Serrano.⁸⁰

Serrano villages were typically located near water sources and dwelling consisted of large, circular thatched and domed structures of willow covered with tule thatching. These tule structures could be built to house a large family. In addition to the living structure, a ramada (an open air structure for outdoor cooking) was located adjacent to the home.⁸¹ A large ceremonial structure was often present and was used as the religious center where the lineage leader resided. Additional structures, such as granaries for food storage and sweathouses for ritual activities, were often located adjacent to pools or streams.⁸²

Because of their inland location, Serrano society was left relatively intact during initial Spanish colonization, unlike groups that inhabited the coastal area. In 1772, Spanish explorer Pedro Fagès traveled through the Cajon Pass to the Mojave Desert in an attempt to identify the native groups in this region. Fages' ultimate goal was to place the Serrano under the supervision of a mission. By 1819, the Serrano were relocated to the Estancia of the Mission San Gabriel in Redlands.⁸³ At the time of relocation, there were likely on the order of 3,500 Serrano inhabiting the Mojave Basin. Between 1840 and 1860, a smallpox epidemic decimated the population. By 1910, the census recorded only 100 Serrano.⁸⁴

⁷⁸ Kroeber, A.L. 1925. *Handbook of the Indians of California*. New York: Dover Publications, Inc., p. 611.

⁷⁹ Bean, Lowell J., and Charles R. Smith. 1978. "Serrano." In *Handbook of North American Indians*, Volume 8: California, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 570-574.

⁸⁰ Bean, Lowell J., and Charles R. Smith. 1978. "Serrano." In *Handbook of North American Indians*, Volume 8: California, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 570-574.

⁸¹ Bean, Lowell J., and Charles R. Smith. 1978. "Serrano." In *Handbook of North American Indians*, Volume 8: California, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 570-574.

⁸² Bean, Lowell J., and Charles R. Smith. 1978. "Serrano." In *Handbook of North American Indians*, Volume 8: California, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 570-574.

⁸³ Bean, Lowell J., and Charles R. Smith. 1978. "Serrano." In *Handbook of North American Indians*, Volume 8: California, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 570-574.

⁸⁴ Bean, Lowell J., and Charles R. Smith. 1978. "Serrano." In *Handbook of North American Indians*, Volume 8: California, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 570-574.

The Tataviam

The existing ethnographic data on the Tataviam is limited and limited archaeological research been directly linked to this group. Most of what is known about the Tataviam comes from the work of two anthropologists, John Harrington (1910s) and Alfred Kroeber (mid-1920s), and from data obtained from the San Fernando Mission's registers, as well as the limited archaeological record.⁸⁵

Tataviam territory was bounded by the Chumash to the west, the Kitanemuk to the north, the Serrano to the east, and the Gabrielino to the south. Thus, their material culture, subsistence strategies, rock art representation, and religious practices resemble those of their neighbors, primarily the Gabrielino and Inland Chumash, as well as the Serrano and even the Kawaiisu, who were located to the north of the Kitanemuk.^{86,87}

The Tataviam territory extended from the northwest to the southeast, and encompassed portions of the Antelope, San Fernando, and Santa Clarita Valleys. The center of their territory is assumed to have been the Santa Clarita Basin area (upper portion of the Santa Clara River), east of Piru Creek, just north of what is currently known as the Los Angeles Metropolitan area.⁸⁸ The northern portion of their territory probably included the foothills of Liebre Mountain and Sawmill Mountain, located at the southwestern edge of the Antelope Valley. The northeast boundary of Tataviam territory included the south-facing slopes of Sawmill Mountain and Sierra Pelona, extending southeast to Soledad Pass. The southeastern boundary is unclear but it is likely that the upper Soledad Canyon–Acton area was part of Tataviam territory, at least sometime during the Late Prehistoric period. The southern boundary included the high portions of the San Gabriel Mountains and continued to the west towards the Santa Susana Mountains. Piru Creek appears to be the westernmost boundary of the Tataviam territory.^{89,90} Tataviam territory included portions of the Lake Hughes/Gorman/West of Lancaster, Castaic/Santa Clarita/Agua Dulce, and Acton initiative subareas.

Linguistically the Tataviam (also known as Alliklik)⁹¹ are considered to be part of the Takic subfamily of the Uto Aztecan linguistic family, who moved inland towards the west and along the California coast. The time frame of the Takic expansion is not clearly defined, because migration of

⁸⁵ King, Chester D., and Thomas C. Blackburn. 1978. "Tataviam." In *Handbook of North American Indians, Volume 8: California*, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, p. 535-537.

⁸⁶ King, Chester D., and Thomas C. Blackburn. 1978. "Tataviam." In *Handbook of North American Indians, Volume 8: California*, ed. by William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 535-537.

⁸⁷ Heizer, R.F. (ed). 1978. "Key to Tribal Territories." In *Handbook of North American Indians, Volume 8: California*, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, p. ix.

⁸⁸ Johnson, John R. 1990. "Tataviam Geography and Ethnohistory." In *Journal of California and Great Basin Anthropology*, 12(2): 191-214. Banning, CA: Malki Museum, Inc.

⁸⁹ King, Chester D., and Thomas C. Blackburn. 1978. "Tataviam." In *Handbook of North American Indians, Volume 8: California*, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 535-537.

⁹⁰ Johnson, John R. 1990. "Tataviam Geography and Ethnohistory." In *Journal of California and Great Basin Anthropology*, 12(2): 191-214. Banning, CA: Malki Museum, Inc.

⁹¹ Kroeber, A. 1925. *Handbook of the Indians of California*. New York: Dover Publications, Inc., p. 995. (Used the term Alliklik, which was the name used by neighboring Chumash groups and roughly translates grunters or stammerers. The Kitanemuk used the term Tataviam or "people facing the sun" when referring to the inhabitants of the sunny upper Santa Clara River. The term Alliklik is considered to be derogatory, and therefore ceased to be used in literature around the mid-1970s.)

the population throughout the region took place at different times. Moratto indicates that Uto-Aztecan speakers migrated to California and that by the end of the Early period (circa 1500–1200 BC) Takic groups, such as the Tataviam, the Gabrielino, and the northern Serrano, already had firmly established territories.⁹²

Ethnographic and archaeological information indicates that the Tataviam lived in villages of various sizes, with large centers occupied by about 200 people, widely separated from each other. Large villages were considered to be the major centers. Very small satellite communities of 10 to 15 people were located near the large centers, while mid-size settlements of 20 to 60 people were situated among the large villages. The total Tataviam population at the time of contact is assumed not to have exceeded 1,000 people.⁹³ The village located at Vasquez Rocks is known as the Agua Dulce Village. According to King *et al.*,⁹⁴ the Agua Dulce Village was larger than the surrounding villages and was probably an important economic and political center. Alliances with other villages were maintained through intermarriage and trade. It is estimated that the population of the Agua Dulce Village was possibly as low as 50 people during the early portion of the Middle period and approximately 200 to 300 people towards the end of the Middle period and throughout the Historic period (after AD 1200).⁹⁵

Tataviam subsistence strategies were very similar to those of neighboring groups. A variety of plant foods was part of their diet, including the buds of the yucca plant (*Yucca whipplei*), a major staple, as well as coast live oak acorns (*Quercus agrifolia*), sage (*Salvia mellifera*), juniper berries (*Juniperus californica*), and berries of holly-leaf cherry (*Prunus ilicifolia*). Their diet was also supplemented with insects, small mammals, deer, and possibly pronghorn.⁹⁶ The Tataviam cooked the flower stalks of the plant in earth ovens lined with rocks. The final product was stored and consumed throughout the year. The flowers, seeds, and leaves at the base of the plant were also consumed. Archaeological evidence suggests that the Tataviam, as well as most native Southern Californians, traveled a long distance to collect acorns during certain times of the year. Ethnographic information indicates that acorn was primarily processed using bedrock mortars.

The Tataviam mortuary practices were influenced by their immediate neighbors, and archaeological evidence indicates that the Tataviam practiced both cremation and inhumation. Among the groups influencing the Tataviam were the Chumash; Coastal and inland Chumash were among the few that used inhumation exclusively.⁹⁷ The Gabrielino practiced both, inhumation and cremation,⁹⁸ until the establishment of the missions, when cremation was eliminated and

⁹² Moratto, Michael J. [1984] 2004. *California Archaeology*. Salinas, CA: Coyote Press.

⁹³ King, Chester D., and Thomas C. Blackburn. 1978. "Tataviam." In *Handbook of North American Indians, Volume 8: California*, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 535-537.

⁹⁴ King, Chester D., Charles Smith and Tom King. 1974. *Archaeological Report Related to the Interpretation of Archaeological Resources Present at Vasquez Rocks County Park*. Prepared for: County of Los Angeles Department of Parks and Recreation, p. 43.

⁹⁵ King, Chester D., Charles Smith and Tom King. 1974. *Archaeological Report Related to the Interpretation of Archaeological Resources Present at Vasquez Rocks County Park*. Prepared for: County of Los Angeles Department of Parks and Recreation, p. 33.

⁹⁶ King, Chester D., and Thomas C. Blackburn. 1978. "Tataviam." In *Handbook of North American Indians, Volume 8: California*, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 535-537.

⁹⁷ Kroeber, A.L. 1925. *Handbook of the Indians of California*. New York: Dover Publications, Inc., p. 556.

⁹⁸ McCawley, William. 1996. *The First Angelinos: The Gabrielino Indians of Los Angeles*. Banning, CA: Malki Museum Press, p. 157.

inhumation alone became the norm. The Serrano cremated their deceased,⁹⁹ while the Kitanemuk preferred inhumation.¹⁰⁰ Based on his research of the Gabrielinos, McCawley¹⁰¹ mentions that inhumation (more common along coastal groups) may have been a result of cultural influence by the Chumash or a practice adopted because scarcity of fuel required for cremations.¹⁰² With interment came the practice of grave goods a practice favored by most of the tribes in California. Grave goods usually consisted of beads of various materials, knives, projectile points, and exotic trade items among other objects. Ethnographic studies, as well as archaeological evidence regarding the presence or absence of grave goods and their quality, have been important archaeological tools to determine social hierarchy among individuals in specific social groups. Excavations at two burial sites in the Agua Dulce Village (CA-LAN-361 and CA-LAN-373) show social differentiation, which is reflected as the presence of exotic trade items in the graves, or complete lack of any grave goods.

The Vanyume

Limited information is available on the Vanyume. The Vanyume are a small division of the Serrano linguistic group that lived in the Mojave Desert, near the Mojave River.¹⁰³ The Vanyume population was likely low and confined to several small villages. The Vanyume were hostile to the neighboring Serrano, but were reported to have good relations with the Mojave and Chemehuevi.¹⁰⁴ The Vanyume were hunters and gatherers, and shell beads and millstones were known to have been used. The Vanyume are generally associated with life ways similar to the Serrano.¹⁰⁵ Vanyume territory may have included portions of the Lake Angeles/Llano/Valyermo/Littlerock, Lancaster Northeast, and Antelope Valley Northeast initiative subareas.

5.2.1.2 Prehistoric Context

The proposed initiative study area is located at the boundary between two prehistoric cultural chronologies proposed by researchers: the California coastal chronology and the Mojave Desert chronology. The geographical extent of both chronologies are poorly defined; however, the approximate eastern limit of the California coastal chronology in this area is the Sierra Pelona Ridge and the western limit of the Mojave Desert chronology in this area is the Antelope Valley. For this reason, both the coastal and desert chronologies are presented below. Future work may provide support for a more precise chronology of this area.

⁹⁹ Bean, Lowell J., and Charles R. Smith. 1978. "Serrano." In *Handbook of North American Indians*, Volume 8: California, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 570-574.

¹⁰⁰ Blackburn, Thomas C., and Lowell J. Bean. 1978. "Kitanemuk." In *Handbook of North American Indians*, Volume 8: California, ed. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 564-569.

¹⁰¹ McCawley, William. 1996. *The First Angelinos: The Gabrielino Indians of Los Angeles*, Banning, CA: Malki Museum Press.

¹⁰² McCawley, William. 1996. *The First Angelinos: The Gabrielino Indians of Los Angeles*. Banning, CA: Malki Museum Press, p. 157.

¹⁰³ Kroeber, A.L. 1925. *Handbook of the Indians of California*. New York: Dover Publications, Inc., p. 614.

¹⁰⁴ Kroeber, A.L. 1925. *Handbook of the Indians of California*. New York: Dover Publications, Inc., p. 614.

¹⁰⁵ Kroeber, A.L. 1925. *Handbook of the Indians of California*. New York: Dover Publications, Inc., p. 614.

Coastal Chronology

Several prehistoric cultural chronologies have been proposed for the coastal Southern California region with three of the most frequently cited sequences developed by William Wallace,¹⁰⁶ Claude Warren,¹⁰⁷ and Chester King.¹⁰⁸ Such chronologies provide a framework to discuss archaeological data in relation to broad cultural changes seen in the archaeological record. The chronological sequence presented herein represents an updated synthesis of these schemes as compiled by Glassow and others¹⁰⁹ for the Northern California Bight. This geographic area consists of the coastal area from Vandenberg Air Force Base south to Palos Verdes, as well as the Channel Islands and adjacent inland areas, including the San Fernando Valley and Los Angeles Basin.¹¹⁰ The prehistoric sequence of the Northern California Bight can be divided into four broad temporal categories (Table 5.2.1.2-1, *Southern California Coastal Regional Chronology*). It should be noted that the prehistoric chronology for the region is being refined on a continuing basis, with new discoveries and improvements in the accuracy of dating techniques.

TABLE 5.2.1.2-1
SOUTHERN CALIFORNIA COASTAL REGIONAL CHRONOLOGY

| Epoch | Coastal Region | Dates |
|---------------------------------------|----------------------|---------------------------------|
| Terminal Pleistocene / Early Holocene | Paleo-Coastal Period | Circa 9500 to 7000/6500 BC |
| Middle Holocene | Millingstone Period | Circa 7000/6500 to 1500/1000 BC |
| Late Holocene | Intermediate Period | 1500/1000 BC to AD 750 |
| Late Holocene | Late Period | AD 750 to Spanish contact |

Terminal Pleistocene and Early Holocene: Paleo-Coastal Period (Circa 9500 to 7000/6500 BC)

Although data on early human occupation for the Southern California coast are limited, archaeological evidence from the northern Channel Islands suggests initial settlement within the region occurred at least 12,000 years BP. At Daisy Cave (CA-SMI-261) on San Miguel Island, radiocarbon dates indicate an early period of use in the terminal Pleistocene, sometime between 9600 and 9000 calibrated (cal) BC.¹¹¹ Evidence of early human occupation in the Northern California Bight has also been found on nearby Santa Rosa Island, where human remains from the

¹⁰⁶ Wallace, William J. 1955. "A Suggested Chronology for Southern California Coastal Archaeology." *Southwestern Journal of Anthropology* 11: 214–30.

¹⁰⁷ Warren, Claude M. 1968. "Cultural Tradition and Ecological Adaptation on the Southern California Coast." In *Archaic Prehistory in the Western United States*, ed. Cynthia Irwin-Williams. Eastern New Mexico University Contributions in Anthropology No. 1. Portales, NM: Eastern New Mexico University.

¹⁰⁸ King, Chester. 1990. *Evolution of Chumash Society: A Comparative Study of Artifacts Used for Social System Maintenance in the Santa Barbara Channel Region before AD 1804*. New York, NY: Garland.

¹⁰⁹ Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. "Prehistory of the Northern California Bight and the Adjacent Transverse Ranges." In *California Prehistory, Colonization, Culture, and Complexity*, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira.

¹¹⁰ Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. "Prehistory of the Northern California Bight and the Adjacent Transverse Ranges." In *California Prehistory, Colonization, Culture, and Complexity*, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira.

¹¹¹ Erlandson, J.M., D.J. Kennett, B.L. Ingram, D.A. Guthrie, D.P. Morris, M.A. Tveshov, G.J. West, and P.L. Walker 1996. "An Archaeological and Paleontological Chronology for Daisy Cave (CA-SMI-261), San Miguel Island, California." *Radiocarbon*, 38: 355–73.

Arlington Springs Site (CA-SRI-1730) have been dated between 11,000 and 10,000 cal BC.¹¹² Archaeological data recovered from these and other coastal Paleoindian sites indicate a distinctively maritime cultural adaptation, termed the “Paleo-Coastal Tradition,”¹¹³ which involved the use of seafaring technology and a subsistence regime focused on shellfish gathering and fishing.¹¹⁴

Relatively few sites have been identified in Los Angeles County that date to the terminal Pleistocene and early Holocene. Currently, the earliest reliable date for human occupation in the area derives from the La Brea Tar Pits (CA-LAN-159), where human bone has been dated to 8520 cal BC.¹¹⁵ Evidence of possible early human occupation has also been found at the sand dune bluff site of Malaga Cove (CA-LAN-138), located between Redondo Beach and Palos Verdes.¹¹⁶ Researchers have proposed that archaeological remains recovered from the lowermost cultural stratum at the site, which include shell, animal bone, and chipped stone tools, may date as early as 8000 cal BC.^{117,118}

Middle Holocene: Millingstone Period (Circa 7000/6500 to 1500/1000 BC)

The Millingstone Period or Horizon, also referred to as the “Encinitas Tradition,”^{119,120} is the earliest well-established cultural occupation of the coastal areas of the region. The onset of this period, which began sometime between 7000 and 6500 cal BC, is marked by the expansion of populations throughout the Northern California Bight. Regional variations in technology, settlement patterns, and mortuary practices among Millingstone sites have led researchers to define several local manifestations or “patterns” of the tradition.¹²¹ Groups that occupied the San Fernando Valley are thought to have been relatively small and highly mobile during this time, with a general subsistence economy focused on the gathering of shellfish and plant foods, particularly hard seeds, with hunting being of less importance.¹²²

¹¹² Johnson, J.R., T.W. Stafford Jr., H.O. Ajie, and D.P. Morris. 2002. “Arlington Springs Revisited.” In Proceedings of the Fifth California Islands Symposium, ed. D. Browne, K. Mitchell, and H. Chaney, pp. 541–45. Santa Barbara, CA: USDI Minerals Management Service and The Santa Barbara Museum of Natural History.

¹¹³ Moratto, M.J. 1984. California Archaeology, pp. 103-113. Academic Press, New York.

¹¹⁴ Rick, T.C., J.M. Erlandson, and R.L. Vellanoweth. 2001. “Paleocoastal Fishing along the Pacific Coast of the Americas: Evidence from Daisy Cave, San Miguel Island, California.” American Antiquity, 66: 595–614.

¹¹⁵ Berger, R., R. Protsch, R. Reynolds, C. Rozaire, and J.R. Sackett. 1971. New Radiocarbon Dates Based on Bone Collagen of California Indians. Los Angeles, CA: Contributions to the University of California Archaeological Survey.

¹¹⁶ Walker, Edwin Francis. 1951. Five Prehistoric Archaeological Sites in Los Angeles County, California. F. W. Hodge Anniversary Publication Fund VI. Los Angeles, CA: Southwest Museum.

¹¹⁷ Moratto, M.J. 1984. California Archaeology, pp. 132. Academic Press, New York.

¹¹⁸ Wallace, W.J. 1986. “Archaeological Research at Malaga Cove.” In Symposium: A New Look at Some Old Sites, ed. G.S. Breschini and T. Haversat. Salinas, CA: Coyote Press.

¹¹⁹ Sutton, Mark Q. 2010. “The Del Rey Tradition and Its Place in the Prehistory of Southern California.” Pacific Coast Archaeological Society Quarterly, 44(2): 1–54.

¹²⁰ Sutton, Mark Q., and Jill K. Gardner. 2010. “Reconceptualizing the Encinitas Tradition of Southern California.” Pacific Coast Archaeological Society Quarterly, 42(4): 1–64.

¹²¹ Sutton, Mark Q., and Jill K. Gardner. 2010. “Reconceptualizing the Encinitas Tradition of Southern California.” Pacific Coast Archaeological Society Quarterly, 42(4): 1–64.

¹²² Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. “Prehistory of the Northern California Bight and the Adjacent Transverse Ranges.” In California Prehistory, Colonization, Culture, and Complexity, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira.

Two temporal subdivisions have been defined for the portion of the Topanga Pattern falling within the Millingstone Period: Topanga I (circa 6500 to 3000 BC) and Topanga II (circa 3000 to 1000 BC).¹²³ Topanga I assemblages are characterized by abundant manos and metates, core tools and scrapers, charmstones, coggled stone, and discoidals; projectile points are quite rare with those present resembling earlier, large, leaf-shaped forms.¹²⁴ Secondary inhumations with associated cairns are the most common burial form at Millingstone sites with small numbers of extended inhumations also identified. The subsequent Topanga II phase largely represents a continuation of the Topanga pattern with site assemblages characterized by numerous manos and metates, charmstones, coggled stones, discoidals, and some stone balls. A significant technological change in ground stone occurs at this time with the appearance of mortars and pestles at Topanga II sites suggesting the adoption of balanophagy by coastal populations.¹²⁵ The quantity of projectile points also notably increases in Topanga II site deposits indicating that the hunting of large game may have played a greater role in the subsistence economy than in earlier times. While secondary burials continue to be quite common, a few flexed inhumations have also been recovered from archaeological contexts dating to the Topanga II phase.

A number of Millingstone sites have been identified in the San Fernando Valley and surrounding areas. The early component of the Tank site (CA-LAN-1), located in the nearby Santa Monica Mountains, appears to date to the Topanga I phase.¹²⁶ In addition, a marine shell sample from the Encino Village site (CA-LAN-43 / CA-LAN-111) yielded a radiocarbon date of 4570 ± 80, suggesting use of the southern portion of the valley during the Topanga I phase.¹²⁷ The presence of mortars and pestles alongside stemmed projectile points at the Chatsworth site (CA-LAN-21), located at the western edge of the San Fernando Valley, suggests a Topanga II presence.¹²⁸ Finally, the Big Tujunga Wash site, located at the eastern edge of the San Fernando Valley, may have also contained a Topanga II component.¹²⁹

Late Holocene: Intermediate Period (1500/1000 BC to AD 750)

The Intermediate Period, which encompasses the early portion of the “Del Rey Tradition” as defined by Sutton,¹³⁰ begins around 3500 BP. At this time, significant changes are seen throughout the coastal areas of Southern California in material culture, settlement systems, subsistence

¹²³ Sutton, Mark Q., and Jill K. Gardner. 2010. “Reconceptualizing the Encinitas Tradition of Southern California.” *Pacific Coast Archaeological Society Quarterly*, 42(4): 1–64, 8.

¹²⁴ Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. “Prehistory of the Northern California Bight and the Adjacent Transverse Ranges.” In *California Prehistory, Colonization, Culture, and Complexity*, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira.

¹²⁵ Sutton, Mark Q., and Jill K. Gardner. 2010. “Reconceptualizing the Encinitas Tradition of Southern California.” *Pacific Coast Archaeological Society Quarterly*, 42(4): 1–64, 41.

¹²⁶ Sutton, Mark Q., and Jill K. Gardner. 2010. “Reconceptualizing the Encinitas Tradition of Southern California.” *Pacific Coast Archaeological Society Quarterly*, 42(4): 1–64, 8.

¹²⁷ Taylor, R.E., P.J. Ennis, P.J. Slota Jr. and L.A. Payen. 1989. “Non-Age-Related Variations in Aspartic Acid Racemization in Bone from a Radiocarbon-dated Late Holocene Archaeological Site.” *Radiocarbon*, 31(3): 1048-56.

¹²⁸ Sutton, Mark Q., and Jill K. Gardner. 2010. “Reconceptualizing the Encinitas Tradition of Southern California.” *Pacific Coast Archaeological Society Quarterly*, 42(4): 1–64, 8.

¹²⁹ Sutton, Mark Q., and Jill K. Gardner. 2010. “Reconceptualizing the Encinitas Tradition of Southern California.” *Pacific Coast Archaeological Society Quarterly*, 42(4): 1–64, 8.

¹³⁰ Sutton, Mark Q. 2010. “The Del Rey Tradition and Its Place in the Prehistory of Southern California.” *Pacific Coast Archaeological Society Quarterly*, 44(2): 1–54.

strategies, and mortuary practices. These new cultural traits have been attributed to the arrival of Takic speaking people from the southern San Joaquin Valley.¹³¹ Biological, archaeological, and linguistic data indicate that the Takic groups who settled in the San Fernando Valley were ethnically distinct from the preexisting Hokan-speaking Topanga populations and are believed to be ancestral to ethnographic Gabrielino groups.¹³² While archaeological evidence indicates that “relic” Topanga III populations continued to survive in isolation in the Santa Monica Mountains, these indigenous groups appear to have been largely replaced or absorbed by the Gabrielino or Chumash by 2000 BP.¹³³

Intermediate Period sites within Los Angeles County are represented by the “Angeles Pattern” of the Del Rey Tradition.¹³⁴ Three temporal subdivisions have been defined for the portion of the Angeles Pattern that falls within the Intermediate Period: Angeles I (1500 to 600 BC), Angeles II (600 BC to AD 400), and Angeles III (AD 400 to 750).¹³⁵ The onset of the Angeles I phase is characterized by the increase and aggregation of regional populations and the appearance of the first village settlements. The prevalence of projectile points, single-piece shell fishhooks, and bone harpoon points at Angeles I sites suggests a subsistence shift in the Intermediate Period with an increased emphasis on fishing and terrestrial hunting and less reliance on the gathering of shellfish resources. Regional trade or interaction networks also appeared to develop at this time with coastal populations in Los Angeles County obtaining small steatite artifacts and *Olivella* shell beads from the southern Channel Islands and obsidian from the Coso Volcanic Field.¹³⁶ Finally, marked changes are seen in mortuary practices during the Angeles I phase with flexed primary inhumations and cremations replacing extended inhumations and cairns.

The Angeles II phase largely represents a continuation and elaboration of the Angeles I technology, settlement, and subsistence systems. One exception to this pattern is the introduction of a new funerary complex around 2600 BP consisting of large rock cairns or platforms which contain abundant broken tools, faunal remains, and cremated human bone. These mortuary features have generally been thought to represent the predecessor of the Southern California Mourning Ceremony.¹³⁷ Several important changes in the archaeological record mark the beginning of the Angeles III phase. At this time, larger seasonal villages characterized by well-developed middens and cemeteries were established along the coast or inland areas. Archaeological data from Angeles III sites indicate that residents of these settlements practiced a fairly diverse subsistence strategy

¹³¹ Sutton, Mark Q. 2009. “People and Language: Defining the Takic Expansion in Southern California.” *Pacific Coast Archaeological Society Quarterly*, 41(2&3): 31-93.

¹³² Sutton, Mark Q. 2009. “People and Language: Defining the Takic Expansion in Southern California.” *Pacific Coast Archaeological Society Quarterly*, 41(2&3): 31-93.

¹³³ Sutton, Mark Q., and Jill K. Gardner. 2010. “Reconceptualizing the Encinitas Tradition of Southern California.” *Pacific Coast Archaeological Society Quarterly*, 42(4): 1–64, 17.

¹³⁴ Sutton, Mark Q. 2010. “The Del Rey Tradition and Its Place in the Prehistory of Southern California.” *Pacific Coast Archaeological Society Quarterly*, 44(2): 1–54.

¹³⁵ Sutton, Mark Q., and Jill K. Gardner. 2010. “Reconceptualizing the Encinitas Tradition of Southern California.” *Pacific Coast Archaeological Society Quarterly*, 42(4): 1–64, 8.

¹³⁶ Koerper, Henry C., Roger D. Mason, and Mark L. Peterson. 2002. “Complexity, Demography, and Change in Late Holocene Orange County.” In *Catalysts to Complexity: Late Holocene Societies of the California Coast*, ed. M. Erlandson and Terry L. Jones. *Perspectives in California Archaeology*, Vol. 6. Los Angeles, CA: University of California, Los Angeles, Institute of Archaeology.

¹³⁷ Sutton, Mark Q. 2010. “The Del Rey Tradition and Its Place in the Prehistory of Southern California.” *Pacific Coast Archaeological Society Quarterly*, 44(2): 1–54.

which included the exploitation of both marine and terrestrial resources.¹³⁸ Notable technological changes occurred at this time with the introduction of the plank canoe and bow and arrow.¹³⁹ The appearance of new *Olivella* bead types at Angeles III sites indicates a reconfiguration of existing regional exchange networks with increased interaction with populations in the Gulf of California.¹⁴⁰ Finally, cremations increase slightly in frequency at this time with inhumations no longer placed in an extended position.¹⁴¹ Intermediate Period sites in Los Angeles County include CA-LAN-2 and CA-LAN-197, both of which are located in the Santa Monica Mountains. The formal cemeteries at these sites are representative of the increased sedentism that occurred during the Intermediate Period.¹⁴²

Late Holocene: Late Period (AD 750 to Spanish Contact)

The Late Period dates from approximately AD 750 until Spanish contact at AD 1542. Sutton¹⁴³ has divided this period, which falls within the larger Del Rey Tradition, into two phases: Angeles IV (AD 750–1200) and Angeles V (AD 1200–1550). The Angeles IV phase is characterized by the continued growth of regional populations and the development of large, sedentary villages. Although chiefdoms appear to have developed in the northern Channel Islands and Santa Barbara region after 850 BP,^{144,145} little direct evidence has been found to suggest this level of social complexity existed in the San Fernando Valley during the late prehistoric period.¹⁴⁶

Several new types of material culture appear during the Angeles IV phase including Cottonwood series points, birdstone and “spike” effigies, *Olivella* cupped beads, and *Mytilus* shell disk beads. The presence of Southwestern pottery, Patayan ceramic figurines, and Hohokam shell bracelets at Angeles IV sites suggests some interaction between groups in Southern California and the Southwest. Notable changes are seen in regional exchange networks after 800 BP with an increase in the number and size of steatite artifacts, including large vessels, elaborate effigies, and *comals*, recovered from Angeles V sites. The presence of these artifacts suggests a strengthening of trade ties

¹³⁸ Sutton, Mark Q. 2010. “The Del Rey Tradition and Its Place in the Prehistory of Southern California.” *Pacific Coast Archaeological Society Quarterly*, 44(2): 1–54.

¹³⁹ Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. “Prehistory of the Northern California Bight and the Adjacent Transverse Ranges.” In *California Prehistory, Colonization, Culture, and Complexity*, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira.

¹⁴⁰ Koerper, Henry C., Roger D. Mason, and Mark L. Peterson. 2002. “Complexity, Demography, and Change in Late Holocene Orange County.” In *Catalysts to Complexity: Late Holocene Societies of the California Coast*, ed. M. Erlandson and Terry L. Jones. *Perspectives in California Archaeology*, Vol. 6. Los Angeles, CA: University of California, Los Angeles, Institute of Archaeology.

¹⁴¹ Sutton, Mark Q. 2010. “The Del Rey Tradition and Its Place in the Prehistory of Southern California.” *Pacific Coast Archaeological Society Quarterly*, 44(2): 1–54.

¹⁴² Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. “Prehistory of the Northern California Bight and the Adjacent Transverse Ranges.” In *California Prehistory, Colonization, Culture, and Complexity*, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira.

¹⁴³ Sutton, Mark Q. 2010. “The Del Rey Tradition and Its Place in the Prehistory of Southern California.” *Pacific Coast Archaeological Society Quarterly*, 44(2): 1–54.

¹⁴⁴ Arnold, Jeanne E. 1992. “Complex Hunter-Gatherer-Fishers of Prehistoric California: Chiefs, Specialists, and Maritime Adaptations of the Channel Islands.” *American Antiquity*, 57(1): 60–84.

¹⁴⁵ Gamble, Lynn H. 2005. “Culture and Climate: Reconsidering the Effect of Palaeoclimatic Variability among Southern California Hunter-Gatherer Societies.” *World Archaeology*, 37(1): 92–108.

¹⁴⁶ Sutton, Mark Q. 2010. “The Del Rey Tradition and Its Place in the Prehistory of Southern California.” *Pacific Coast Archaeological Society Quarterly*, 44(2): 1–54.

between coastal Los Angeles populations and the southern Channel Islands.¹⁴⁷ Finally, Late Period mortuary practices remain largely unchanged from the Intermediate Period with flexed primary inhumations continuing to be the preferred burial method.

Late Period sites in Los Angeles County include CA-LAN-227 and CA-LAN-229, which are situated in the Santa Monica Mountains. Both sites contain less Millingstone artifacts than earlier sites, but more mortars, pestles, projectile points, drills, beads, pipes, and bone tools.¹⁴⁸ Although these sites represent a move toward centralized sedentary villages during this period, it is unclear whether they represent year-round occupation or semi-permanent villages used as base settlements.¹⁴⁹

Mojave Desert Chronology

The desert chronology consists of a brief outline of the currently accepted chronological framework for the Mojave Desert Region. Archaeological sequences are grouped into Late Pleistocene and Early, Middle, and Late Holocene time frames, with period and phase definitions varying by region. This report uses the set of period names that has been broadly applied to the Mojave Desert (Table 5.2.1.2-2, *Mojave Desert Regional Chronology*). It should be noted that the prehistoric chronology for the region is being refined on a continuing basis, with new discoveries and improvements in the accuracy of dating techniques.

**TABLE 5.2.1.2-2
MOJAVE DESERT REGIONAL CHRONOLOGY**

| Epoch | Mojave Desert Region | Dates |
|------------------|-------------------------|------------------------------------|
| Late Pleistocene | Paleoindian Period | 12,000 ¹⁵⁰ to 10,000 BP |
| Early Holocene | Lake Mojave Period | Circa 10,000 to 7000 BP |
| Middle Holocene | Pinto Period | Circa 7000 to 4000 BP |
| Late Holocene | Gypsum Period | Circa 4000/3500 to 1500 BP |
| Late Holocene | Rose Spring Period | Circa 1500 to 1000/600 BP |
| Late Holocene | Late Prehistoric Period | Circa 1000 BP to Contact AD 1770 |

Late Pleistocene: Pre-Projectile Point Period (Before 12,000 BP)

The earliest Pleistocene archaeological sites, which may be earlier than 12,000 years BP, are often referred to as pre-Clovis, or pre-projectile point and are viewed as controversial by many archaeologists because of the lack of dateable contexts and the uncertainty in the accuracy of dates obtained from some artifacts submitted for analysis.¹⁵¹ One of the most thorough studies on this

¹⁴⁷ Koerper, Henry C., Roger D. Mason, and Mark L. Peterson. 2002. "Complexity, Demography, and Change in Late Holocene Orange County." In *Catalysts to Complexity: Late Holocene Societies of the California Coast*, ed. M. Erlandson and Terry L. Jones. Perspectives in California Archaeology, Vol. 6. Los Angeles, CA: University of California, Los Angeles, Institute of Archaeology.

¹⁴⁸ Moratto, M. 1984. California Archaeology. pp. 141. Academic Press, Inc. Orlando, Florida.

¹⁴⁹ Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. "Prehistory of the Northern California Bight and the Adjacent Transverse Ranges." In *California Prehistory, Colonization, Culture, and Complexity*, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira.

¹⁵⁰ This date is subject to dispute among archaeologists.

¹⁵¹ Wallace, W.J. 1962. "Prehistoric Cultural Development in the Southern California Deserts." *American Antiquity*, 28(2): 172–180.

time period is Emma Lou Davis's 1978 study of Pleistocene Lake China, Ridgecrest, in eastern California.¹⁵² Other examples are the Calico Early Man Site and the Manix Lake Lithic Industry.^{153,154}

Late Pleistocene: Paleoindian Period (Circa 12,000 BP to 10,000 BP)

The subsequent Paleoindian Period is recognized throughout the west by the presence of fluted projectile points, such as the well-known Clovis points, and associated artifacts. Recent calibrations of these radiocarbon dates suggest that fluted points may be up to 2,000 years older than previously thought, with a range of about 13,000 to 11,000 calendar years BP.¹⁵⁵ Although many fluted points have been found in the Great Basin and Mojave Desert, none of these have been recovered in dateable contexts.¹⁵⁶ Davis identified several sites associated with the shoreline at Pleistocene Lake China that contained fluted points.¹⁵⁷ In the vicinity of the proposed initiative area, fluted points have been reported in the El Paso Mountains, Antelope Valley, and adjacent mountains.^{158,159}

Fluted points have traditionally been interpreted as tools used for hunting Pleistocene megafauna due to their clear association with megafauna remains in the southwestern United States. However, more recent research suggests a more diversified subsistence strategy, one including the use of productive shallow lakes and marsh environments. This interpretation flows from the fact that nearly all fluted points sites in the Great Basin were found along the perimeter of the now-extinct lakes and marshes that existed during the Late Pleistocene and early Holocene.¹⁶⁰ Some argue that this distribution may represent a bias in the visibility of older sites in that exposed older surfaces, where such sites would be found, are typically more pervasive along washes and as the center of flat, playa bearing locations, in areas not obscured by younger deposits.¹⁶¹ This bias would provide

¹⁵² Davis, E.L. 1978. "The Ancient Californians: Rancholabrean Hunters of the Mohave Lakes Country." Science Series 29. Los Angeles, CA: Natural History Museum.

¹⁵³ Leakey, L.S.B., R.D. Simpson, and T. Clements. 1968. "Archaeological excavations in the Calico Mountains, California: Preliminary Report." Science, 160: 1022–1023.

¹⁵⁴ Simpson, R.D. 1958. "The Manix Lake Archaeological Survey." The Masterkey, 32(1): 4–10.

¹⁵⁵ Fagan, Brian. 2005. Ancient North America: The Archaeology of a Continent. 4th Edition. London: Thames & Hudson, p. 12.

¹⁵⁶ Dillon, B.D. 2002. "California Paleoindians: Lack of Evidence, or Evidence of Lack?" In Essays in California Archaeology: A Memorial to Franklin Fenega, ed. W.J. Wallace and F.A. Riddell. Berkeley, CA: University of California Publications, pp. 110–128.

¹⁵⁷ Davis, E.L. 1978. "The Ancient Californians: Rancholabrean Hunters of the Mohave Lakes Country." Science Series 29. Los Angeles, CA: Natural History Museum.

¹⁵⁸ Dillon, B.D. 2002. "California Paleoindians: Lack of Evidence, or Evidence of Lack?" In Essays in California Archaeology: A Memorial to Franklin Fenega, ed. W.J. Wallace and F.A. Riddell. Berkeley, CA: University of California Publications, pp. 110–128.

¹⁵⁹ Earle, D.D., B.L. Boyer, R.A. Bryson, R.U. Bryson, M.M. Campbell, J.J. Johannesmeyer, K.A. Lark, C.J. Parker, M.D. Pittman, L.M. Ramirez, M.R. Ronning, and J. Underwood. 1997. Cultural Resources Overview and Management Plan for Edwards Air Force Base, California, Volume 1, Overview of Prehistoric Cultural Resources. Prepared for: AFFTC/EMXR, Edwards Air Force Base, CA, p. 54.

¹⁶⁰ Grayson, Donald K. 1993. The Desert's Past: A Natural Prehistory of the Great Basin. Washington, DC: Smithsonian Institution Press.

¹⁶¹ Basgall, M.E., and M.C. Hall. 1994. "Perspectives on the Early Holocene Archaeological Record of the Mojave Desert." In Kelso Conference Papers 1987–1992, A Collection of Papers and Abstracts from the First Five Kelso Conferences on the Prehistory of the Mojave Desert, ed. G. Dicken Everson and Joan S. Schneider. Bakersfield, CA: California State University, Bakersfield, Museum of Anthropology, Occasional Papers in Anthropology, 4: 63–81.

a narrow view of subsistence and adaptive strategies during the early Holocene to Late Pleistocene periods if in fact additional activity areas located away from these resources are not being recognized. Although the level of utilization and focus on these areas is debated, these environments would undoubtedly have provided a rich habitat for numerous plants and animals and were likely exploited by Paleoindian peoples.

Early Holocene: Lake Mojave Period (Circa 10,000 BP to 7000 BP)

The quantity of archaeological remains in the western United States increases at the beginning of the Holocene Period, about 10,000 years BP. Sites dating to the Early Holocene are found along the shorelines of Pleistocene dry lakes and are characterized by the occurrence of large stemmed and concave base projectile points, as well as other distinctive flaked stone tools. The point types that are associated with this period are known as Lake Mojave and Silver Lake projectile points, named for the dry lakes where they were first found.¹⁶² Lake Mojave sites are relatively rare in the western Mojave Desert, but Earle et al. reported at least five sites on Edwards Air Force Base with Lake Mojave Period points.^{163,164}

Little is known about the subsistence strategies during this period, although it is assumed that hunting was a primary focus. The presence of projectile points and the relative lack of ground stone tools indicative of plant processing lend credence to this view. Faunal assemblages at several sites of this period have also supported this assumption, with evidence for both small (e.g., lagomorph) and large (e.g., artiodactyl) animal exploitation.^{165,166} As with the Paleoindian Period, however, the presence of Lake Mojave Period sites near extinct Pleistocene and early Holocene lakes suggest a diverse range of resources may have been utilized.

Middle Holocene: Pinto Period (Circa 7000 BP to 4000 BP)

The Middle Holocene is characterized by the appearance of Pinto series projectile points in the Mojave Desert.¹⁶⁷ Pinto points are smaller than Lake Mojave points, and their name derives from

¹⁶² Campbell, E.W.C., W.H. Campbell, E. Antevs, C.E. Amsden, J.A. Barbieri, and F.D. Bode. 1937. "The Archaeology of Pleistocene Lake Mojave." Southwest Museum, Paper No. 9. Los Angeles, CA.

¹⁶³ Sutton, Mark Q. 1987. "Some Aspects of Kitanemuk Prehistory." In *Prehistory of the Antelope Valley, California: An Overview*. Occasional Paper No. 1. Lancaster, CA: Antelope Valley Archaeological Society, p. 229.

¹⁶⁴ Earle, D.D., B.L. Boyer, R.A. Bryson, R.U. Bryson, M.M. Campbell, J.J. Johannesmeyer, K.A. Lark, C.J. Parker, M.D. Pittman, L.M. Ramirez, M.R. Ronning, and J. Underwood. 1997. *Cultural Resources Overview and Management Plan for Edwards Air Force Base, California, Volume 1, Overview of Prehistoric Cultural Resources*. Prepared for: AFFTC/EMXR, Edwards Air Force Base, CA, p. 54.

¹⁶⁵ Basgall, M.E. 2000. "The Structure of Archaeological Landscapes in the North-Central Mojave Desert." In *Archaeological Passages: A Volume in Honor of Claude Nelson Warren*, ed. J.S. Schneider, R.M. Yohe II, and J.K. Gardner. Hemet, CA: Western Center for Archaeology and Paleontology, Publications in Archaeology.

¹⁶⁶ Basgall, M.E., and M.C. Hall. 1994. "Perspectives on the Early Holocene Archaeological Record of the Mojave Desert." In *Kelso Conference Papers 1987–1992, A Collection of Papers and Abstracts from the First Five Kelso Conferences on the Prehistory of the Mojave Desert*, ed. G. Dicken Everson and Joan S. Schneider. Bakersfield, CA: California State University, Bakersfield, Museum of Anthropology, Occasional Papers in Anthropology, 4: 63–81.

¹⁶⁷ Sutton, Mark Q. 1996. "The Current Status of Archaeological Research in the Mojave Desert." *Journal of California and Great Basin Anthropology*, 18(2): 231.

the Pinto Basin where they were first defined.¹⁶⁸ The period is not well delineated because of a paucity of chronometric data and disagreement on the definition and dating of the Pinto series.¹⁶⁹

With the onset of the Middle Holocene, the climate became dryer and hotter throughout the deserts of the western United States. Sites dating to this time period exhibit diverse artifact assemblages, marked by the presence of both hunting tools and milling equipment. Many interpret these assemblages as a move from exploitation of only higher-ranked food items, such as large animals, to a more diversified subsistence strategy that also includes low-ranked resources such as seeds, as a response to the climatic shift to more arid conditions. Settlement patterns also appear to change in response to climatic conditions with a move from lakeshore habitats, which became dry, to areas around streams or springs.¹⁷⁰

Late Holocene Gypsum Period (Circa 4000/3500 BP to 1500 BP)

About 4,000 years ago, climatic conditions shifted again, this time to the cooler, moister conditions characterizing the Late Holocene. This period is characterized by the replacement of Pinto points with Gypsum and Elko series projectile points. In the Owens Valley region, at approximately the same time period, Pinto points were replaced by Humboldt and Elko series projectile points.

An increase in population, trade, and social complexity is suggested with the more favorable climate conditions. The mortar and pestle appears to have been introduced during this period, which is hypothesized to mark the beginning of tree crop utilization, such as mesquite and oak. There was an increase in the use of seeds, including piñon, which is indicated by the presence of milling stones. However, hunting of a variety of fauna, including mountain sheep, remained an important part of the economy. This period is also marked by increased evidence of ritual activities as indicated by numerous rock art sites (e.g., Coso Range) and the discovery of split-twig figurines at Newberry Cave in the central Mojave Desert.¹⁷¹ The presence of split-twig figurines also suggests interaction with the Southwest culture area during this time period.

Late Holocene: Rose Spring Period (Circa 1500 to 1000/600 BP)

Throughout the Great Basin, Elko and other dart-size points were replaced about 1,500 years ago with Rose Spring and Eastgate projectile points, often grouped together under the label Rosegate.¹⁷² This occurrence, which correlates with the introduction of the bow and arrow around AD 500,¹⁷³ may also mark the beginning of the Numic expansion, which many researchers believe emanated from southeastern California.

¹⁶⁸ Campbell, E.W.C., and W.H. Campbell. 1935. "The Pinto Basin Site." In Southwest Museum, Paper No. 9. Los Angeles, CA.

¹⁶⁹ Warren, C.N. 2002. "Time, Form, and Variability: Lake Mojave and Pinto Periods in Mojave Desert Prehistory." In *Essays in California Archaeology: A Memorial to Franklin Fenenga*, ed. W.J. Wallace and F.A. Riddell. Berkeley, CA: University of California Archaeological Research Facility, pp. 129–141.

¹⁷⁰ Sutton, Mark Q. 1996. "The Current Status of Archaeological Research in the Mojave Desert." *Journal of California and Great Basin Anthropology*, 18(2): 221–257.

¹⁷¹ Smith, G.A., W.C. Schuiling, L. Martin, R.J. Sayles, and P. Jillson. 1957. San Bernardino County Museum Scientific Series 1, Newberry Cave, CA.

¹⁷² Thomas, D. H. 1981. "How to Classify the Projectile Points from Monitor Valley, Nevada." *Journal of California and Great Basin Anthropology*, 3(1): 7–43.

¹⁷³ Yohe, R.M. 1998. "The Introduction of the Bow and Arrow and Lithic Resource Use at Rose Spring (CA-INY-372)." *Journal of California and Great Basin Anthropology*, 20: 26–52.

The appearance of Rose Spring series projectile points marks the beginning of the Rose Spring Period in the Mojave Desert.^{174,175} Major villages and numerous other sites dating to this time period have been recorded in eastern California. Many of these contain bedrock milling features and portable milling stones, along with marine shell artifacts and obsidian from extralocal sources, suggesting long-distance trade. Two sites exhibit architectural features distinct to this period; at Cantil, there was evidence of a wickiup-like structure, and the Koehn Lake site shows evidence of a pit house.¹⁷⁶ Subsistence strategies during this time period appear to have shifted from one with a predominant focus on hunting of large game to one focused on utilization of a variety of plant resources, supplemented with some hunting of medium to small game such as lagomorphs and rodents.¹⁷⁷

Late Holocene Late Prehistoric Period (Circa 1000 BP to Contact AD 1770)

The final time period is known as the Late Prehistoric in the Mojave Desert. The period began about 1000 BP and lasted until historic contact. Desert Side-notched and Cottonwood series projectile points replaced the larger points from the previous period, and pottery first appeared in the form of Owens Valley brown ware. During this period, trade networks increased along the Mojave River and over the San Gabriel Mountains, and groups from the Antelope Valley may have served as intermediaries among populations located in peripheral areas.¹⁷⁸ Subsistence strategies remained much the same from the Gypsum Period onward, with a focus on collection of plant resources, supplemented by hunting of medium to small animals.

5.2.2 Historic Resources

5.2.2.1 Historic Period Context

The history of the areas covered by the proposed initiative is diverse and difficult to synthesize into a single narrative. For this reason, the historic context is broken into two regions: the Antelope Valley, which approximates the history of the Antelope Valley Northeast, Lake Angeles/Llano/Valyermo/Littlerock, Lake Hughes/Gorman/West of Lancaster, and Lancaster Northeast subareas; and the Santa Clarita Valley, which approximates the history of the Acton, Castaic/Santa Clarita/Agua Dulce, and East San Gabriel Mountains subareas.

¹⁷⁴ Lanning, E.P. 1963. "Archaeology of the Rose Spring Site INY-372." *American Archaeology and Ethnology*, 49(3): 237–336.

¹⁷⁵ Yohe, R.M. 1998. "The Introduction of the Bow and Arrow and Lithic Resource Use at Rose Spring (CA-INY-372)." *Journal of California and Great Basin Anthropology*, 20: 26–52.

¹⁷⁶ Sutton, Mark Q. 1996. "The Current Status of Archaeological Research in the Mojave Desert." *Journal of California and Great Basin Anthropology*, 18(2): 221–257.

¹⁷⁷ Sutton, Mark Q. 1996. "The Current Status of Archaeological Research in the Mojave Desert." *Journal of California and Great Basin Anthropology*, 18(2): 221–257.

¹⁷⁸ Earle, D.D., B.L. Boyer, R.A. Bryson, R.U. Bryson, M.M. Campbell, J.J. Johannsmeyer, K.A. Lark, C.J. Parker, M.D. Pittman, L.M. Ramirez, M.R. Ronning, and J. Underwood. 1997. *Cultural Resources Overview and Management Plan for Edwards Air Force Base, California, Volume 1, Overview of Prehistoric Cultural Resources*. Prepared for: AFFTC/EMXR, Edwards Air Force Base, CA, p. 58.

Antelope Valley

European Discovery and the Mission Period (1772–1821)

The first documented expedition into Antelope Valley by a European was in 1772 and was led by Don Pedro Fages who traveled from San Diego to San Luis Obispo via Cajón Pass, Mojave Desert, Hughes Lake, Antelope Valley, Tejón Pass, Cañada de los Uvas (Grapevine Canyon), and Buena Vista Lake. Don Fages left the first written record of exploration in the south San Joaquin Valley.¹⁷⁹ In 1776, Francisco Garces is reported to have explored the region, including the Cummings and Tehachapi Valleys in the Tehachapi Mountains, when traveling from the San Joaquin Valley to the Mojave River near Barstow. Historic accounts also indicate that Garces left traces of his visit at Willow Springs (near Rosamond) and on Castle Butte (near California City).¹⁸⁰ After this time, little documentation exists for European explorations or visits to the Mojave Desert and beyond until the 1800s; however, it is certain that such contacts occurred. Aside from these minor encounters, Native Americans residing in these areas were likely indirectly affected by disruptions in trade caused by the European occupation in the coastal and adjacent areas.

In the early 1800s, the Spanish increased their efforts to incorporate Native Americans into the mission system. Native Americans from interior tribes were either brought or came to the San Gabriel and San Fernando missions, established in 1771 and 1797, respectively, which may have exerted influence as far as the upper Mojave River. Although the Spanish were determined to gather all natives into the mission system, there are numerous examples of interior Native American villages not represented in the mission registers, such as in the southern Antelope Valley, suggesting low levels of interaction or influence prior to this time. For example, according to Earle, the first baptism of a Kawaiisu member was not recorded in the missions until 1821.¹⁸¹ As a side effect of the increased number of missions in Southern California, native neophytes attempted to escape missions by running away and seeking refuge with interior tribes, such as in the Southern San Joaquin Valley or the Mojave Desert and adjacent mountains. This impacted the existing tribes in these areas because forays into these regions were made by the Spanish on numerous occasions to recapture these people, and some tribes became mixed with the influx of natives from different tribal territories. This tribal intermixing continued after the end of the mission system in 1834. With the reduction in the native populations, tribal interaction spheres necessarily increased and territorial boundaries became blurred.

The Mexican Period (1821–1846)

During the period of Mexican rule (1821–1846), the Antelope Valley remained relatively outside the frontier of Mexican settlement. The closest Mexican settlement was the Rancho San Francisquito in the Santa Clarita–Newhall area, located approximately 20 miles south of Antelope Valley. After the secession to the United States in 1848, however, this situation would change dramatically.

¹⁷⁹ California Office of Historic Preservation. Accessed November 2007. Web site. "California Historical Landmarks: Kern County." Available at: http://ohp.parks.ca.gov/default.asp?page_id=21423

¹⁸⁰ City of Mojave. Accessed 4 November 2007. Web site. "Mojave's History." Available at: www.mojave.ca.us/history_IL.htm

¹⁸¹ Earle, D. 1997. Ethnohistoric Overview of the Edwards Air Force Base Region and the Western Mojave Desert. Prepared for: AFFTC/EMXR, Edwards Air Force Base, CA. Prepared by: Earle and Associates, Palmdale, CA, p. 44.

The American Period (1850–present)

The beginning of the Euro-American period is marked by the establishment of the state of California in 1850. In the following years, the Antelope Valley witnessed increased numbers of expeditions and explorations by Hispanic and American graziers, miners, and adventurers. A U.S. Army survey party was sent to the area in 1853 to search for possible railway routes that would connect the San Joaquin and Antelope Valleys. Fort Tejon was established soon thereafter in Grapevine Canyon on the west end of the Tehachapi Mountains. This signaled the opening of Euro-American settlement into the San Joaquin Valley and Tehachapi Mountains.¹⁸²

Euro-American prospectors were drawn to the western Mojave Desert in the late 19th century by the mining potential of the Antelope Valley. Copper was first discovered in the area in 1884. Throughout the 1890s, the Antelope Valley experienced a series of successive rushes though the high costs associated with milling and transporting ore and the scarcity of water limited the success of these endeavors. One of the largest booms in the Antelope Valley occurred in 1894 following the discovery of gold by Ezra M. Hamilton at Tropico Hill north of Rosamond. After Hamilton's initial discovery, other miners found gold in the western Mojave Desert at Standard Hill and Soledad Mountain.^{183,184,185} Mining towns such as Randsburg and Oro Grande were established in the Antelope Valley during this period, with Rosamond, Barstow, and Mojave serving as major suppliers for the mining operations.¹⁸⁶

Euro-American settlers were also drawn to the western Mojave Desert by the agricultural potential of the area. In the late 1880s and early 1890s, rainfall was unusually plentiful, and farms in the Antelope Valley produced large crops of wheat, barley, and other grains.¹⁸⁷ A number of irrigation districts were established at this time, which provided water for the cultivation of a variety of fruit and nut trees. A severe drought between 1894 and 1904 devastated a number of these newly established farms and forced many settlers to abandon their land. An agricultural resurgence occurred in the Antelope Valley following the end of the drought. This resurgence was spurred by the introduction of gasoline-powered pumps, which enabled farmers to dig shallow wells for irrigation agriculture rather than relying solely on artesian water sources. The use of these pumps not only allowed for the replanting of crops that had previously thrived but also enabled the large-scale cultivation of alfalfa, which by 1920 was the Antelope Valley's major crop.

Although there is evidence of cattle grazing in the Antelope Valley as early as the 1860s, ranching activities did not become prevalent until the late 1880s, when the influx of miners and speculators led to an increased demand for beef. The Rosamond area developed into an industrial center for

¹⁸² Earle, D. 1997. Ethnohistoric Overview of the Edwards Air Force Base Region and the Western Mojave Desert. Prepared for: AFFTC/EMXR, Edwards Air Force Base, CA. Prepared by: Earle and Associates, Palmdale, CA, p. 50.

¹⁸³ Settle, Glen. 1965. Bears, Borax, and Gold. Rosamond, CA: The Kern-Antelope Historical Society, Inc.

¹⁸⁴ Miller, Ronald D., and Peggy J. Miller. 1976. Mines of the Mojave. Glendale, CA: La Siesta Press.

¹⁸⁵ Vredenburgh, Larry M., Gary L. Shumway, and Russell D. Hartill. 1981. Desert Fever: An Overview of Mining in the California Desert. Canoga Park, CA: Living West Press.

¹⁸⁶ Earle, D., K. Lark, C.J. Parker, M. Ronning, and J. Underwood. 1998. Cultural Resources Overview and Management Plan for Edwards Air Force Base, California, Vol. 2, Overview of Historic Cultural Resources. Prepared by: Computer Sciences Corporation, Edwards Flight Test Center, Edwards Air Force Base, CA, p. 8.

¹⁸⁷ Stickel, E. Gary, and Lois J. Weinman-Roberts. 1980. An Overview of the Cultural Resources of the Western Mojave Desert. Environmental Research Archaeologists, Los Angeles. Prepared for: U.S. Department of the Interior, Bureau of Land Management, California Desert Planning Program, Riverside, CA.

cattle ranching.¹⁸⁸ By the 1920s, there was a dramatic decline in cattle ranching activities due to the growing population of the valley and disputes with sheep herders and alfalfa growers. Other livestock activities undertaken in the area include the seasonal grazing of sheep, which occurred as flocks were driven from the San Bernardino Valley to summer pastures in the nearby mountains.

As mining and ranching operations developed in the area in the late 1800s, a need arose for the transportation of goods and passengers between the desert towns and the main points of commerce. The first stagecoaches began operating in Kern County soon after Fort Tejon was established in 1854.¹⁸⁹ One of the most utilized stagecoach routes in the Antelope Valley went from El Monte and Los Angeles to Tehachapi via Willow Springs. According to Barras, lighter wagons utilized this route to get to Kern River country, while heavier teams may have traveled by way of Jawbone Canyon and Kelso Valley further to the east.¹⁹⁰ Another popular stagecoach route that crossed the Antelope Valley took travelers from Los Angeles to the San Joaquin Valley; this route followed the southern edge of the valley over the Tejon Pass.¹⁹¹

The construction of the Southern Pacific Railway across Antelope Valley began in the mid-1800s and was part of an inland route that ran between San Francisco and Los Angeles. Completed in 1876, the rail line changed the Antelope Valley from an isolated region to a magnet for settlers. The Southern Pacific Railroad established a number of towns in the area at this time, including Rosamond, Lancaster, and Mojave.¹⁹²

Another important development in the history of the area was the construction of the Los Angeles Aqueduct. In the early 1900s, city leaders recognized that the water needs of the growing population of Los Angeles had exceeded the capacity of local sources. In 1904, the Owens Valley was identified as a likely source for additional water. After obtaining necessary water and land rights and approving a bond measure to fund construction, the City of Los Angeles began work in 1908 on the 233-mile-long aqueduct. In addition to building the aqueduct itself, the development of new infrastructure was required to support the project. The entire construction of the aqueduct required thousands of laborers, housed in camps alongside the aqueduct route, which left an imprint on the local economies. Becoming the country's largest municipal water system at the time, the Los Angeles Aqueduct was completed in 1913. In order to divert the full amount of authorized water, the City of Los Angeles later constructed a second aqueduct, completed in 1970, which largely parallels the course of the First Los Angeles Aqueduct.

The military arrived in the western Mojave Desert in 1928 when the dry lakebed near Muroc became an area for general aviation practices. In 1942, the facility was named Army Air Base, Lake Muroc, which later became Muroc Air Force Base in 1948. In 1949, the base was renamed Edwards Air Force Base.¹⁹³

¹⁸⁸ Settle, Glen A. 1967. *Along the Rails from Lancaster to Mojave*. Rosamond, CA: The Kern-Antelope Historical Society, Inc.

¹⁸⁹ Burmeister, Eugene. 1977. *The Golden Empire: Kern County, California*. Beverly Hills, CA: Autograph Press, p. 70.

¹⁹⁰ Barras, Judy. 1976. *The Long Road to Tehachapi*. Tehachapi, CA: The Tehachapi Heritage League, pp. 21–25.

¹⁹¹ Barras, Judy. 1976. *The Long Road to Tehachapi*. Tehachapi, CA: The Tehachapi Heritage League, pp. 21–25.

¹⁹² Settle, Glen A. 1967. *Along the Rails from Lancaster to Mojave*. Rosamond, CA: The Kern-Antelope Historical Society, Inc.

¹⁹³ Greenwood, R.S., and M. McIntyre. 1980. *Cultural Resources Overview for Edwards Air Force Base*. Pacific Palisades, CA: Greenwood and Associates.

In the period following World War II, a fundamental shift occurred in the Antelope Valley's economy. Groundwater depletion, increased energy costs, and inflated land prices made irrigation farming increasingly difficult. As agriculture declined in importance in the 1950s, the expansion of Edwards Air Force Base and the establishment of Air Force Plant 42, a federally owned military aerospace facility, transformed the Antelope Valley into a hub of military aircraft design, testing, and production. Population boomed in the area throughout the following decades, with increased housing prices in the region resulting in the valley becoming a bedroom community to the Greater Los Angeles area. The 1980s and 1990s were marked by periods of rapid growth with the development of major housing tracts dramatically increasing the population of both Palmdale and Lancaster. Since 2000, the Antelope Valley has continued to expand as residential developments, small businesses, and light industry gradually replace the remaining agricultural fields and native desert scrubland.

Santa Clarita Valley

European Discovery and the Mission Period (1769–1821)

The first Europeans to pass through the Santa Clarita Valley were a group of Spanish explorers on their way to Monterey Bay from San Diego. Under the leadership of Gaspar de Portolá, the exploration party entered the Santa Clarita Valley on August 8, 1769, after previously crossing the Santa Monica Mountains and San Fernando Valley. The explorers named a river they encountered after St. Clare, thus giving the name of the Santa Clarita Valley and community. The group then headed north on their way to Santa Barbara.

In August 1795, an exploration party set out to identify a site for a new mission, to be located between the San Gabriel Mission and the San Buenaventura Mission. The requirements included that the land be viable for crops, be near a source of abundant water, and have an indigenous population that could be converted to Catholicism. With these objectives met, a site for the new mission was decided upon in the upper half of the Los Encinos Valle, as the San Fernando Valley was then called. The San Fernando Mission was established on September 8, 1797, and was the seventeenth mission founded by the Catholic Church in California. Father Fermin Francisco Lausen was appointed in charge of the mission. The name given to the mission honored King Ferdinand III of Spain (1217–1251). In order to assist in the establishment of the San Fernando Mission, several other California missions sent nearly 1,000 animals that included cattle, horses, mules, and sheep. Many native inhabitants of the Santa Clarita Valley, such as the Tataviam, were forcibly taken to the newly constructed mission. While living at the mission, they were under the direction of the priests who required the Native Americans to farm (wheat, barley, corn, beans, peas, and fruit trees); raise cattle; cure hides; tend vineyards; make wine; and practice a trade, such as carpentry, masonry, tailoring, or shoemaking. The mission's ranch lands eventually grew to include the Santa Clarita Valley.

The Mexican Period (1821–1846)

In 1821, when Mexico declared its independence from Spain, initially little changed for the missions. At that time there were approximately 1,000 Native Americans living and working at the San Fernando Mission. However, in 1834, the Mexican government secularized the California Missions, which resulted in the San Fernando Mission being turned over to Don Pedro Lopez, who acted as mission majordomo (governor of the mission). Between 1840 and 1846, six separate land grants were carved out of the former Rancho Misión San Fernando Rey de España. Eulogio de Célis was the first to acquire the entire 116,858-acre ranch for an estimated \$14,000. Further

encroachments on mission lands in the valley included Tujunga (1840), El Escorpión (1845), El Encino (1845), La Providencia (1845), and Cahuenga (1846). In 1846, California governor Pio Pico authorized the sale of remaining mission land to raise money to defend Mexican California from an inevitable American takeover.

Up to this period, gold was thought to be a myth in California. Native Americans told Spanish explorers they were familiar with gold, but for the entirety of Spanish California and the majority of Mexican California, none had been discovered. However, in 1842 the first gold in California in was discovered at Placerita Canyon, near Santa Clarita, by Francisco Lopez, Manuel Cota, and Domingo Bermudez.¹⁹⁴ The discovery set off a miniature gold rush in the Santa Clarita Valley, sending hundreds of local residents to the canyon in search of riches; however, the first shipment of gold from California only contained 18.3 ounces.¹⁹⁵

The American Period (1850–present)

After Californian statehood was established in 1850, mining developed into a major presence in the Santa Clarita Valley region. In 1861, mines began operating in Soledad Canyon, initially pursuing copper but eventually switching to produce the majority of gold recovered in Los Angeles County.¹⁹⁶ Soledad Canyon mines include the Red Rover, Don, and Emma mines. Iron, quartz, and titanium were additionally mined periodically from Soledad Canyon. Beginning during the first half of the twentieth century, mining in the Santa Clarita Valley began to shift toward aggregate production and continues to the present.¹⁹⁷ Petroleum was another natural resource to have an impact on the Santa Clarita Valley. Beginning in the 1860s, Los Angeles–based residents began prospecting for oil in the Santa Clarita Valley. On September 26, 1876, one of the first commercially successful oil wells on the west coast of the United States began producing at Pico Canyon in southwest Santa Clarita Valley.¹⁹⁸ The discovery led to an oil boom, creating the boom town of Mentryville, named after the owner of the successful well. The town included a school, blacksmith, machine shop, and bakery, but began to collapse at the turn of the century as new oil fields were quickly appearing.¹⁹⁹ Oil production in the Santa Clarita Valley continues into the early part of the 21st century.

The construction of the Los Angeles Aqueduct was also important to the development of the Santa Clarita Valley. The entire construction of the aqueduct required thousands of laborers, housed in camps alongside the aqueduct route, which left an imprint on the local economies. Becoming the country's largest municipal water system at the time, the Los Angeles Aqueduct was completed in 1913. Obtaining water continued to have an impact on the Santa Clarita Valley, but the St. Francis

¹⁹⁴ Guinn, J.M. *An Extended A History of California and an Extended History of Los Angeles and Environs*. Historic Record Company. Los Angeles. 1915.

¹⁹⁵ Guinn, J.M. *An Extended A History of California and an Extended History of Los Angeles and Environs*. Historic Record Company. Los Angeles. 1915.

¹⁹⁶ Blanchard, Hugh. "Mines of the Soledad." <http://www.lagoldmines.com/index.php?page=143075.txt>. Accessed October 8, 2014.

¹⁹⁷ Santa Clarita Historical Society. "Soledad Canyon Mining Operations." <http://www.scvhistory.com/scvhistory/jk0017.htm>. Accessed October 8, 2014.

¹⁹⁸ Worden, Leon. "The Story of Mentryville: California's Pioneer Oil Town." 1997. <http://www.scvhistory.com/mentryville/mstory.htm>. Accessed October 8, 2014.

¹⁹⁹ Worden, Leon. "The Story of Mentryville: California's Pioneer Oil Town." 1997. <http://www.scvhistory.com/mentryville/mstory.htm>. Accessed October 8, 2014.

Dam, completed in 1926, was to have a devastating impact on the region. The St. Francis Dam was constructed in San Francisquito Canyon in an ambitious plan to secure water for the growing Los Angeles metropolitan region. On the night of March 12/13, 1928, the dam failed catastrophically, unleashing an incredible volume of water on the Santa Clarita Valley.²⁰⁰ The resulting flood killed 432 people, not including an unknown amount of migrant workers, and caused extensive damage to the Santa Clarita Valley. The failure of the St. Francis Dam is the largest engineering catastrophe in United States during the 20th century.

5.3 CULTURAL RESOURCES CHARACTERIZATION

5.3.1 Historical Resources

An abbreviated literature review and records search was conducted at the SCCIC on April 29, 2014. The abbreviated records search included a review of spatial data and basic information for all known relevant previous investigation and previous reported cultural resources within the seven subareas of the proposed initiative (Figure 4.3.1-1, *Cultural Resources Records Search Area*). The HRI, California Point of Historical Interest (SPHI), California Historical Landmarks (SHL), CRHR, and NRHP were searched to determine whether known historical resources are located within the seven subareas of the proposed initiative. The literature and records search was abbreviated due to the large size of the combined subareas for the proposed initiative. The information reviewed includes sufficient data necessary to determine the level of cultural sensitivity for each subarea. Based on the information collected, there are no listed or eligible for listing NRHP properties within the subareas of the proposed initiative. However, six historical resources in three of the subareas, all archaeological, are listed or considered eligible for listing on the CRHR (Table 5.3.1-1, *California Register Eligible and Listed Resources within the Proposed Initiative Subareas*).

**TABLE 5.3.1-1
CALIFORNIA REGISTER ELIGIBLE AND LISTED RESOURCES
WITHIN THE PROPOSED INITIATIVE SUBAREAS**

| Initiative Subarea | CRHR Eligible/Listed |
|---|----------------------|
| Antelope Valley Northeast | 0 |
| Lancaster Northeast | 0 |
| Lake Hughes/Gorman/West of Lancaster | 3 |
| Castaic/Santa Clarita/Agua Dulce | 2 |
| Acton | 0 |
| Lake Los Angeles/Llano/Valyermo/Little Rock | 1 |
| East San Gabriel Mountains | 0 |

5.3.2 Archaeological Resources

An abbreviated literature review and archaeological records search was conducted at the SCCIC on April 29, 2014. The search included a review of spatial data and basic information of known relevant cultural resource survey and excavation reports, and previous reported cultural resources to ascertain the presence of known prehistoric and historic archaeological resources within the seven subareas. The literature and records search was abbreviated due to the large size of the

²⁰⁰ Rogers, JD. "The 1928 St. Francis Dam Failure and Its Impact on American Civil Engineering." http://web.mst.edu/~rogersda/st_francis_dam/St-Francis-Dam-for-ASCE-Press.pdf. Accessed October 8, 2014.

combined subareas for the proposed initiative. The information reviewed includes sufficient data necessary to determine the level of archaeological sensitivity for each subarea. Based on the information obtained, approximately 659 previous cultural resources investigations have been conducted within the seven subareas, and approximately 637 cultural resources have been identified (Appendix A, *Locations of Previously Recorded Resources within the Proposed Initiative Records Search Area*). Based on the record search results, no historic period built environment resources were identified as listed or eligible for listing on the CRHR. Table 5.3.2-1, *Documented Cultural Resources and Reports within the Proposed Initiative Subareas*, provides a breakdown of the reports and resources identified within each subarea.

**TABLE 5.3.2-1
DOCUMENTED CULTURAL RESOURCES AND REPORTS
WITHIN THE PROPOSED INITIATIVE SUBAREAS**

| Initiative Subarea | Investigations | Cultural Resources |
|---|----------------|--------------------|
| Antelope Valley Northeast | 2 | 1 |
| Lancaster Northeast | 79 | 44 |
| Lake Hughes/Gorman/West of Lancaster | 213 | 433 |
| Castaic/Santa Clarita/Agua Dulce | 159 | 86 |
| Acton | 108 | 23 |
| Lake Los Angeles/Llano/Valyermo/Little Rock | 97 | 49 |
| East San Gabriel Mountains | 1 | 1 |

5.3.3 Human Remains

Concurrent with record search data obtained by the SCCIC, the County of Los Angeles Local Management System, containing records for 63,000 categorized locations, was analyzed for the presence of any cemeteries or burials within the proposed initiative area. Concomitantly, coordination was initiated with the NAHC in association with the proposed initiative on April 21, 2014.²⁰¹ The NAHC was requested to conduct a records search from their Sacred Lands File for the presence of Native American traditional cultural properties, sacred sites, or human remains within each of the seven subareas. Written responses on three subareas were received by Sapphos Environmental, Inc. on May 7, 2014.²⁰² The responses indicated that although one subarea had resources nearby, the Sacred Lands File failed to indicate the presence of Native American cultural resources within the proposed initiative area.

The records searches and consultation revealed that there are known cemeteries or burial sites within the record search area (Table 5.3.3-1, *NAHC Results and Known Burial or Cemeteries within the Subareas Affected by the Proposed Initiative*).

²⁰¹ Thomas, Roberta, Sapphos Environmental, Inc., Pasadena, CA. 21 April 2014. Letter to Dave Singleton, Native American Heritage Commission, Sacramento, CA.

²⁰² Singleton, Dave, Native American Heritage Commission, Sacramento, CA. 7 May 2014. Letter response to Roberta Thomas, Sapphos Environmental, Inc., Pasadena, CA.

**TABLE 5.3.3-1
NAHC RESULTS AND KNOWN BURIAL OR CEMETERIES WITHIN
THE SUBAREAS AFFECTED BY THE PROPOSED INITIATIVE**

| Initiative Subarea | NAHC SLF Results | Known Burial or Cemetery |
|---|-------------------------------------|--------------------------|
| Antelope Valley Northeast | Negative | Negative |
| Lancaster Northeast | Negative | Negative |
| Lake Hughes/Gorman/West of Lancaster | Negative | Positive |
| Castaic/Santa Clarita/Agua Dulce | Negative | Positive |
| Acton | Negative | Positive |
| Lake Los Angeles/Llano/Valyermo/Little Rock | Negative (resources located nearby) | Positive |
| East San Gabriel Mountains | To be supplied by the NAHC | Negative |

5.4 IMPACT ANALYSIS

The State CEQA Guidelines recommend the consideration of four questions when addressing the potential for significant impacts to cultural resources. Would the proposed initiative have any of the following effects:

- (a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5 of the State CEQA Guidelines?

The proposed initiative would have the potential to result in impacts to historical resources related to a substantial adverse change in the significance of a historical resource previously known and unknown. The literature and records search identified six historic resources (Table 5.3.1-1) that have been previously documented within three of the seven subareas. However, the absence of previously documented historical resources in the remaining four subareas does not preclude the potential for such resources to be present. Some of these areas may not have not been previously surveyed and/or the existing cultural resources present may not been evaluated for significance pursuant to CEQA. Although the current zoning allows for development of single-family residences, in accordance with the County’s building permit process, the current zoning does not require a cultural resources assessment prior to permitting single-family residential development. As such, the potential for the proposed initiative to impact historical resources (known and unknown) exists and constitutes a potentially significant impact, requiring the consideration of mitigation measures and alternatives to avoid or reduce impacts to below the level of significance.

- (b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

The proposed initiative would have the potential to result in impacts to cultural resources related to a substantial adverse change in the significance of an archaeological resource. The records search and literature review identified 637 previously recorded archaeological resources within all seven subareas of the proposed initiative (Table 5.3.2-1). Six of these were identified in the record search as being listed or eligible for listing on the CRHR (Table 5.3.1-1). Additionally, because not all areas have been previously surveyed for archaeological resources, there is the potential for additional archaeological resources to be present. Although the current zoning allows for development of single-family residences, in accordance with the County’s building permit process, the current zoning does not require a cultural resources assessment prior to permitting single-family residential development. As such, the potential for the proposed initiative to impact archaeological

resources (known and unknown) does exist, and constitutes a potentially significant impact, including the consideration of mitigation measures and alternatives to avoid or reduce impacts to below the level of significance.

- (c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

The proposed initiative would have the potential to result in impacts to paleontological resources related directly or indirectly to the destruction of a unique paleontological resource or unique geologic feature. As previously outlined, all subareas of the proposed initiative have geological units that could contain significant paleontological resources. Although the current zoning allows for development of single-family residences, in accordance with the County's building permit process, the current zoning does not require a cultural resources assessment prior to permitting single-family residential development. As such, the potential for the proposed initiative to impact paleontological resources (known and unknown) does exist, and constitutes a potentially significant impact, requiring the consideration of mitigation measures and alternatives to avoid or reduce impacts to below the level of significance.

- (d) Disturb any human remains, including those interred outside of formal cemeteries?

The proposed initiative may have the potential to disturb human remains, including those interred outside of formal cemeteries. The record search conducted at the SCCIC revealed known areas with possible burials, and because not all areas have been surveyed for cultural resources, there remains a possibility for human remains to exist. Although the current zoning allows for development of single-family residences, in accordance with the County's building permit process, the current zoning does not require a cultural resources assessment prior to permitting single-family residential development. As such the potential for the proposed initiative to impact human remains (known and unknown) does exist, and constitutes a potentially significant impact, requiring the consideration of mitigation measures and alternatives to avoid or reduce impacts to below the level of significance.

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APPENDIX A

**PREVIOUSLY RECORDED RESOURCES WITHIN
THE PROPOSED INITIATIVE RECORDS SEARCH AREA**

The location data for cultural resources will not be circulated for public review. To protect the sites from unauthorized excavation, looting, and/or vandalism, the County of Los Angeles has been notified of the need to keep confidential the location of known resources beyond what is necessary. Records in the information centers are exempt from the California Public Records Act (Government Code Section 6250 et seq.). Government Code Section 6254.19 states that “nothing in this chapter requires disclosure of records that relate to archaeological sites information maintained by the Department of Parks and Recreation, the State Historical Resources Commission, or the State Lands Commission.” Government Code Section 6254 explicitly authorizes public agencies to withhold information from the public relating to “Native American graves, cemeteries, and sacred places maintained by the Native American Heritage Commission.” Due to the sensitive nature of cultural resources described herein, this report is confidential and meant for the exclusive use of the County of Los Angeles and other trustee and responsible agencies related to planning, construction, operation, maintenance, and management of the proposed initiative.

Appendix K

Water Supply, Hydrology, and Water Quality Analysis

Hauled Water Ordinance

Water Supply, Hydrology, and Water Quality Analysis

*Supporting Document for the Single
Family Residential Hauled Water
Initiative EIR*

Prepared By: HDR

Prepared For: Sapphos Environmental

December 2015

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Introduction

An Environmental Impact Report (EIR) is being prepared for Los Angeles County Hauled Water Task Force for a project ordinance titled the Single Family Residential Hauled Water Initiative. The Project is residential development that consists of approximately 42,872 parcels across 285,500 acres of existing agricultural and open space land to facilitate single-family residential uses. The Project is located in unincorporated Los Angeles County, north of Santa Clarita and south of Kern County. The Project will develop low-density single-family homes that will be spread throughout the Project Area. For evaluation purposes, development is estimated to take place over a 20-year period and the maximum population growth is expected to be approximately 7,000 people per development year for an estimated total project population of 149,370 at build-out.

Project Summary

This report is a supporting document for the Project's EIR and serves as an evaluation of the Project's effects on the existing environmental conditions within the Project area. An analysis of the Project's impact on the area's water supply, hydrology, and water quality is presented in this report. Key aspects of the Project are as follows:

- The Project Area does not have an available potable water supply and all developments within the Project Area will depend on hauled water from potable water retailers, who obtain some or all of their water from groundwater basins.
- Potable water retailers, in response to new potable water demand could pump groundwater from existing wells or, possibly, install new wells into groundwater basins to which they have pumping rights.
- The Project does not include the modification of existing groundwater well regulations or an evaluation of utilizing hauled water for existing developments.
- The average per capita water use of 191 gallons per day (gpd) was estimated based on reported per capita water use by water retail agencies within the vicinity of the Project (SWRCB, 2014).
- Only contractors licensed by California Department of Public Health (CDPH) will deliver hauled water to the Project and all water will be required to meet CDPH's standards for hauled drinking water.
- A projection of the rates for the hauled water is not included in this report as the rates will vary by a myriad of factors, such as the amount of available water at the time, hauling distance, and contract fees with retailers and water haulers.

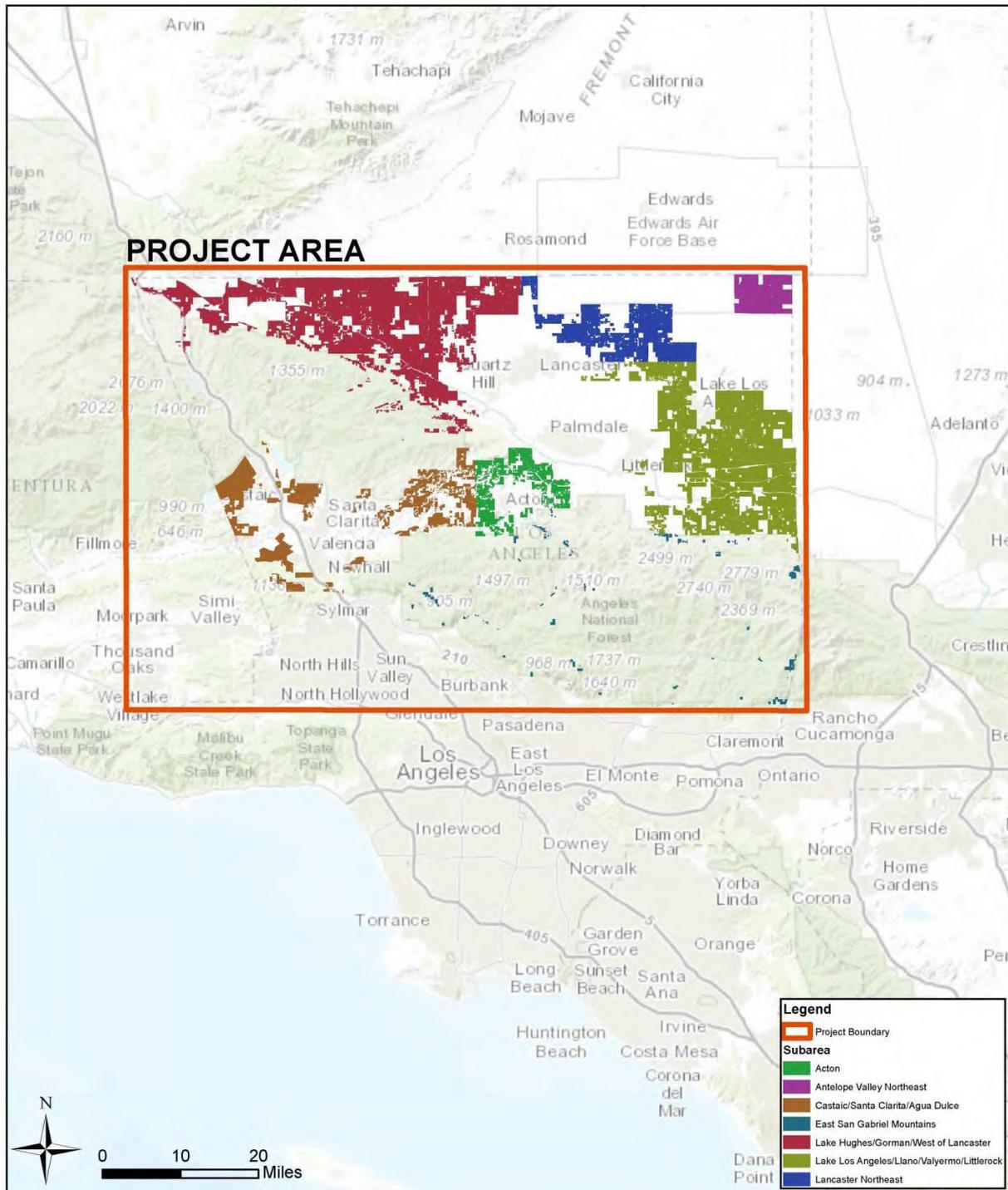
Water Supply Analysis

The developable parcels within the Project are not within retail water agency service areas and, therefore, unable to connect to existing potable water distribution systems. Additionally, the developable parcels within the Project do not have access to suitable groundwater wells. The Project will obtain its water supply from licensed water haulers, who will purchase their water from retail water suppliers with a surplus supply or the haulers will act as retail water suppliers themselves. It is assumed that hauled water for the Project will not be obtained from water retailers that are projected to have a shortage in its water supplies and do not have adequate supplies to meet the Project's demands and fire suppression requirements. The water supply for the Project will come from multiple sources and will depend on a retailers' availability of water.

Costs for water hauled longer distances will be higher. At some distance, the parcel owner's willingness to pay will not match the costs for hauling water from those distances. This study does not assess the maximum hauling distance based on a willingness to pay criteria. This study assesses the impacts of hauling water on the water supplies within proximity of the Project.

The Project encompasses a large area and different sections of the development can receive hauled water from different sources depending on proximity. A map showing the location of the project and the existing water purveyors in the region is shown on Figure 1.

Figure 1. Project Area



I. Existing Water Supply

The water retailers within Antelope Valley and Santa Clarita obtain their water from various supplies, such as allocations from the State Water Project (SWP), imported water, recycled water, and ground water. This section provides a summary of the source of supply for the water retailers.

A. State Water Project Supplies

In Antelope Valley, there are two SWP contractors: Antelope Valley-East Kern (AVEK) and Palmdale Water District (PWD). The SWP contractor for retailers within Santa Clarita Valley is the Castaic Lake Water Agency (CLWA). AVEK and CLWA are water wholesalers that supply retailers with water.

The California Department of Water Resources (DWR) has agreements with Contractors, such as AVEK and CLWA, to provide them with specific allocations of water from the SWP each year. A maximum allocation is set for each year and the actual percentage of the allocation a Contractor receives depends on the current supply of the SWP. In dry years, Contractors' allocation percentages decrease.

AVEK has a maximum allocation from the SWP of 141,400 acre-feet per year (AFY). In AVEK's 2010 Urban Water Management Plan (UWMP), they projected to receive about 62% of the allocated amount each year from 2015 – 2035 in an average year scenario. CLWA has a maximum SWP allocation of 95,200 AFY. In an average weather year, CLWA projects that it will receive 61% of its allocation and in a single-dry year, it projects its allocation will decrease by 10-13%.

Due to the current drought conditions in California (2014), SWP allocations have decreased for all SWP Contractors. AVEK and CLWA's actual SWP allocation decreased between 2013 and 2014 to percentages much lower than projected in the 2010 UWMP and is shown in the Table 1 below. Since the actual SWP allocations are lower than expected, the projections made in the 2010 UWMP are higher estimates of AVEK and CLWA's actual supply. Since the 2012-2014 SWP allocations were not included in the wholesalers' 2010 UWMPs, the available water supply evaluated in this study does not factor in the amounts presented in Table 1. Table 1 serves as a reference and shows that projections made in an agency's 2010 UWMP may not be exact reflections of an agency's actual water supply.

Table 1. Actual SWP Allocations

| Agency | 2012 | | 2013 | | 2014 | |
|--------|-----------------|---------------------|-----------------|---------------------|-----------------|---------------------|
| | Initial Request | Approved Allocation | Initial Request | Approved Allocation | Initial Request | Approved Allocation |
| AVEK | 141,400 | (65%) 91,910 | 141,400 | (35%) 49,490 | 144,844 | (5%) 7,242 |
| CLWA | 95,200 | (65%) 61,880 | 95,200 | (35%) 33,320 | 95,200 | (5%) 4,760 |

DWR 2014

B. Other Imported Water

AVEK does not import water from any agencies other than the SWP. It relies on other types of supplies to account for decreased SWP allocations.

In addition to importing water from the SWP, CLWA has agreements with Buena Vista and Rosedale Water Districts in Kern County to receive a set amount of 11,000 AFY regardless of the weather year. Also, CLWA has a water transfer set up with Nickel Water, another Kern County district, which will provide a set supply of about 1,600 AFY. This additional source is intended to supply water to a planned development in Newhall Ranch. Newhall Ranch is a proposed master-plan development along the Santa Clara River and will include approximately 20,000 homes. The first two phases of the Newhall Ranch Development, Landmark Village and Mission Village, have been approved and the homes will be constructed within the next several years. CLWA's additional supply for the Newhall Ranch Project may be a potential supply for the Project. In dry weather years, CLWA has an agreement with DWR that it can utilize water from Castaic Lake as an additional source.

C. Recycled Water

In the 2010 Integrated UWMP, Los Angeles County Waterworks District (LACWWD) No. 40 and Quartz Hill Water District (QHWD) describe a plan to add a non-potable recycled water distribution system that will be routed through Lancaster, Palmdale, and the unincorporated communities of LA County (IRUWMP AV, 2010). The first phase of construction for the system, known as the AV Backbone, began in 2009 and is expected to be online by 2015. The AV Backbone is intended to provide recycled water for non-potable uses, such as irrigation of parks, schools, and golf course. Lancaster Water Reclamation Plant (LWRP) will supply secondary treated water to the AV Backbone. LWRP was recently upgraded to a treatment capacity of 18 mgd and is planned to undergo another expansion to 21 mgd as described the 2006 Recycled Water Master Plan.

With the increased treatment capacity and the construction of the AV Backbone, the availability of recycled water in the area will increase. The IRUWMP AV states that the amount of water provided by the AV Backbone will depend on the amount of development in the area. Based on the area's current growth predictions, the recycled water supply will be 5,400 AFY in 2015 and will increase to 8,200 AFY in 2020. By 2035, it is expected that the recycled water will make up about 12% of the area's supply. In an average weather year, the IRUWMP AV projects that its water supplies will remain constant between 2015 and 2035 and its demand will increase by about 43% due to a population increase. The planned recycled water supply is expected to account for the area's projected population growth by offsetting potable consumption for non-potable uses, but the growth projections do not account for the development of the Project. The Project is not accounted for in the IRUWMP because it was not a known development when the evaluation for the IRUWMP was done. The recycled water development is expected to offset consumption of potable water supplies, which could make the potable supplies available for sale to water haulers. However the

projected population growth within the district may utilize those freed up potable water supplies.

D. Ground Water

The Project Area is situated above three groundwater basins: Antelope Valley Basin, Santa Clara River Basin, and Acton Valley Basin. Antelope Valley Basin and Acton Valley Basin underlie the AVEK service area and Santa Clara River Basin underlies the CLWA service area. The information below shows that the groundwater in Antelope Valley Basin is fully utilized and will not be able to support new groundwater wells. While there are no formal pumping limits set for Santa Clara River Basin and Acton Valley Basin, the available ground water within these basins is already accounted for by existing users. Water purveyors with existing groundwater wells can potentially increase their pumping amounts to supply water to water haulers for the Project.

Antelope Valley Basin

The majority of the Project's proposed parcels are above the Antelope Valley Basin. A water right adjudication process is being completed to identify which users have the legal authority to withdraw groundwater and how much they can pump each year. The safe yield of the basin is stated to be 110,000 AFY in the Antelope Valley IRUWMP and for the report for Phase III of the adjudication. While the adjudication is still in process, the IRUWMP has made projections on the allocations based on historical groundwater pumping use. LACWWD No. 40 is projected to have a constant groundwater pumping rate of 23,200 AFY and Quartz Hill Water District is projected to have a constant pumping rate of 2,500 AFY from 2015-2035. These projections are presented in Table 2 and are subject to change after the adjudication has been finalized.

Table 2. Approximate Groundwater Pumping Allocations - Antelope Valley Basin

| District/Agency | Estimated Pumping |
|---|--------------------------|
| District 40 - Estimated Adjudication 2015 | 23,200 |
| QHWD - Estimated Adjudication 2015 | 2,500 |
| PWD 2015 | 12,000 |
| Cal Water Antelope Valley District - 2015 | 1,000 |
| Rosamond CSD - 2015 | 4,600 |
| To Be Determined | 66,700 |

The projected pumping allocations presented in Table 2 do not account for the entire annual safe yield of the Antelope Valley Groundwater Basin. In addition to the agencies listed, there are other parties involved in the adjudication and their pumping allocations have not been determined at this time. The basin will be closed to new groundwater pumping once the adjudication is completed. In order to obtain ground water from Antelope Valley Basin, the water haulers will have to develop contracts with members that have pumping rights.

The amount of available water in the basin is also limited by the groundwater quality. A 2008 USGS publication on groundwater quality in the Antelope Valley found the following from its testing:

- Perchlorate is a compound with potential impacts to human health. In the 2008 USGS study, perchlorate was detected in 49 samples and none of the samples exceeded the CA-MCL of 6- $\mu\text{g/L}$ and 94% of those samples had levels lower than one-third of the CA-MCL.

Elevated concentrations of metals and trace elements occur in places that may limit groundwater use for drinking water because of public health concerns or issues with taste, color and odor. In the 2008 USGS study, there were 17 trace elements at or above human-health thresholds and four, arsenic, boron, chromium VI and vanadium, were found to be over the drinking water limits. Arsenic was found to be over its maximum contaminant level as set by the EPA and adopted by CDPH (MCL-US) in five samples and three samples contained levels of boron that exceeded its notification level (NL-CA). Four out of 19 wells sampled in the Antelope Valley Basin had concentrations of chromium VI that exceeded its MCL-CA of 10- $\mu\text{g/L}$.

Santa Clara River Basin

The Santa Clara River Basin is not adjudicated, but a Groundwater Management Plan (GWMP) for the Basin was adopted in 2003. The GWMP establishes planning and monitoring of the basin's supplies, but it does not set formal restrictions on groundwater pumping.

The Basin has an upper and lower aquifer from which ground water can be extracted. The upper aquifer, the Alluvium formation, has a maximum depth of 200 feet and the lower aquifer, the Saugus formation, has an approximate depth of 2,000 feet (CLWA 2010). The available ground water from this basin is limited due to the historical contamination issues.

The CLWA 2010 UWMP lists that a maximum of 40,000 AFY can be extracted from the Alluvium formation and a maximum of 15,000 AFY can be extracted from the Saugus formation. Table 3 below lists the projected groundwater pumping amounts from each agency within CLWA.

Table 3. Projected Groundwater Pumping Amounts - Santa Clara River Basin

| Groundwater Pumping from Alluvium Formation | |
|--|---------------------------------------|
| Agency | Projected Pumping Amounts 2015 |
| NCWD | 1,825 |
| SCWD | 10,500 |
| VWC | 11,675 |
| Agricultural & Other | 14,500 |
| Unknown/Unaccounted For | 1,500 |
| Groundwater Pumping from Saugus Formation | |
| LACWWD | 500 |
| NCWD | 4,400 |
| SCWD | 2,850 |
| VWC | 2,850 |
| Agricultural & Other | 900 |
| Unknown/Unaccounted For | 3,500 |

CLWA 2010 UWMP

As shown in Table 3, the Basin can adequately supply the projected demands of the local agencies before the Basin’s maximum yield is reached. Based on available information, Santa Clara River Basin has approximately 5,000 AFY of ground water that is not projected to be used by an existing agency. A portion of this ground water may be used by private well owners or it may be unused. Since the Basin is not adjudicated and is not expected to be in overdraft, the Project could potentially lead an agency with existing ground water wells to decide to increase its pumping amounts and supply the additional supply to the Project.

The Basin’s water supply capacity is limited due to previous contamination issues. Between 1997 and 2005, six wells had levels of perchlorate that were high enough to shut down pumping from those wells. These wells are all located near a former manufacturing site, Whittaker- Bermite Property, with perchlorate contamination that is being cleaned by California Department of Toxic Substances Control (DTSC). Table 4 lists the pumping capacity and status of contaminated wells in the Santa Clara River Basin.

Table 4. Status of Contaminated Wells in Santa Clara River Basin

| Well Name | Original Pumping Capacity (gpm) | Status |
|--------------|---------------------------------|--|
| Saugus 1 & 2 | 2,600 (each) | Both have returned to service with a reduced pumping capacity of 1,200 gpm (each) (CLWA, 2011) |
| NCWD-11 | 1,200 | Removed from service and has not been returned to service (CLWA, 2011) |
| VWC-Q2 | 1,200 | Returned to service. |
| SCWD-Stadium | 778 | Sealed and replaced by a new well with a projected pumping capacity of 800 gpm (CLWA, 2005) |
| VWC-157 | 1,500 | Replaced by a new well, VWC-206, with a capacity of 1,500 gpm (CLWA, 2011) |

The contamination of wells Saugus 1 & 2 and NCWD-11 resulted in a decrease in groundwater pumping capacity of 4,000 gpm. As the Whittaker-Bermite Property is cleaned, there is a possibility that wells near the property will also be contaminated and further reduce the Basin's pumping capacity.

Acton Valley Basin

Acton Valley Basin is a small groundwater basin with a total storage capacity of about 40,000 AFY, an annual natural recharge of 7,200 AFY, and a safe yield of 1,540 AFY (DWR Bulletin 118, 2003). LACWWD No. 37 has three wells that pump approximately 2,200 AFY from the basin (Acton-Agua Dulce Master Plan, 2004). Although the Basin is not adjudicated, most of its ground water is already utilized by existing groundwater pumpers.

The Basin's water quality was found to have high levels of total dissolved solids, sulfate, and chloride in 1989. DWR's Bulletin 118 states that only one of the fourteen sampled wells was found to have a nitrate concentration greater than the maximum contaminant level (MCL). Based on results from studies done on this basin, it does not have a major contamination issue that would reduce the amount of available water.

The research for this study shows that the majority of the area's available ground water is already being pumped by local users. This is based on the safe yield of the three basins and projected pumping rates in various weather years. The Project could result in ground water purchase agreements between water haulers and agencies that have existing wells and the available amount is dependent on each agency.

II. Project Water Demand

The estimated water demand from the Project was calculated based on the historical annual average number of building permits issued in the area. In this study, three cases with different amounts of developments per year were analyzed. Case 1 is based on the average number of

building permits for single-family homes issued between 2000 and 2014 by County of Los Angeles Building and Safety. Case 2 is based on the reasonable case scenario for the issuance of building permits based on data from LA County building permit data. Case 3 assumes a maximum of 2,000 building permits per year in order to reach Project build-out of 42,872 parcels in 20 years.

- Case 1 (Low): 184 building permits per year
- Case 2 (Medium): 384 building permits per year
- Case 3 (High): 2,000 building permits per year

The estimated average water use per capita used for this analysis was determined based on the surrounding water districts usage rates in 2014. The average residential gallons per capita day (R-GPCD) water use of surrounding districts is 191 R-GPCD. Table 5 lists the average residential water use per district over a year period.

Table 5. Average Water Use in Region

| Supplier | Water Use (R- |
|--|----------------------|
| Castaic Lake Water Agency Santa Clarita Water Division | 196 |
| Castaic Lake Water Agency Santa Clarita Water Division | 199 |
| Castaic Lake Water Agency Santa Clarita Water Division | 170 |
| Castaic Lake Water Agency Santa Clarita Water Division | 155 |
| Los Angeles County Public Works Waterworks District 40 | 236 |
| Los Angeles County Public Works Waterworks District 40 | 233 |
| Los Angeles County Public Works Waterworks District 40 | 250 |
| Los Angeles County Public Works Waterworks District 40 | 186 |
| Newhall County Water District | 160 |
| Newhall County Water District | 190 |
| Newhall County Water District | 166 |
| Newhall County Water District | 178 |
| Palmdale Water District | 208 |
| Palmdale Water District | 201 |
| Palmdale Water District | 163 |
| Palmdale Water District | 163 |
| Average | 191 |

State Water Resources Control Board, 2014

Based on the expected development of each year, Table 6 presents the projected cumulative water demand for each Project Case over the next 20 years. Water demand was calculated based on the estimated average water use per person per day and the area’s average household size in 2012 of 3.5 people.

Table 6. Projected Cumulative Water Demand from Development (AFY)

| | 2015 | 2020 | 2025 | 2030 | 2035 |
|-----------------|-------|-------|--------|--------|--------|
| Case 1 (Low) | 138 | 689 | 1,378 | 2,067 | 2,756 |
| Case 2 (Medium) | 288 | 1,438 | 2,876 | 4,313 | 5,751 |
| Case 3 (High)* | 1,498 | 7,489 | 14,977 | 22,466 | 32,105 |

**Case 3 is projected to reach build out by 2035 for a total of 42,872 developed parcels*

The values in Table 6 do not account for water required for fire suppression. Fire hydrants will not be accessible to the developments because they are located outside of water district service areas. Each development will need its own potable water storage tank on its parcel to store domestic and fire suppression water. Since LA County does not have a standard fire suppression water volume storage requirement, a volume of 5,000 gallons per household is used for this analysis. Storage tanks will have a total capacity of 10,000 gallons: 5,000 gallons for domestic water and 5,000 gallons for fire suppression. The fire suppression water would be in a separate chamber of the tank and only consumed through a fire suppression system. The fire suppression supply will likely need to be flushed and replenished once a year. The values presented in Table 7 include the water demand for domestic and fire suppression purposes.

Table 7. Projected Cumulative Water Demand from Development with Fire Suppression Water Storage (AFY)

| | 2015 | 2020 | 2025 | 2030 | 2035 |
|-----------------|-------|-------|--------|--------|--------|
| Case 1 (Low) | 141 | 703 | 1,406 | 2,109 | 2,812 |
| Case 2 (Medium) | 293 | 1,467 | 2,935 | 4,402 | 5,869 |
| Case 3 (High)* | 1,528 | 7,642 | 15,284 | 22,926 | 32,763 |

III. Supply and Demand Projections of Potential Water Purveyors for Project

The availability of water was determined based on a comparison of the water demand and supply projections described in the 2010 UWMPs of the water agencies nearby the project.

For the water supply analysis, the Project development is divided into two sections based on location and underlying groundwater basin. The development east of the San Gabriel Mountains is located within the Antelope Valley and above the Antelope Valley Groundwater Basin. The majority of the development west and in the San Gabriel Mountains is located within the Santa Clarita Valley and above the Santa Clara River Basin. For the purposes of

this analysis, the primary water suppliers for the development in the Antelope Valley are assumed to be the retail agencies that are supplied by AVEK and the primary water suppliers for the development in the Santa Clarita Valley are the water retailers who are supplied by the Castaic Lake Water Agency. A detailed description of the two wholesale suppliers is provided below. Although the evaluation of water supply is divided into two regions, the Project can obtain its supply from either of the wholesalers depending on availability.

The Castaic Lake Water Agency UWMP accounts for the entire water supply for the retail agencies in its region. The AVEK UWMP accounts for the SWP project supply for the retail agencies in its region. These two UWMPs account for most of the water supply in the Project Area. Additional water supply used in the AVEK region consists of ground water directly pumped by retail water agencies or others with minor pumping rights. This ground water is accounted for in this analysis in a separate table from the water supply referenced from the UWMPs. The UWMPs prepared by these two wholesale water agencies present estimated supplies and demands for their service areas based on historical water use and planned projects for three different scenarios: average weather year, single-dry year, and multiple-dry years. The demands and supplies projected by an agency in each of those scenarios will vary depending on the agency's conservation and drought measures.

A. Future Water Supply and Demand Projections – Antelope Valley

Table 8 below shows that AVEK can only meet the projected demand of its existing clients in an average-year based on information presented in its 2010 UWMP. The demand projections in Table 8 do not include the Project. This is shown in Section C. In a single-dry year and after the third year in a multiple-dry year scenario, AVEK is projected to be in a deficit and will not be able to meet the demand of its clients.

AVEK's expected water demand is based on projected population growth. Based on population data from Southern California Association of Government (SCAG), the population within AVEK's service area is projected to grow by approximately 40% between 2015 and 2030. This projected growth does not include the additional population from the Project. The Project was not included in the development plan for the AVEK's service area; therefore, AVEK could not include the Project's estimated water demand in its 2010 UWMP. Although the region's population will grow during 2015-2030, AVEK does not project an increase in its sources of water supply during that time.

Table 8. AVEK Supply and Demand Projections (AFY)

| Average Year | 2015 | 2020 | 2025 | 2030 | 2035 |
|---------------------------|-------------|-------------|-------------|-------------|-------------|
| Supply Total | 107,688 | 107,688 | 107,688 | 107,688 | 107,688 |
| Demand Total | 91,075 | 92,828 | 94,530 | 96,558 | 115,870 |
| Surplus/Deficit | 16,613 | 14,860 | 13,158 | 11,130 | -8,182 |
| Single Dry Year | | | | | |
| Supply Total | 37,000 | 37,000 | 37,000 | 37,000 | 37,000 |
| Demand Total | 91,075 | 92,828 | 94,530 | 96,558 | 115,870 |
| Surplus/Deficit | -54,075 | -55,828 | -57,530 | -59,558 | -78,870 |
| Multiple Dry Years | | | | | |
| Supply Total | 72,601 | 72,601 | 72,601 | 72,601 | 72,601 |
| Demand Total | 91,075 | 92,828 | 94,530 | 96,558 | 115,870 |
| Surplus/Deficit | -18,474 | -20,227 | -21,929 | -23,957 | -43,269 |

2010 AVEK UWMP. Values for 2035 were estimated based on previous years' projections. Negative values indicate a deficit.

AVEK projects to have a higher supply in the multiple-dry year scenario than it does in the single dry year scenario because it plans to use additional sources, such as ground water, to supplement its allocation in dry years. In the single dry year scenario, AVEK projects that its only supply will be its minimum allocation from the SWP. The shortages projected by AVEK do not account for its customers' additional water supply sources, such as increased ground water pumping or recycled water. The water retailers within AVEK's district are aware of the shortages and included additional water supply sources to make up for decreased allocations from AVEK's SWP source.

AVEK Customers

Los Angeles County Waterworks District (LACWWD) No. 40 and Quartz Hill Water District (QHWD) developed an integrated UWMP titled Antelope Valley 2010 UWMP. LACWWD supplies water to multiple areas within Antelope Valley, such as Lancaster, Palmdale, Pearblossom, Littlerock, Sun Village, Rock Creek, Northeast Los Angeles County, and Lake Los Angeles. The Antelope Valley UWMP projects a surplus in an average year and to exactly meet its demands in a single- and multiple-dry years scenario.

California Water Service Company – Antelope Valley District (CW-AV) is a smaller district in the northern Antelope Valley and obtains the majority of its water from six active groundwater wells. In CW-AV's 2010 UWMP, it projects to provide exactly enough supply to meet demand in an average, single-dry, and multiple-dry years.

B. Water Supply and Demand Projections – Santa Clarita Valley

In CLWA's 2010 UWMP, it projects the available supplies and expected demand between 2015 and 2035. The demand projections are based on historical use and expected population growth. It is assumed that the planned growth within CLWA's service area does not include the Project; therefore, all developments from the Project are additional demands on the

system. A surplus is projected for the average, single-dry, and multiple-dry years for this region, as shown in Table 9 below. Table 9 demand projections do not include the Project. These are shown in Section C.

Table 9. CLWA Supply and Demand Projections (AFY)

| Average Year | 2015 | 2020 | 2025 | 2030 | 2035 |
|---------------------------|-------------|-------------|-------------|-------------|-------------|
| Supply Total | 106,607 | 110,157 | 113,35 | 117,707 | 121,207 |
| Demand Total | 72,343 | 71,908 | 80,23 | 88,564 | 96,892 |
| Surplus/Deficit | 34,264 | 38,249 | 33,12 | 29,143 | 24,315 |
| Single Dry Year | | | | | |
| Supply Total | 116,417 | 126,887 | 124,38 | 128,437 | 141,937 |
| Demand Total | 80,350 | 80,757 | 89,92 | 99,096 | 108,265 |
| Surplus/Deficit | 36,067 | 46,130 | 34,46 | 29,341 | 33,672 |
| Multiple Dry Years | | | | | |
| Supply Total | 124,517 | 134,252 | 133,85 | 138,802 | 149,802 |
| Demand Total | 80,350 | 80,757 | 89,92 | 99,096 | 108,265 |
| Surplus/Deficit | 44,167 | 53,495 | 43,92 | 39,706 | 41,537 |

CLWA 2010 UWMP

CLWA projects to have adequate supply to meet its projected growth, not including the Project. The surplus projected in the single-dry year scenario is higher than the multiple-dry years scenario because CLWA plans to increase its pumping from the Santa Clara River Basin’s Saugus formation. CLWA has analyzed the estimated impact of the increased pumping and has found that it will not decrease the levels in the Basin to levels lower than what is allowed in the GWMP.

C. Water Supply and Demand Projections – Project Area

When the Project is evaluated as a single development project, the combined supply from CLWA and Antelope Valley will be utilized to provide for the development, as water haulers can purchase water from retailers in both areas. The total supplies and demands from CLWA and Antelope Valley account for a majority of the region, but may not include all supplies and demands.

The supply and demand of potential purveyors that could supply water to the Project was compared to the Project demand to determine if there is available supply for the Project. The results are shown on Table 10-Table 12. The addition of the Project to the existing demand will leave a surplus in the average year scenario for the low- and medium-development cases. In the dry- and multiple-dry years scenarios, the projected shortages will be increased by the development.

Table 10. Projected Supply and Demand for Total Development - Average Year (AFY)

| SUPPLIES | 2015 | 2020 | 2025 | 2030 | 2035 |
|--------------------------------------|----------------|----------------|----------------|----------------|----------------|
| CLWA | 106,607 | 110,157 | 113,357 | 117,707 | 121,207 |
| AVEK | 107,688 | 107,688 | 107,688 | 107,688 | 107,688 |
| Antelope Valley | 101,200 | 105,800 | 117,300 | 128,700 | 141,000 |
| AV-CW | 1,187 | 1,153 | 1,188 | 1,225 | 1,263 |
| Total Supply | 210,075 | 214,641 | 226,176 | 237,613 | 249,951 |
| Total | 316,682 | 324,798 | 339,533 | 355,320 | 371,158 |
| EXISTING DEMAND | | | | | |
| CLWA | 72,343 | 71,908 | 80,236 | 88,564 | 96,892 |
| AVEK | 91,075 | 92,828 | 94,530 | 96,558 | 115,870 |
| Antelope Valley | 98,400 | 103,900 | 116,300 | 128,700 | 141,000 |
| AV-CW | 1,187 | 1,153 | 1,188 | 1,225 | 1,263 |
| Total Demand | 190,662 | 197,881 | 212,018 | 226,483 | 258,133 |
| Total | 263,005 | 269,789 | 292,254 | 315,047 | 355,025 |
| Total Surplus or Deficit | 53,677 | 55,009 | 47,279 | 40,273 | 16,133 |
| REMAINING WATER AFTER PROJECT | | | | | |
| Case 1 (Low) | 53,536 | 54,306 | 45,873 | 38,164 | 13,321 |
| Case 2 (Medium) | 53,384 | 53,542 | 44,344 | 35,871 | 10,264 |
| Case 3 (High) | 52,149 | 47,367 | 31,995 | 17,347 | -16,630 |

Negative values indicate a deficit.

Table 11. Projected Supply and Demand for Total Development - Single-Dry Year (AFY)

| SUPPLIES | 2015 | 2020 | 2025 | 2030 | 2035 |
|--|----------------|---------------|----------------|----------------|----------------|
| CLWA | 116,417 | 126,887 | 124,387 | 128,437 | 141,937 |
| AVEK | 37,000 | 37,000 | 37,000 | 37,000 | 37,000 |
| ANTELOPE VALLEY | 98,400 | 103,900 | 116,000 | 128,700 | 140,800 |
| ANTELOPE VALLEY - CW | 1,183 | 1,149 | 1,184 | 1,221 | 1,258 |
| Total Supply | 136,583 | 142,049 | 154,184 | 166,921 | 179,058 |
| Total | 253,000 | 268,936 | 278,571 | 295,358 | 320,995 |
| EXISTING DEMAND | | | | | |
| CLWA | 80,350 | 80,757 | 89,926 | 99,096 | 108,265 |
| AVEK | 91,075 | 92,828 | 94,530 | 96,558 | 115,870 |
| ANTELOPE VALLEY | 98,400 | 103,900 | 116,000 | 128,700 | 140,800 |
| ANTELOPE VALLEY - CW | 1,183 | 1,149 | 1,184 | 1,221 | 1,258 |
| Total Demand | 190,658 | 197,877 | 211,714 | 226,479 | 257,928 |
| Total | 271,008 | 278,634 | 301,640 | 325,575 | 366,193 |
| Total Surplus or Deficit | -18,008 | -9,698 | -23,069 | -30,217 | -45,198 |
| REMAINING WATER AFTER DEVELOPMENT | | | | | |
| Case 1 (Low) | -18,149 | -10,401 | -24,475 | -32,326 | -48,010 |
| Case 2 (Medium) | -18,301 | -11,165 | -26,004 | -34,619 | -51,067 |
| Case 3 (High) | -19,536 | -17,340 | -38,353 | -53,143 | -77,961 |

*Negative values indicate a deficit.

Table 12. Projected Supply and Demand for Total Development - Multiple-Dry Years (AFY)

| SUPPLIES | 2015 | 2020 | 2025 | 2030 | 2035 |
|--|---------|---------|---------|---------------|----------------|
| CLWA | 124,517 | 134,252 | 133,852 | 138,802 | 149,802 |
| AVEK | 72,601 | 72,601 | 72,601 | 72,601 | 72,601 |
| Antelope Valley | 98,800 | 103,900 | 116,300 | 128,700 | 141,100 |
| AV-CW | 1,059 | 1,053 | 1,085 | 1,118 | 1,153 |
| Total Supply | 172,460 | 177,554 | 189,986 | 202,419 | 214,854 |
| Total | 296,977 | 311,806 | 323,838 | 341,221 | 364,656 |
| EXISTING DEMAND | | | | | |
| CLWA | 80,350 | 80,757 | 89,926 | 99,096 | 108,265 |
| AVEK | 91,075 | 92,828 | 94,530 | 96,558 | 115,870 |
| Antelope Valley | 98,400 | 103,900 | 116,300 | 128,700 | 141,100 |
| AV-CW | 1,059 | 1,053 | 1,085 | 1,118 | 1,153 |
| Total Demand | 190,534 | 197,781 | 211,915 | 226,376 | 258,123 |
| Total | 270,884 | 278,538 | 301,841 | 325,472 | 366,388 |
| Total Surplus or Deficit | 26,093 | 33,268 | 21,997 | 15,749 | -1,732 |
| REMAINING WATER AFTER DEVELOPMENT | | | | | |
| Case 1 (Low) | 25,952 | 32,565 | 20,591 | 13,640 | -4,544 |
| Case 2 (Medium) | 25,800 | 31,801 | 19,062 | 11,347 | -7,601 |
| Case 3 (High) | 24,565 | 25,626 | 6,713 | -7,177 | -34,495 |

*Negative values indicate a deficit.

The supply projections for the multiple-dry years scenario are higher than the supply projections in a single-dry year because some of the agencies plan to increase their groundwater pumping or obtain water from additional sources during a drought.

For the average year (Table 10), this analysis projects that Case 1 will have a surplus of 13,321 AF by 2035. At build-out in 2035 (Case 3), the area is projected to have a surplus of 16,133 AF based on projected demand of the service area, but the addition of the Project will result in a deficit of 16,630 AF.

In a single-dry year (Table 11), the Project is expected to result in a deficit in 2035 for all cases of development. Without the Project, the area is estimated to have a deficit of 45,198 AF by 2035. The inclusion of the Project will result in a deficit of 48,010 AF for Case 1 and a deficit of 77,961 AF at build-out (Case 3) by 2035.

For the multiple-dry years scenario (Table 12), a deficit of 1,732 AF is expected in 2035 before the Project. The area's deficit is expected to increase after the Project has been added. A deficit of 4,544 AF is projected for Case 1 and a deficit of 34,495 AF is projected at build-out (Case 3).

Note that historical building permit data in the area suggests that by 2035, significantly less than build-out is likely to occur. In the Case 1 scenario (184 homes per year), by 2035, for the average year there would still be a surplus of 13,321 AF. For the dry year, there will be a deficit of 48,010 AF, for the multiple-dry years, a deficit of 4,544 AF.

The Project can obtain its water supply from other surrounding suppliers or retailers, such as Kern County, if the parcel owners are willing to pay for the longer haul distances. Estimated water hauling costs are not included in this study. Impacts from longer haul distances from districts outside the Project area are not included in this study.

Additional Sources

KERN COUNTY

The 2010 UWMPs for West Kern Water District (WKWD), Kern County Water Agency Improvement District No. 4 (ID4), and North of the River Municipal Water District (NORMWD) estimate that these districts will meet or exceed their projected water demands. WKWD obtains its water supply from the SWP, groundwater extractions, and transfers between surrounding districts. The population within WKWD is projected to grow by 10 percent between 2015 and 2035 and is in-line with WKWD's projected water supply increases. ID4 and NORMWD rely on imported water from SWP and banked ground water to meet their supplies. The population within the two districts is expected to grow at a rate of about 1.5 percent. Based on the projections from the districts' 2010 UWMPs, the districts are projected to have sufficient water supply to meet the increased demand from their projected population growth and can potentially supply excess water to the Project.

Water haulers can purchase water from the districts in Kern County. WKWD & ID4 are approximately 70-80 miles from the City of Castaic where a portion of development is proposed.

D. Conclusion

After review of the 2010 UWMPs of surrounding agencies, there will be sufficient water supply

for the build-out of the project by 2035 for the average weather year scenario at the Case 1 and 2 development rates. In the single-dry and multiple-dry years scenarios, there will not be sufficient water supply for the existing customers and the Project. The impact of the area’s supplies at build-out is presented in Table 13. These values were determined from the local water purveyors’ 2010 UWMPs.

Table 13. Remaining Supply at Project Build-Out (AFY)

| | Average Year | Single Dry Year | Multiple Dry Year |
|------------------------|---------------------|------------------------|--------------------------|
| Case 1 (Low) | 13,321 | -48,010 | -4,544 |
| Case 2 (Medium) | 10,264 | -51,067 | -7,601 |
| Case 3 (High) | -16,630 | -77,961 | -34,495 |

In order to meet the demand of the Project in dry weather years, water haulers can develop water purchase agreements with districts in Kern County, if they have adequate supply. The source of water supply for the Project can be different for the developments within Antelope Valley and Santa Clarita Valley.

The projections listed in Table 13 are based on average water use data from water retailers near the Project area. The estimated deficits can be reduced by including residential conservation methods in the Project. A Best Management Practice (BMP) that can be included with the Project ordinance is to require residences to have water-efficient landscapes, which are landscapes that use drought-tolerant plants. In an EPA publication, it is estimated that 30 percent of the water use by households in the United States is for outdoor use. Enforcing water-efficient landscapes can decrease each household’s water use by up to 30 percent or possibly more and, using the 30 percent estimate, could decrease the average household demand from 669 GPD to 468 GPD. As shown in Table 14, this would still result in a deficit in the single- and multiple-dry years scenarios, but the deficit would be lower. In an average year, the surplus will be about 9 percent greater for Case 1.

Table 14. Remaining Supply at Project Build-Out with Conservation

| | Average Year | Single Dry Year | Multiple Dry Year |
|------------------------|---------------------|------------------------|--------------------------|
| Case 1 (Low) | 14,204 | -47,127 | -3,661 |
| Case 2 (Medium) | 12,107 | -49,224 | -5,758 |
| Case 3 (High) | -4,835 | -66,166 | -22,700 |

The Project Ordinance could require that all households within the Project implement water conservation best practices in order to prevent a deficit in the area’s projected supply. Without conservation best practices, the Project is expected to have a significant impact on the area’s existing and planned water supply. From this evaluation, it is expected that the development of all 42,872 parcels in 20 years will result in a large deficit in water supply that could impact the area’s water purveyors and their existing customers.

Hydrology Analysis

A hydrology analysis was completed to determine the Project's impact on the area's existing hydrology. The existing area is undeveloped and produces minimal runoff. With the Project, the area's runoff is expected to increase. The Project's impact on hydrology was analyzed by looking at a typical parcel and then for each subarea. Since the Project is the development of single-family homes over a phased period, there are no existing stormwater regulations that require the Project to limit its runoff. The Project may have to include stormwater management techniques as a way to decrease its impact on the area's existing flood zones and waterways.

I. Existing Hydrology

The majority of the Project is located in a dry area and experiences minimal rainfall throughout the year. The Project extends from the San Gabriel Mountains to the eastern end of Antelope Valley. The Project has been divided into two primary zones, Antelope Valley and Santa Clarita Valley, and one small zone, East San Gabriel Mountains. The different zones account for the differing soil and rainfall properties. The developments in the East San Gabriel Mountains are spread throughout the Mountains and will have rainfall and soil characteristics that are much different than the developments in Antelope and Santa Clarita Valley. Stormwater runoff in Antelope Valley flows from the San Gabriel Mountains and percolates into the groundwater basin or flows into one of the three low-lying playas near Edwards Air Force Base. In Santa Clarita Valley, runoff flows into Castaic Lake or into Santa Clara River, which outlets at the Pacific Ocean. Runoff from the developments in East San Gabriel Mountains will flow to several different streams within the Mountains based on their locations. Several parcels are located along San Antonio Creek which flows into Santa Ana River.

The Project Area is comprised of a distributed development pattern of generally non-adjacent parcels. Increases in impervious surface will be distributed throughout the Project Area and not be concentrated in one location. Therefore, increases in peak flow due to increased imperviousness will be distributed across several receiving streams.

II. Hydrology by Parcel

The parcel data provided to HDR by Sapphos Environmental was used to determine the characteristics of a general parcel. Additional data on impervious percentage, rainfall depth, and soil type were obtained from the Los Angeles County Hydrology Manual. Assumptions reflected in the hydrology calculations presented in Table 15 and Table 16 are provided below:

- Average size of a parcel within the Project is 6.6 acres
- Average length of a parcel is 1,000 feet (ft)
- Slope of 0.02 ft/ft was used as the average flow slope of a parcel
- Soil Type of 120 for Antelope Valley was used, per Appendix C of LA County

Hydrology Manual

- Soil Type of 97 for Santa Clarita Valley was used, per Appendix C of LA County Hydrology Manual
- Soil Type of 50 for East San Gabriel Mountains was used, per Appendix C of LA County Hydrology Manual
- Impervious Percentage, per Appendix D of LA County Hydrology Manual
 - Pre-Development: Vacant Undifferentiated 10%
 - Post-Development: Low Density Residential 21%
 - Post-Development: Low Density Residential with Paved Roads 50%
- An impervious percentage of 50% was used to account for the development of single- family homes and access roads.

Table 15. Hydrology Calculations Input

| Area | Impervious Percentage | Area (ac) | Slope (ft/ft) | Soil Type | Impervious Percentage (%) |
|---|------------------------|-----------|---------------|-----------|---------------------------|
| Antelope Valley | Pre-Development | 6.25 | 0.02 | 120 | 10 |
| | Post-Development (21%) | 6.25 | 0.02 | 120 | 21 |
| | Post-Development (50%) | 6.25 | 0.02 | 120 | 50 |
| West of Mountains - Castaic/Santa Clarita | Pre-Development | 6.85 | 0.02 | 97 | 10 |
| | Post-Development (21%) | 6.85 | 0.02 | 97 | 21 |
| | Post-Development (50%) | 6.85 | 0.02 | 97 | 50 |
| East San Gabriel Mountains | Pre-Development | 6.22 | 0.02 | 50 | 10 |
| | Post-Development (21%) | 6.22 | 0.02 | 50 | 21 |
| | Post-Development (50%) | 6.22 | 0.02 | 20 | 50 |

Table 16. Rainfall Depth

| Area | Storm | Rainfall Depth (in) |
|-------------------------------|-------------------|----------------------------|
| Antelope Valley Planning Area | 2 year/ 24 hour | 1.44 |
| | 5 year/ 24 hour | 1.99 |
| | 10 year/ 24 hour | 2.36 |
| | 25 year/ 24 hour | 2.86 |
| | 100 year/ 24 hour | 3.67 |
| Santa Clarita Planning Area | 2 year/ 24 hour | 1.91 |
| | 5 year/ 24 hour | 2.89 |
| | 10 year/ 24 hour | 3.53 |
| | 25 year/ 24 hour | 4.35 |
| | 100 year/ 24 hour | 5.56 |
| East San Gabriel Mountains | 2 year/ 24 hour | 3.97 |
| | 5 year/ 24 hour | 5.60 |
| | 10 year/ 24 hour | 6.49 |
| | 25 year/ 24 hour | 8.68 |
| | 100 year/ 24 hour | 10.95 |

The Modified Rational Method specified in the LA County Hydrology Manual was used to calculate the peak flow rate and runoff volume for a generic parcel pre- and post-development. The results of the hydrologic analysis are presented in Tables 17 through 19.

Table 17. Hydrology Calculations Results by Parcel - Antelope Valley

| Scenario | Storm | Time of Concentration | Peak Flow Rate | 24-Hour Runoff Volume |
|------------------------|----------|-----------------------|-------------------|-----------------------|
| | | Minutes | Cubic feet/second | Acre-feet |
| Pre-Development | 2 year | 30 | 0.42 | 0.13 |
| Post-Development (21%) | | 30 | 0.62 | 0.2 |
| Post-Development (50%) | | 30 | 1.16 | 0.37 |
| Pre-Development | 5 year | 30 | 0.57 | 0.18 |
| Post-Development (21%) | | 30 | 0.86 | 0.28 |
| Post-Development (50%) | | 30 | 1.59 | 0.51 |
| Pre-Development | 10 year | 30 | 0.69 | 0.22 |
| Post-Development (21%) | | 30 | 1.03 | 0.33 |
| Post-Development (50%) | | 27 | 2.00 | 0.61 |
| Pre-Development | 25 year | 30 | 1.06 | 0.27 |
| Post-Development (21%) | | 30 | 1.48 | 0.4 |
| Post-Development (50%) | | 21 | 3.1 | 0.74 |
| Pre-Development | 100 year | 22 | 2.79 | 0.38 |
| Post-Development (21%) | | 20 | 3.35 | 0.54 |
| Post-Development (50%) | | 16 | 5.16 | 0.97 |

Table 18. Hydrology Calculation Results by Parcel - Santa Clarita Valley

| Scenario | Storm | Time of Concentration | Peak Flow Rate | 24-Hour Runoff Volume |
|------------------------|----------|-----------------------|-------------------|-----------------------|
| | | Minutes | Cubic feet/second | Acre-feet |
| Pre-Development | 2 year | 30 | 1.21 | 0.21 |
| Post-Development (21%) | | 30 | 1.44 | 0.31 |
| Post-Development (50%) | | 27 | 2.17 | 0.55 |
| Pre-Development | 5 year | 23 | 2.93 | 0.36 |
| Post-Development (21%) | | 21 | 3.44 | 0.49 |
| Post-Development (50%) | | 19 | 4.41 | 0.85 |
| Pre-Development | 10 year | 18 | 4.65 | 0.46 |
| Post-Development (21%) | | 17 | 5.01 | 0.63 |
| Post-Development (50%) | | 15 | 6.39 | 1.05 |
| Pre-Development | 25 year | 15 | 8.17 | 0.60 |
| Post-Development (21%) | | 14 | 7.45 | 0.81 |
| Post-Development (50%) | | 13 | 8.76 | 1.33 |
| Pre-Development | 100 year | 12 | 10.55 | 0.85 |
| Post-Development (21%) | | 12 | 11.00 | 1.10 |
| Post-Development (50%) | | 11 | 12.55 | 1.73 |

Table 19. Hydrological Calculations by Parcel - San Gabriel Mountains

| Scenario | Storm | Time of Concentration | Peak Flow Rate | 24-Hour Runoff Volume |
|------------------------|----------|-----------------------|-------------------|-----------------------|
| | | Minutes | Cubic feet/second | Acre-feet |
| Pre-Development | 2 year | 14 | 6.99 | 0.59 |
| Post-Development (21%) | | 13 | 7.51 | 0.75 |
| Post-Development (50%) | | 13 | 7.89 | 1.15 |
| Pre-Development | 5 year | 10 | 12.89 | 0.98 |
| Post-Development (21%) | | 10 | 13.04 | 1.18 |
| Post-Development (50%) | | 10 | 13.19 | 1.70 |
| Pre-Development | 10 year | 9 | 16.28 | 1.25 |
| Post-Development (21%) | | 9 | 16.28 | 1.46 |
| Post-Development (50%) | | 9 | 16.46 | 2.04 |
| Pre-Development | 25 year | 7 | 24.74 | 2.00 |
| Post-Development (21%) | | 7 | 24.74 | 2.25 |
| Post-Development (50%) | | 7 | 24.74 | 2.91 |
| Pre-Development | 100 year | 6 | 33.59 | 2.85 |
| Post-Development (21%) | | 6 | 33.59 | 3.12 |
| Post-Development (50%) | | 6 | 33.59 | 3.84 |

Based on the analysis, there will be increased peak flows from each parcel due to the Project. The development of single-family homes on vacant land is estimated to increase a parcel's impervious percentage from 10 percent to 20 percent. This is expected to increase the runoff volume from each parcel by 1.3-1.5 times the original runoff volume. If access roads are included in the development, then the impervious percentage of the area is estimated to increase to 50 percent, which could result in a large increase in runoff. This can result in increased soil erosion in undeveloped areas and increased sedimentation of local receiving waters. This impact will be significant even with the implantation of BMPs. BMPs that could be applied to the developments could include the preparation of a site-specific drainage plan and the incorporation of retention and infiltration-type structures, such as porous pavement.

III. Hydrology by Subarea

The Project Area was separated into seven subareas to find the post-development impact on the 24-Hour Runoff Volume. For each subarea the 24-Hour Runoff Volume was calculated for an average parcel and multiplied by the number of parcels within the subarea to provide a conservative estimate. The calculation was done for a 25-year and 100-year storm for an impervious percentage of 10 percent for pre-development and 21 percent for post-development. The input data used to calculate the runoff volume can be found in Table 20 and Table 21. Additional data on impervious percentage, rainfall depth, and soil type were found from Los Angeles County Hydrology Manual.

Table 20. Hydrology Calculation Input Information for Proposed Project Area

| Subarea | Total Project Area (acres) | Total Number of Project Parcels | Average Area Per Parcel (Acre) |
|--|----------------------------|---------------------------------|--------------------------------|
| Acton | 18,067 | 1,245 | 15 |
| Antelope Valley Northeast | 14,528 | 1,938 | 8 |
| Castaic/Santa Clarita/Agua Dulce | 37,594 | 2,249 | 17 |
| East San Gabriel Mountains | 4,092 | 658 | 6 |
| Lake Hughes/Gorman/ West of Lancaster | 125,041 | 15,166 | 8 |
| Lake Los Angeles/ Llano/ Valyermo/Littlerock | 108,067 | 14,822 | 7 |
| Lancaster NE | 35,325 | 6,794 | 5 |
| Total | 342,715 | 42,872 | |

Table 21. Hydrology Calculation Input Information 2

| Subarea | Average Area per Parcel (acres) | Average Length (feet) | Slope (feet/feet) | Soil Type | Rainfall Area |
|---|--|------------------------------|--------------------------|------------------|----------------------|
| Acton | 15 | 2,997 | 0.02 | 120 | Antelope Valley |
| Antelope Valley Northeast | 7 | 2,002 | 0.02 | 120 | Antelope Valley |
| Castaic/Santa Clarita/Agua Dulce | 17 | 2,683 | 0.02 | 97 | Santa Clarita Valley |
| East San Gabriel Mountains | 6 | 1,401 | 0.02 | 50 | Antelope Valley |
| Lake Hughes/ Gorman/ West of Lancaster | 8 | 1,997 | 0.02 | 120 | Antelope Valley |
| Lake Los Angeles/ Llano/ Valyermo/ Littlerock | 7 | 2,029 | 0.02 | 120 | Antelope Valley |
| Lancaster Northeast | 5 | 1,814 | 0.02 | 120 | Antelope Valley |

LA County’s Modified Rational Method was used to calculate the runoff volume for a generic parcel per subarea for pre- and post-development then multiplied by the number of parcels within that subarea to get the total runoff volume of a subarea. The results of the hydrologic analysis are presented in Table 22.

Table 22. Pre- vs Post-Development Runoff Volumes by Subarea

| Subarea | Storm | Impervious Percentage | 24-Hour Total Runoff Volume | Total Increased 24-Hour Runoff Volume |
|---|----------|-----------------------|-----------------------------|---------------------------------------|
| | | | (acre-feet) | (acre-feet) |
| Acton | 25-Year | 10% | 809 | 349 |
| | | 20% | 1,158 | |
| | 100-Year | 10% | 1,096 | 436 |
| | | 20% | 1,531 | |
| Antelope Valley Northeast | 25-Year | 10% | 581.40 | 252 |
| | | 20% | 833.34 | |
| | 100-Year | 10% | 794.58 | 329 |
| | | 20% | 1,124.04 | |
| Castaic/Santa Clarita/Agua Dulce | 25-Year | 10% | 3,351 | 990 |
| | | 20% | 4,341 | |
| | 100-Year | 10% | 4,700 | 1,237 |
| | | 20% | 5,937 | |
| East San Gabriel Mountains | 25-Year | 10% | 1,316 | 145 |
| | | 20% | 1,461 | |
| | 100-Year | 10% | 1,842 | 184 |
| | | 20% | 2,027 | |
| Lake Hughes/Gorman/ West of Lancaster | 25-Year | 10% | 5,156 | 2,275 |
| | | 20% | 7,431 | |
| | 100-Year | 10% | 7,128 | 2,882 |
| | | 20% | 10,010 | |
| Lake Los Angeles/ Llano/ Valyermo/ Littlerock | 25-Year | 10% | 4,447 | 1,927 |
| | | 20% | 6,373 | |
| | 100-Year | 10% | 6,077 | 2,520 |
| | | 20% | 8,597 | |
| Lancaster NE | 25-Year | 10% | 1,495 | 611 |
| | | 20% | 2,106 | |
| | 100-Year | 10% | 1,970 | 815 |
| | | 20% | 2,786 | |

Based on the results presented in Table 22, each subarea is projected to have an increase in runoff volume in a 25- and 100-year design storm. The Project area is undeveloped and has no existing stormwater drainage facilities. The development of the Project will create additional flow that may require the construction of new stormwater drainage facilities..

IV. Effects of Project Stormwater on Existing Stormwater Drainage System

The Project Area will be in unincorporated communities of LA County and there are minimal or no existing stormwater drainage facilities in those areas. The developments in the East San Gabriel Mountains, Lake Hughes/Gorman/West of Lancaster, and Lancaster North East Subareas do not have existing LA County stormwater drainage facilities. These areas were not developed and only produced minimal runoff prior to the Project.

New stormwater drainage facilities that connect to existing drainage facilities may have to be constructed to convey the additional runoff from the Project. There may be a need for stormwater drainage infrastructure for developments in highly sloped areas or areas susceptible to erosion. Developments in the Antelope Valley Northeast Subarea would produce runoff that could flow to the Rosamond, Rogers, and Buckhorn Dry Lakes. Rosamond and Rogers Dry Lake are prone to flooding since they are the lowest points in Antelope Valley. There is no existing development within the dry lakes. Therefore, there would be no immediate damage of residential or critical buildings if flooding were to occur in this area. Although the extent of the flood plain is expected to increase as a result of the development, this increase is not expected to cause major damage to structures since the area is mostly undeveloped.

V. Existing Flood Zones

Several developments in the Project are located in the boundaries of 100-year flood zones. The subareas of Lake Hughes/Gorman/West of Lancaster, Lancaster North East, and Lake Los Angeles include over 1,000 parcels within Federal Emergency Management Agency (FEMA) Flood Zone A, which are areas that will be inundated by the one percent-annual-chance flood event (100-year storm). The flood zone within the Lake Hughes Subarea has an approximate volume of 967,680-AF and the estimated additional runoff generated from a 100-year design storm from the Lake Hughes Subarea of 2,880-AF, which is about 0.2 percent of the flood zone volume, is not expected to have a significant impact on the existing flood zone.

Parcels within the Lancaster North East and Lake Los Angeles Subareas are located within two large flood zones that are east of Palmdale and follow Rock Creek Wash from the San Gabriel Mountains to Edwards Air Force Base. The flood zones are about 20-25 miles long and vary from 0.5- 2.5 miles in width. An estimate of the flood zones volumes was done by determining their areas and average depth in GIS based on National Park Service's USA

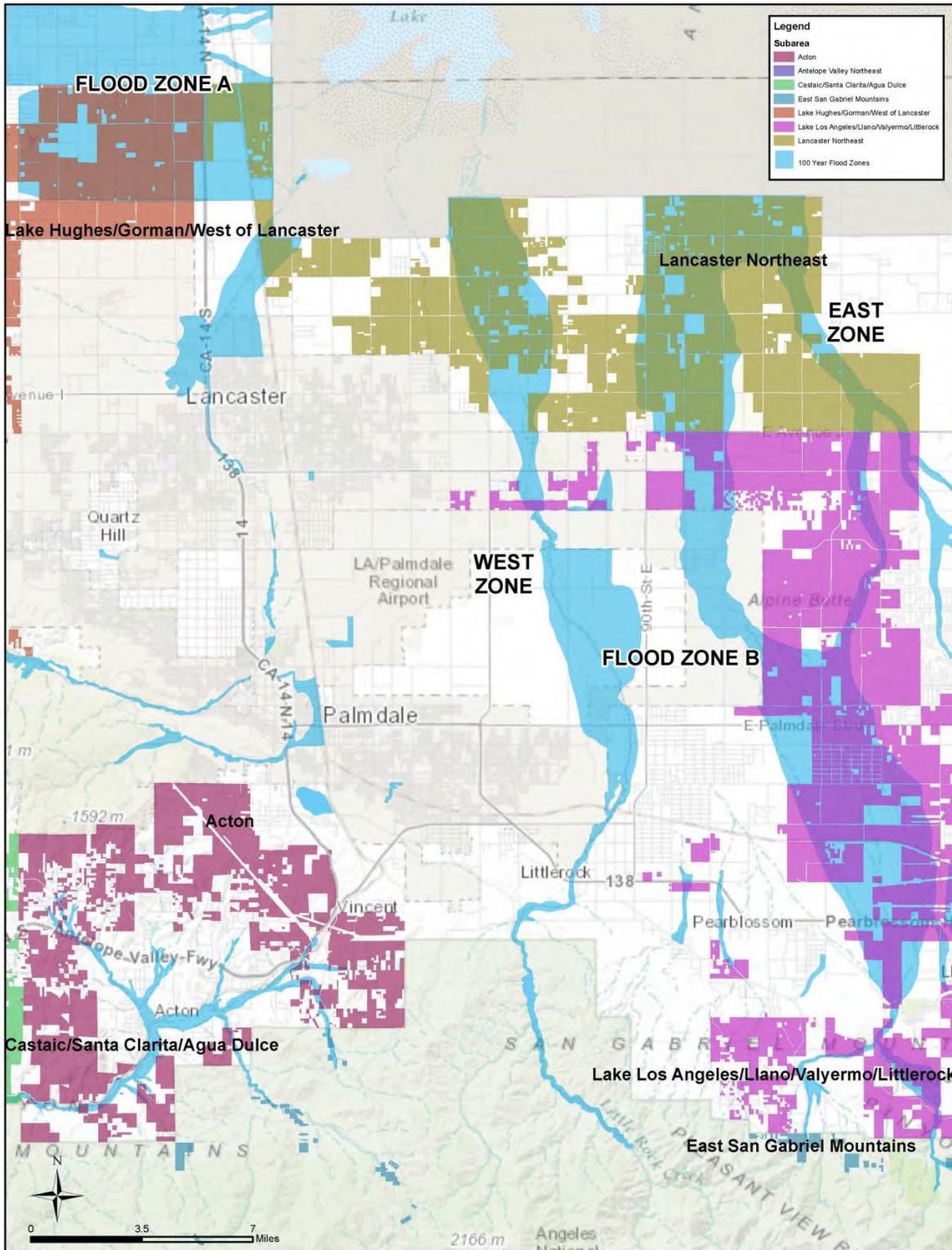
topography data set.

- The west flood zone is estimated to have a surface area of 20,400 acres and an average depth of 10 feet for a total volume of 204,000-AF.
- The east flood zone is estimated to have an approximate surface area of 47,600 acres and an approximate average depth of five feet for a total volume of 238,000-AF.

The expected increase in runoff produced by a 100-year design storm from the Lancaster North East and Lake Los Angeles Subareas is about 3,355-AF, which could result in an approximate 0.7 percent increase in the total volume of the east and west flood zones. This could increase the boundaries of the two existing flood zones, particularly where there is high concentration of development directly south of Edwards Air Force Base. The flood zones are large and the region would have to be modeled to determine the extent to which the boundaries increase. The FEMA flood zones in Antelope Valley are shown in Figure 2.

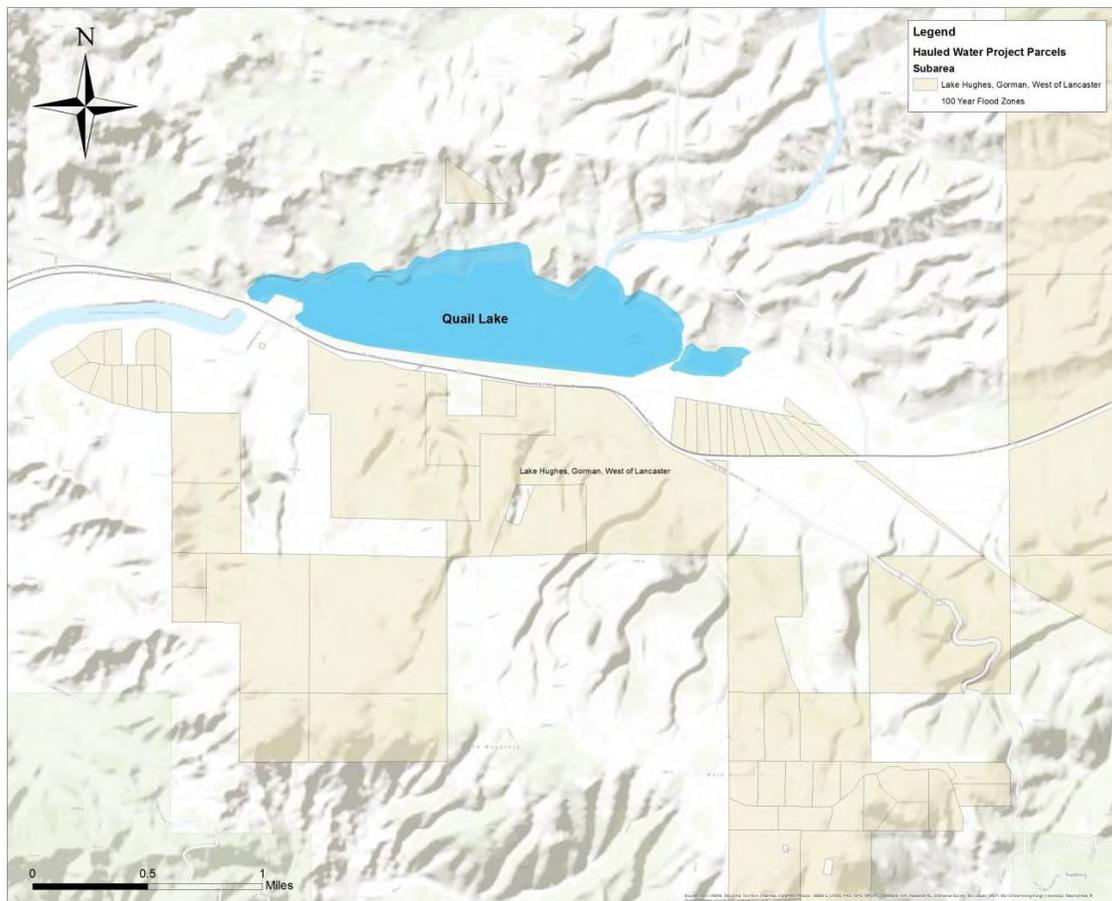
There are a few small flood zones within East San Gabriel Mountains and development in this area is not expected to significantly increase existing flood zone boundaries. Parcels in East San Gabriel Mountains are distributed throughout the area and only a few parcels are adjacent to each other. Runoff from the small clusters of parcels is expected to contribute low volumes of runoff to existing flood zones.

Figure 2. Antelope Valley FEMA Flood Zones



There are no large flood zones within the Santa Clarita Valley, but small flood zones are spread throughout the region. A flood zone exists around the flood plain of Santa Clara River and some developments of the Project are located within that flood plain. Several parcels within the Project are located north of branches of the Santa Clara River, such as those in the San Gabriel Mountains near Acton and Agua Dulce. These branches will receive additional runoff from the development as a result of the development. A portion of the northwest section of the Lake Hughes Subarea is situated above Quail Lake, which is a designated flood zone. Quail Lake has an approximate capacity of 7,580 AF and the Project's development in this area would produce approximately 40-AF of runoff after a 100-year design storm. The projected runoff from the development is about 1 percent of the lake's total capacity; therefore, the Project could potentially result in an increase of the lake's flood zone boundary. A road exists on the south side of the lake at an elevation about 10 feet higher than the lake and the increased Project runoff is not expected to have an impact on this road. Quail Lake is a storage reservoir for the west branch of the California Aqueduct and measures should be taken to protect the lake. The Quail Lake flood zone is shown in Figure 3.

Figure 3. Quail Lake FEMA Flood Zone



Evaluation of the Project's hydrological impact on the area shows that the Project will impact the area's natural drainage and has a potential to expand existing flood zones by small amounts. The level of impact will vary by subarea. The dry lakes in Edwards Air Force Base have the highest potential to be impacted by the Project since the majority of the runoff within Antelope Valley flows toward them.

VI. Flood Risk Reduction

Los Angeles County requires that developers proposing to connect to a Los Angeles County Flood Control District system obtain a connection permit, which requires calculation of peak flows from the development and adherence to peak flow allowances as determined by Los Angeles County Flood Control engineers. Most of the Project is not likely to connect directly to a Los Angeles County Flood Control District system. Most of the Project does not have existing storm drainage or flood control infrastructure. Therefore, this Los Angeles County Flood Control District requirement is not likely to affect the site design employed by developers of the project.

To reduce the potential flood risk impacts that could arise from the cumulative impacts of the Project, Project-specific Best Management Practices can be employed. These can include detention or retention basins; scour protection along river branches to prevent erosion; and distributed stormwater retention infrastructure such as stormwater capture cisterns or green roofs to attenuate runoff flows; and green stormwater infrastructure for access roads.

VII. Conclusion

The Project will result in an increase in stormwater runoff for the area since the existing area is undeveloped. The development will consist of low-density single-family homes and is expected to increase the runoff of each developed parcel by about 26 percent to 48 percent. Developed parcels will not be concentrated in one location and there will be open space between most parcels. The open space between each parcel will not be developed and is not expected to increase runoff flow. Additional runoff produced by the development will impact the area's existing drainage patterns, but the impact could be minimized by incorporating BMP features and infrastructure protections.

The results of this evaluation indicate that the Project will have a significant impact on the existing area and the BMPs described in this section could be incorporated into the Project's ordinance to lessen its impact.

Water Quality Analysis

To further support the EIR, the Project's impact on the quality of stormwater runoff in the area was evaluated. Since the existing area is vacant, runoff is not impacted by human activities associated with development. At build-out, a maximum of approximately 42,872 single-family residences will be developed, which will increase the amount of human activity in the area. This increase would add new pollutants to the stormwater runoff, such as metals from vehicles and pesticides from landscape care. To determine the impact of the Project on existing conditions, the increased runoff from each parcel and potential impact to impaired water bodies was determined.

LA County's Low Impact Development (LID) Standards Manual requires developments manage stormwater runoff. Developments are categorized as Designated or Non-Designated. The single-family homes proposed to be developed in this Project will mostly be categorized as Small-Scale Non-Designated Projects. Small-Scale Non-Designated Projects are required to implement at least two County BMPs. The BMPs can be used to retain stormwater runoff or mitigate pollutant discharges. The County's LID ordinance does not require a specific reduction in pollutant discharges, but it does have requirements on the size of the BMPs in the manual.

BMPs listed for Non-Designated Projects are not required to meet a specific pollutant load reduction or to retain a specified amount of runoff. They are only intended to reduce a development's pollutant load, but not necessarily to reduce all pollutant loads to a pre-development condition; therefore, each development of the Project will result in an increase of pollutant discharges. Procedures from the County's LID Standards Manual were followed to determine the difference in the proposed initiative's pre- and post-development runoff volumes and potential pollutant loads.

The rainfall depth from Soledad Canyon, Gage 405 was used to estimate the 85th percentile storm depth for Santa Clarita Valley, and Little Gleason, Gage 1074, for East San Gabriel Mountains, per LA County's Spatial Distribution Analysis of the 85th Percentile 24-hr Rainfall. A rainfall depth of 0.75-inches was used for the Antelope Valley since it was greater than the 85th percentile storm for that area. The total runoff volume generated by a general parcel in Antelope Valley, Santa Clarita Valley, and East San Gabriel Mountains as required by LA County's SUSMP is listed in Table 23.

Table 23. Hydrology Results for 85th Percentile of Storm Event

| | Storm | Rainfall Depth | Time of Concentration | Peak Flow Rate | 24-Hour Runoff Volume |
|-----------------------------------|-----------------------------|-----------------------|------------------------------|-----------------------|------------------------------|
| Antelope Valley | | inches | minutes | Cubic feet per second | acre-feet |
| Pre-Development | 85 th Percentile | 0.75 | 30 | 0.24 | 0.08 |
| Post-Development | | | 30 | 0.35 | 0.11 |
| Santa Clarita Valley | | | | | |
| Pre-Development | 85 th Percentile | 0.90 | 30 | 0.28 | 0.09 |
| Post-Development | | | 30 | 0.41 | 0.13 |
| East San Gabriel Mountains | | | | | |
| Pre-Development | 85 th Percentile | 1.28 | 30 | 0.72 | 0.13 |
| Post-Development | | | 30 | 0.84 | 0.18 |

An increase of 0.04-AF of runoff will result for a typical developed parcel in Santa Clarita and an increase in runoff of 0.03-AF is expected from a typical developed parcel in Antelope Valley. In the East San Gabriel Mountains, a runoff volume increase of 0.05-AF is expected. Parcels within the East San Gabriel Mountains are spread out and large, and concentrated pollutant loads are not expected to result from this subarea. Each parcel is estimated to produce a slightly increased amount of runoff from the area’s 85th percentile rainfall depth. A concern with increased runoff from the Project’s parcels is that it will contain new or increased levels of pollutants. The common pollutants in urban stormwater runoff from single-family residential units and associated access roads are listed below.

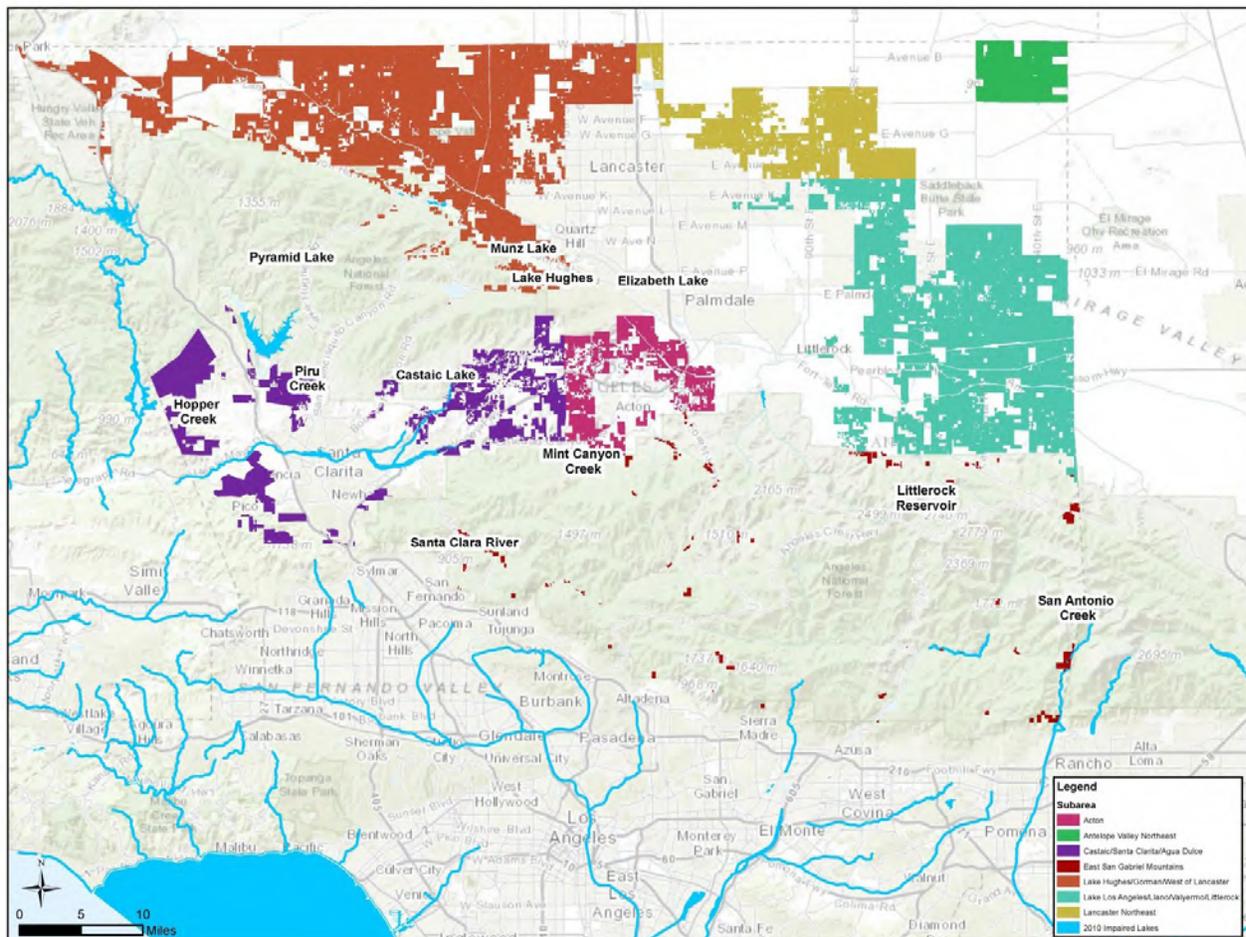
- Sediment and Floatables
- Pesticides and Herbicides
- Organic Materials
- Metals (Lead and Zinc)
- Oil and Grease
- Hydrocarbons
- Bacteria and Viruses
- Nitrogen and Phosphorus

Overall, runoff from the proposed initiative would increase relative to existing baseline, ranging from 0.02 AF to 0.05 AF per parcel developed. This increased runoff combined with typical pollutants generated on residential land uses could result in potentially significant water quality impacts to existing water bodies. While the LID ordinance requires two BMPs to treat the additional runoff, they will not remove all pollutants or provide complete on-site retention that would mimic the pre-development condition.

I. Impact to Impaired Water Bodies

Increased runoff from the developed parcels is expected to contain pollutants that, if not treated, can result in the decrease in water quality of the receiving water. Specific pollutants have discharge limits if the receiving water they are discharged to is classified as an impaired water body. If the receiving water body is an impaired water body per the Clean Water Act Section 303(d), it has pollutant discharge limits associated with it that are outlined in a National Pollutant Discharge Elimination System (NPDES) permit. Impaired water bodies near the Project are shown in Figure 4.

Figure 4. Impaired Water Bodies near Project Area



There are several impaired water bodies in the region that runoff from the Project will potentially enter, particularly Elizabeth Lake and several reaches of Upper Santa Clara River. Elizabeth Lake was recorded as an impaired water body due to trash and reaches along Upper Santa Clara River have established a Total Maximum Daily Load (TMDL) for coliform due to impairments from non-point or unknown sources (SWRCB, 2011). The impaired water bodies and their pollutants that may receive runoff from the Project are listed in Table 24.

Table 24. Impaired Waters and Pollutants

| Water Body | Pollutant |
|--|--|
| Pyramid Lake | Mercury |
| Munz Lake | Trash ¹ |
| Littlerock Reservoir | Manganese |
| Lake Hughes | Trash |
| Elizabeth Lake | Eutrophic Organic Enrichment/Low Dissolved Oxygen Trash pH |
| Castaic Lake | Mercury |
| Mint Canyon Creek Reach 1 | Nitrate and Nitrite |
| Piru Creek (from gaging station below Santa Felicia Dam to headwaters) | Chloride pH |
| Santa Clara River Reach 5 (Blue Cut gaging station to West Pier Hwy 99 Bridge) | Chloride Coliform Iron |
| Santa Clara River Reach 6 (W Pier Hwy 99 to Bouquet Cyn Rd) | Chloride Chlorphyrifos Coliform |
| Santa Clara River Reach 7 (Bouquet Canyon Rd to above Lang Gaging Station) | Chloride Coliform Iron |

SWCRB, 2011

¹ Pollutants shown in bold are common pollutants discharged from single-family developments.

The pollutants listed in Table 24 that can be negatively impacted by human activities are trash, nitrate and nitrite, coliform, and metals. Therefore, runoff from the development will cause an impact for these pollutants listed in Table 24.

II. Water Quality BMPs

The Project will develop low-density single-family homes that will be spread throughout the Project Area. This will allow for preservation of natural areas between each parcel. Developments will have to comply with the County LID Ordinance as Small-Scale Non-Designated Projects and will be required to include two BMPs per County’s LID ordinance. While the BMPs would mitigate the pollutant discharges from each site, they would not eliminate all polluted discharges from a site to mimic the pre-development condition. The impact of the individually developed parcels could potentially impact water quality of downstream water bodies. Based on the analysis completed for this study, it is expected that the Project will have a significant impact even with the implementation of BMPs.

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Appendix L

Noise Technical Report

**SINGLE-FAMILY RESIDENTIAL HAULED WATER INITIATIVE
FOR NEW DEVELOPMENT**

NOISE TECHNICAL REPORT

PREPARED FOR:

**LOS ANGELES COUNTY HAULED WATER TASK FORCE
900 SOUTH FREMONT AVENUE, 11TH FLOOR
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MAY 11, 2016

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SECTION ES

EXECUTIVE SUMMARY

This Noise Technical Report was undertaken by Sapphos Environmental, Inc. for the County of Los Angeles (County) to evaluate the proposed Single-Family Residential Hauled Water Initiative for New Development (proposed initiative), in the unincorporated territory of Los Angeles County. The proposed initiative would allow hauled water as the primary source of potable water for new development of single-family residences on existing vacant legal lots, or lots that are eligible for a certificate of compliance, where the property owner has demonstrated that there is no other feasible source of private or municipal potable water, or capability of developing an on-site well to provide potable water to the property, and only if the property lies outside of the boundaries of the local private and municipal water districts, and is not eligible for service by the nearest public-community water purveyor.

The report's findings are as follows:

- The proposed initiative would potentially result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies whenever construction takes place within 251 feet of a sensitive receptor.
- The proposed initiative would not result in exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.
- The proposed initiative would not result in a substantial permanent increase in ambient noise levels in the proposed initiative vicinity above levels existing without the proposed initiative.
- The proposed initiative would result in a substantial temporary or periodic increase in ambient noise levels in the proposed initiative vicinity above levels existing without the proposed initiative.
- For a proposed initiative parcel located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, the proposed initiative would not expose people residing or working in the proposed initiative area to excessive noise levels.
- For a proposed initiative parcel within the vicinity of a private airstrip, the proposed initiative would not expose people residing or working in the proposed initiative area to excessive noise levels.

SECTION 1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

This Noise Technical Report was undertaken by Sapphos Environmental, Inc. for the County of Los Angeles (County), for the Single-Family Residential Hauled Water Initiative for New Development (proposed initiative). This technical report identifies relevant regulatory framework, baseline conditions in the proposed initiative study area as they relate to ambient noise, the potential for the proposed initiative to result in substantial adverse direct, indirect, and cumulative impacts on ambient noise levels from construction and occupancy of single-family residences facilitated by the approval of building permits relying on the use of hauled water as the primary source of potable water and the associated transport of hauled water, and measures or alternatives that would avoid or reduce significant impacts on ambient noise levels.

1.2 PROJECT LOCATION

The area that would be subject to the proposed initiative consists of 42,867 parcels in the unincorporated territory of Los Angeles County (see Figure 1.2-1, *Proposed Initiative Study Area*, at the end of this section).¹ The combined proposed initiative study area consists of approximately 340,461 acres or approximately 532 square miles.

Although this is a Countywide initiative, the parcels that would potentially be affected by the proposed initiative are located entirely within the 5th Supervisorial District in the northern one-third of the County, including areas located in the San Gabriel Mountains, in the Antelope Valley; areas located northeast of the City of Santa Clarita, north and south of California State Route 14; and areas that are southwest of the City of Palmdale in the communities of Agua Dulce and Acton. The subject parcels have been categorized into seven subareas:

1. **Lake Hughes/Gorman/West of Lancaster:** The Lake Hughes/Gorman/West of Lancaster subarea is located in an area generally located west of State Highway 14 and north of the Angeles National Forest. This subarea consists of 15,166 parcels and encompasses approximately 195.4 square miles (125,041.4 acres). State Highway 138 bisects the subarea in an east-west direction, and State Highway 14 forms the eastern boundary of this subarea. This subarea is adjacent to the northwestern edge of the incorporated City of Lancaster.
2. **Lancaster Northeast:** The Lancaster Northeast subarea is located in an area generally east of State Highway 14 and north of East Avenue J. This subarea consists of 6,794 parcels and encompasses approximately 55.2 square miles (35,324.90 acres). State Highway 14 forms the western boundary, and East Avenue J forms the southern boundary of this subarea. Edwards Air Force Base is located north of the study area. This subarea is adjacent to the northeastern edge of the incorporated City of Lancaster.

¹ Assessor's Parcels Numbers for the referenced parcels are on file at the Los Angeles County Department of Regional Planning.

3. **Antelope Valley Northeast:** The Antelope Valley Northeast subarea is located in an area generally north of East Avenue E and east of 165th Street East in the far northeastern portion of Los Angeles County. This subarea consists of 1,938 parcels and encompasses approximately 22.7 square miles (14,528.23 acres). This subarea is relatively isolated and is located in the northeastern area of Los Angeles County. This subarea is located approximately 10.9 miles northeast of the incorporated City of Palmdale and approximately 11.3 miles northeast of the incorporated City of Lancaster.
4. **Lake Los Angeles/Llano/Valyermo/Littlerock:** The Lake Los Angeles/Llano/Valyermo/Littlerock subarea is located in an area generally south of East Avenue J, east of 47th Street East. This subarea consists of 14,822 parcels and encompasses approximately 168.8 square miles (108,067.33 acres). Avenue J forms the northern boundary, the Cities of Palmdale and Lancaster form the western boundary, and the San Bernardino County line forms the eastern boundary of this subarea. This subarea is adjacent to the eastern edge of the incorporated City of Palmdale.
5. **Acton:** The Acton subarea is located in an area generally east of Hubbard Road and West of 47th Street East. This subarea consists of 1,246 parcels and encompasses approximately 28.2 square miles (18,067.22 acres). The Angeles National Forest is located to the north and south of the subarea. This subarea is adjacent to the southwestern edge of the incorporated City of Palmdale.
6. **Castaic/Santa Clarita/Agua Dulce:** The Castaic/Santa Clarita/Agua Dulce subarea is located generally west of Hubbard Road and north of the 210 Freeway excluding Kagel Canyon. This subarea consists of 2,243 parcels and encompasses approximately 55.2 square miles (35,340.2 acres). This subarea is adjacent to the northern, western, and southern edges of the incorporated City of Santa Clarita and the northern edge of the incorporated City of Los Angeles.
7. **East San Gabriel Mountains:** The East San Gabriel Mountains subarea consists of parcels generally located within the Angeles National Forest east of State Highway 14, north of the 210 freeway, south of the Pearblossom Highway, and west of the San Bernardino County line. This subarea consists of 658 parcels and encompasses approximately 6.4 square miles (4,092.26 acres). This subarea is adjacent to the northern edges of the San Gabriel and San Fernando Valleys.

The proposed initiative study area is located within 53 U.S. Geological Survey (USGS) 7.5-minute quadrangle maps (see Figure 1.2-2, *USGS 7.5-Minute Quadrangle Index*, at the end of this section):

- Acton
- Adobe Mountain
- Agua Dulce
- Alpine Butte
- Azusa
- Black Mountain
- Burnt Peak
- Chilao Flat
- Condor Peak
- Crystal Lake
- Del Sur
- El Mirage
- Fairmont Butte
- Frazier Mountain
- Glendora
- Green Valley
- Hi Vista
- Jackrabbit Hill
- Juniper Hills
- La Liebre Ranch
- Lake Hughes
- Lancaster East
- Lancaster West
- Lebec
- Liebre Mountain
- Little Buttes
- Littlerock
- Lovejoy Buttes
- Mescal Creek
- Mint Canyon
- Mount Baldy
- Mount San Antonio
- Mount Wilson
- Neenach School
- Newhall
- Oat Mountain
- Pacifico Mountain
- Palmdale
- Pasadena
- Redman
- Ritter Ridge
- Rogers Lake South
- Rosamond
- Rosamond Lake
- San Fernando
- Simi Valley East
- Sleepy Valley
- Sunland
- Val Verde
- Valyermo
- Warm Springs Mountain
- Waterman Mountain
- Whitaker Peak

1.3 PROJECT DESCRIPTION

The purpose of the proposed initiative is to allow the use of hauled water as a primary and sustainable source of potable water on lots with an average slope of less than 50 percent, where it has been demonstrated that potable water for domestic requirements cannot be provided by an on-site groundwater well, and where the lot meets all of the following criteria at the time of the hauled water permit application and as of the effective date of an ordinance authorizing the use of hauled water: (a) the lot is an existing legal lot or entitled to a certificate of compliance; (b) is vacant and has never been developed; (c) is greater than 2,000 square feet in size; (d) is outside the boundaries of a public or private water district; and (e) has a land use designation and is within a zone allowing for the development of a single-family residence.

In order to determine which areas would be subject to the proposed initiative, the Los Angeles County Department of Regional Planning developed a geographic information system (GIS) suitability model in 2012 based on five criteria defined by the Hauled Water Task Force:

- Parcels located in the unincorporated territory of Los Angeles County
- Vacant parcels
- Parcels located in areas where there is no designated water purveyor
- Zoning and General Plan designation that allow for development of a single-family residence
- Parcel size > 2,000 square feet with slopes under 50 percent (26.6°)

The model was re-run in 2015 to incorporate the recently adopted Antelope Valley Town and Country Plan and General Plan amendment.²

1.3.1 Construction Scenario

The evaluation of the proposed initiative is based on an anticipated reasonable worst-case scenario of anticipated development of approximately 3,680 parcels, over the 20-year 2015 to 2035 planning horizon, in the unincorporated territory of Los Angeles County to use hauled water as a source for potable water. Using annual growth rates, the worst-case scenario projects that approximately 184 building permits per year would be issued. The impacts related to noise for the construction associated with the proposed initiative would be indirect and temporary noise generation. The evaluation of construction impacts on ambient noise levels is based on an average single-family residence for the Los Angeles County.

Site preparation and construction of the proposed project would be undertaken in accordance with all federal, state, and county building codes. Construction would be scheduled in compliance with county regulations. The county allows construction noise from Monday through Saturday, between the hours of 7:00 a.m. and 7:00 p.m.³ However, the County Noise Ordinance prohibits construction on Sundays and holidays.

The number of workers required on site during construction hours would be site specific, and construction on the specific parcels would be at the parcel owner's discretion, resulting in variability in the construction scenario for the proposed initiative. For the purpose of this analysis, it was assumed that approximately up to 20 workers would be expected to be on-site during peak construction activity periods, all of whom would drive to the site in an on-road vehicle.

It is assumed that the time required to complete construction of a single family home would be approximately 14 months. For the construction of a home permitted to be built following the proposed initiative, it is anticipated there would be six phases of construction:

1. Ground Clearing
2. Excavation, Grading
3. Foundations
4. Structural, Paving
5. Finishing
6. Landscaping

² Los Angeles County Department of Regional Planning. Adopted 6 October 2015. *Los Angeles County 2035 General Plan*: Chapter 6: Land Use Element. Available online at: planning.lacounty.gov/assets/upl/project/gp_final-general-plan-ch6.pdf

³ County of Los Angeles. County of Los Angeles Code of Ordinances, Section 12.08.440: "Construction Noise."

Site ingress and egress locations for construction, delivery vehicles, haul routes, and emergency response and evacuation would be site specific.

It is assumed that construction would be in compliance with Los Angeles County regulations and standard practices for construction and development. Construction equipment would be turned off when not in use. The construction contractor would be required to ensure that all construction, demolition, and grading equipment are properly maintained. All vehicles and compressors would utilize exhaust mufflers and engine enclosure covers (as designed by the manufacturer) at all times. All grading and earthwork would be performed under the observation of a geotechnical engineer to ensure proper subgrade preparation, selection of satisfactory materials, and placement and compaction of structural fills. Any unanticipated adverse conditions encountered would be evaluated by the project engineering geologist and the soils engineer, and the appropriate recommendation made and implemented.

1.3.2 Operations

According to the Traffic Impact Study conducted by Fehr & Peers Transportation Consultants, it is estimated that the proposed initiative in the operational phase will generate approximately 588,000 net passenger car vehicle miles traveled (VMT) and approximately 4,300 net hauled water truck VMT per average day at full build-out of 3,680 parcels.⁴ These estimates are likely to be a worst-case scenario, operating under the assumption of 5,000 gallons of water per residence per week for domestic use and 5,000 gallons of water per residence per year for fire supply.⁵ At full build-out, the proposed initiative would result in 4,300 water truck VMT per day with 134 trucks traveling on average 31.8 miles round trip. It is assumed one truck could visit up to four parcels in a day, which equates to 134 trucks in operation daily to serve all 3,680 parcels. The residents on each parcel are estimated to take on average 10 daily trips of approximately 16 miles roundtrip in length for an additional 588,000 passenger car VMT daily.

⁴ Fehr & Peers. June 2015. *Single-Family Residential Hauled Water Initiative for New Development: Traffic Analysis*. Prepared for: Los Angeles County Hauled Water Task Force.

⁵ Fehr & Peers. June 2015. *Single-Family Residential Hauled Water Initiative for New Development: Traffic Analysis*. Prepared for: Los Angeles County Hauled Water Task Force.

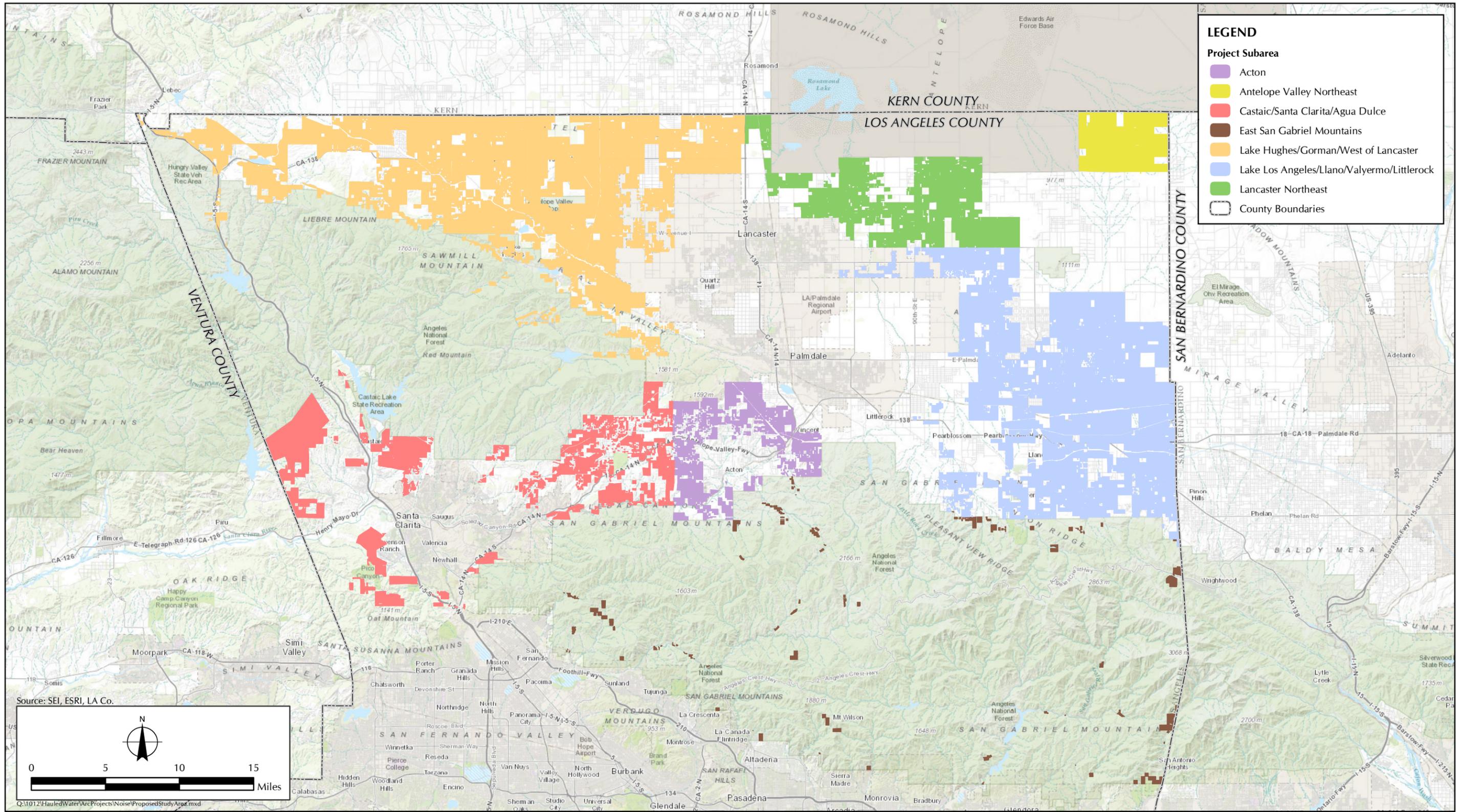


FIGURE 1.2-1
Proposed Initiative Study Area

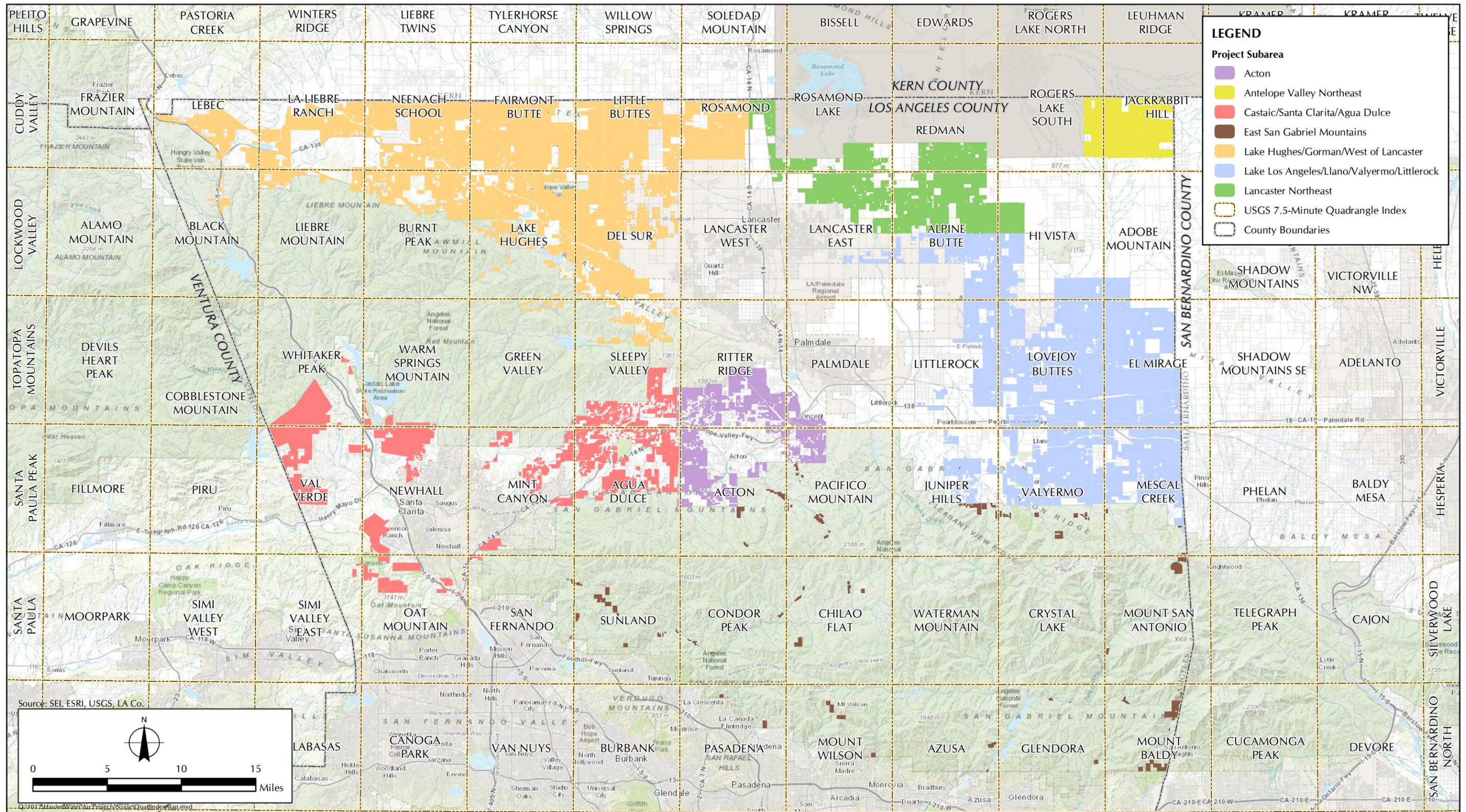


FIGURE 1.2-2
USGS 7.5-Minute Quadrangle Index

2.1 NOISE AND VIBRATION TERMINOLOGY

A list of noise terminology is included to facilitate the discussion of noise and its impacts.

- *A-weighting*. This is the method commonly used to quantify environmental noise that involves evaluation of all frequencies of sound, with an adjustment to reflect the constraints of human hearing. Because the human ear is less sensitive to low and high frequencies than to midrange frequencies, noise measurements are weighted more heavily within those frequencies of maximum human sensitivity in a process called A-weighting (dBA).
- *Ambient*. Ambient is the total noise in the environment, excluding noise from the source of interest.
- *Community noise equivalent level (CNEL)*. CNEL represents the average daytime noise level during a 24-hour day, adjusted to an equivalent level to account for people's lower tolerance of noise during the evening and nighttime hours. Because community receptors are more sensitive to unwanted noise intrusion during the evening and night, an artificial decibel increment is added to quiet-time noise levels. Sound levels are increased by 5 dBA during the evening, from 7:00 p.m. to 10:00 p.m. and by 10 dBA during the nighttime, from 10:00 p.m. to 7:00 a.m. during this quiet time period.
- *Day-night equivalent level (L_{dn})*. L_{dn} is a measure of the 24-hour average noise level at a given location. It is based on a measure of the L_{eq} noise level over a given time period. The L_{dn} is calculated by averaging the L_{eq} for each hour of the day at a given location after penalizing the "sleeping hours" (defined as 10:00 p.m. to 7:00 a.m.), by 10 dBA to account for the increased sensitivity of people to noises that occur at night.
- *Decibel (dB)*. dB is a unitless measure of sound on a logarithmic scale that indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude. The reference pressure is 20 micropascals.
- *Equivalent sound level (L_{eq})*: L_{eq} is a term typically used to express time averages. It is a steady-state energy level that is equivalent to the energy content of a varying sound level over a stated period of time, which means that the L_{eq} represents the noise level experienced over a stated period of time averaged as a single noise level.
- *Frequency*. Frequency is the number of cycles per unit of time (seconds), expressed in hertz (Hz).
- *Noise*. Noise is any sound that annoys or disturbs humans or that causes or tends to cause an adverse psychological or physiological effect on humans. Any unwanted sound.

- *Noise level (L_N)*. Another measure used to characterize noise exposure, L_N is the variation in sound levels over time, measured by the percentage exceedance level. L_{10} is the A-weighted sound level that is exceeded for 10 percent of the measurement period, and L_{90} is the level that is exceeded for 90 percent of the measurement period. L_{50} is the median sound level. Additional statistical measures include L_{min} and L_{max} , the minimum and maximum sound levels, respectively, measured during a stated measurement period.
- *Peak Particle Velocity (PPV)*. Defined as the maximum instantaneous positive or negative peak of the vibration signal, usually measured in inches per second (in/sec).
- *Sound*. It is a vibratory disturbance created by vibrating objects, which, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism, such as the human ear or a microphone.
- *Vibration*. Vibration is the mechanical motion of earth or ground, building, or other type of structure, induced by the operation of any mechanical device or equipment located upon or affixed thereto. For purposes of this report, the magnitude of the vibration shall be stated as the acceleration in “g” units (1 g is equal to 32.2 feet/second², or 9.81 meters/second²).

2.2 NOISE MEASUREMENT

Noise is defined as unwanted sound. The human response to environmental noise is subjective and varies considerably from individual to individual. Sensitive receptors, such as residential areas, convalescent homes, schools, auditoriums, and other similar land uses, may be affected to a greater degree by increased noise levels than industrial, manufacturing, or commercial facilities. The effects of noise can range from interference with sleep, concentration, and communication, to the causation of physiological and psychological stress, and at the highest intensity levels, hearing loss.¹

The method commonly used to quantify environmental noise involves evaluation of all frequencies of sound, with an adjustment to reflect the constraints of human hearing. Since the human ear is less sensitive to low and high frequencies than to midrange frequencies, noise measurements are weighted more heavily within those frequencies of maximum human sensitivity in a process called “A-weighting,” written as dBA. In practice, environmental noise is measured using a sound level meter that includes an electronic filter corresponding to the A-weighted frequency spectrum. Table 2.2-1, *Common Noise Levels and Loudness*, provides examples of noise sources that correlate to measured A-weighted sound levels and the subjective loudness to a person.

¹ U.S. Environmental Protection Agency, Office of Noise Abatement and Control. August 1978. *Noise: A Health Problem*. Washington, DC.

**TABLE 2.2-1
COMMON NOISE LEVELS AND LOUDNESS**

| Noise Source | A-weighted Sound Level (dBA) | Subjective Loudness | |
|--|-------------------------------------|-------------------------------|-------|
| Near jet engine | 130 | Threshold of pain | |
| | 120 | | |
| Rock-n-roll band | 110 | Deafening | |
| Jet flyover at 1,000 feet | 100 | | |
| Loud auto horn at 10 feet | 90 | Very loud | |
| Power Mower | | | |
| Motorcycle at 25 feet | 80 | | |
| Food blender | | | |
| Garbage disposal | 70 | Loud | |
| Living room music | 60 | | |
| Human voice at 3 feet | | | |
| Residential air conditioner at 50 feet | 50 | Moderate | |
| | 40 | | |
| Bird calls | 30 | | Faint |
| Quiet living room | 20 | | |
| Average whisper | 10 | | |
| Rustling leaves | 0 | Very faint | |
| | | Threshold of human audibility | |

SOURCE: Cowan, James P. 1993. *Handbook of Environmental Acoustics*. Hoboken, NJ: John Wiley and Sons.

There are several statistical tools used to evaluate and compare noise level measurements. To account for the fluctuation in noise levels over time, noise impacts are commonly evaluated using time-averaged noise levels. L_{eq} is used to represent the noise level experienced over a stated period of time averaged as a single noise level. Because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, an artificial decibel increment is added to quiet-time noise levels to create a 24-hour noise descriptor, or a 24-hour L_{eq} , which is the CNEL.² L_{dn} also adds an artificial decibel increment to the sound level during nighttime hours, but does not adjust the sound level during the evening hours.

Another measure used to characterize noise exposure is the variation in sound levels over time, measured by percentage exceedance level. L_{10} is the A-weighted sound level that is exceeded 10 percent of the measurement period, and L_{90} is the level exceeded 90 percent of the measurement period. L_{50} is the median sound level. Additional statistical measures include L_{min} and L_{max} , the minimum and maximum sound levels, respectively, measured during a stated measurement period.

These descriptions of noise are based on the sound level at the point of measurement. When determining potential impacts to the environment, the noise level at the receptor is considered. Noise is attenuated as it propagates from the source to the receiver. Attenuation is the reduction in the level of sound resulting from the absorption by the topography of an area (i.e., paved or vegetated surface), atmosphere, distance, barriers, and other factors. Attenuation is also logarithmic rather than linear, so that for stationary point sources such as construction equipment, noise levels decrease approximately 6 dBA for every doubling of distance. For linear sources, such as streets, noise levels decrease by 3 to 5 dBA for every doubling of distance.

To estimate a receiver's subjective reaction to a new noise is to compare the new noise with the existing noise environment, the "ambient" noise level, to which the receiver has become adapted. An increase of 1 dBA over the ambient noise level cannot be perceived unless it occurs in carefully controlled laboratory experiments; a 3-dBA increase is considered as a just-perceivable difference; an increase of at least 5 dBA is a noticeable change, thereby causing community response and often being considered as a significant impact; and a 10-dBA increase is subjectively heard as approximately a doubling in loudness, thereby almost always causing an adverse community response.

The assessment of the noise impact depends on the environment, the nature and level of noise-generating activities, the pathway through which the noise travels, the sensitivity of the receptor, the period of exposure, and the exceedance of the noise level over the ambient level.

2.2.1 Construction Noise

Due to the large area of effect for the proposed initiative, calculating the exact noise impacts associated with the construction of each home for each potentially affected neighboring sensitive receptor is not practical. Construction noise associated with the proposed initiative was analyzed using an estimated average list of construction equipment, and typical scheduling and phasing for construction activities. The construction noise analysis for the proposed initiative is based on

² City of Los Angeles. 2006 L.A. CEQA Thresholds Guide. "I. Noise." Available at: http://www.ci.la.ca.us/ead/programs/table_of_contents.htm

construction equipment noise levels as published in the *FHWA Roadway Construction Noise Model User's Guide*.³

2.2.2 Operational Noise

Operational noise impacts associated with the proposed initiative were evaluated by identifying the noise levels generated by the water hauling activities, and comparing such noise levels to ambient noise levels to determine significance. Result of the Traffic Impact Study are used to calculate potential noise impacts from water hauling truck trips.⁴

2.3 VIBRATION MEASUREMENT

Vibration is an oscillatory motion in terms of displacement, velocity, or acceleration. Vibration is typically measured as peak particle velocity (PPV) in inches per second. In this context, vibration refers to the minimum ground- or structure-borne motion that causes a normal person to be aware of the vibration by means such as, but not limited to, sensation by touch or visual observation of moving objects. The effects of ground-borne vibration include movements of the building floors that can be felt, rattling of windows, and shaking of items on shelves or hangings on the walls. In extreme cases, vibration can cause damage to buildings. The noise radiated from the motion of the room surfaces is called ground-borne noise. Typical levels of ground-borne vibration are listed in Table 2.3-1, *Typical Levels of Ground-borne Vibration*. The vibration motion normally does not provoke the same adverse human reactions as the noise unless there is an effect associated with the shaking of the building. In addition, the vibration noise can only occur inside buildings. Similar to the propagation of noise, vibration propagated from the source to the receptor depends on the receiving building (i.e., the weight of the building), soil conditions, layering of the soils, the depth of groundwater table, etc.

³ U.S. Department of Transportation, Federal Highway Administration. January 2006. FHWA Roadway Construction Noise Model User's Guide. Prepared by: U.S. Department of Transportation, Research and Innovative Technology Administration, John A. Volpe National Transportation Systems Center Acoustics Facility, Cambridge, MA.

⁴ Fehr & Peers. July 2015. Single-Family Residential Hauled Water Initiative for New Development: Traffic Analysis.

**TABLE 2.3-1
TYPICAL LEVELS OF GROUND-BORNE VIBRATION**

| Response | Velocity Level^a | Typical Sources (At 50 feet) |
|---|-----------------------------------|---|
| Minor cosmetic damage of fragile buildings | 100 | Blasting from construction projects |
| Difficulty with tasks such as reading a video display terminal (VDT) screen | 90 | Bulldozers and other heavy tracked construction equipment |
| Residential annoyance, infrequent events | 80 | Rapid transit, upper range |
| Residential annoyance, frequent events | 70 | High speed rail, typical |
| Approximate threshold for human perception | 60 | Bus or truck, typical |
| | 50 | Typical background vibration |

NOTE:

a. Root mean square (RMS) Vibration Velocity Level in VdB relative to 10⁻⁶ inches/second.

SOURCE: Nelson, J.T. and H.J. Saurenman. December 1983. "State-of-the-Art Review: Prediction and Control of Ground-Borne Noise and Vibration from Rail Transit Trains." U.S. Department of Transportation, Urban Mass Transportation Administration, Report Number UMTA-MA-06-0049-83-4, DOT-TSC-UMTA-83-3.

2.3.1 Ground-Borne Vibration

Ground-borne vibration impacts due to construction and operation activities were evaluated by identifying potential vibration sources (i.e., construction equipment for the construction phase, and water hauling trucks for the operation phase), estimating the vibration levels at various distances of potential sensitive receptors, and comparing these levels with the significance thresholds. The vibration source levels for various types of equipment were based on data from the FTA.⁵

⁵ U.S. Department of Transportation, Federal Transit Administration. May 2006. Transit Noise and Vibration Impact Assessment. Washington, DC.

SECTION 3.0

REGULATORY FRAMEWORK

3.1 FEDERAL

Noise Control Act

The adverse impacts of noise were officially recognized by the federal government in the Noise Control Act of 1972,¹ which serves three purposes:

- Promulgating noise emission standards for interstate commerce;
- Assisting state and local abatement efforts; and
- Promoting noise education and research.

The Office of Noise Abatement and Control (ONAC) was initially tasked with implementing the Noise Control Act. However, the ONAC has since been eliminated, leaving the development of federal noise policies and programs to other federal agencies and interagency committees. For example, the Occupational Safety and Health Administration agency prohibits exposure of workers to excessive sound levels. The U.S. Department of Transportation assumed a significant role in noise control through its various operating agencies. Surface transportation system noise is regulated by a host of agencies, including the Federal Transit Administration (FTA). Transit noise is regulated by the FTA, while freeways that are part of the interstate highway system are regulated by the Federal Highway Administration (FHWA). The federal government encourages local jurisdictions to use their land use regulatory authority to site new development to minimize potential noise impacts.

3.2 STATE

Senate Bill 860

In the State of California, State Senate Bill 860, which became effective January 1, 1976, directed the California Office of Noise Control within the State Department of Health Services to prepare the *Guidelines for the Preparation and Content of Noise Elements of the General Plan*.² One purpose of these guidelines was to provide sufficient information concerning the noise environment in the community so that noise could be considered in the land-use planning process. As part of this publication, Land Use Compatibility Standards were developed in four categories: Normally Acceptable, Conditionally Acceptable, Normally Unacceptable, and Clearly Unacceptable. These categories were based on earlier work done by the U.S. Department of Housing and Urban Development. The interpretation of these four categories is as follows:

¹ 42 U.S.C., *Noise Control Act of 1972*, § 4901-4918.

² California Department of Health Services, Office of Noise Control. February 1976. *Guidelines for the Preparation and Content of Noise Elements of the General Plan*. Contact: P.O. Box 942732 Sacramento, CA 94234-7320.

| | |
|----------------------------------|---|
| Normally Acceptable: | Specified land use is satisfactory without special insulation. |
| Conditionally Acceptable: | New development requires detailed analysis of noise insulation requirements. |
| Normally Unacceptable: | New development is discouraged and requires a detailed analysis of insulation features. |
| Clearly Unacceptable: | New development should not be undertaken. |

The state has developed a land-use compatibility matrix for community noise environments that further defines four categories of acceptance and assigns CNEL values to them. In addition, the State Building Code (Part 2, Title 24, California Code of Regulations) establishes uniform minimum noise insulation performance standards to protect persons within new hotels, motels, dormitories, long-term care facilities, apartment houses, and residential units other than detached single-family residences from the effects of excessive noise, including, but not limited to, hearing loss or impairment and interference with speech and sleep. Residential structures to be located where the CNEL or L_{dn} is 60 dBA or greater are required to provide sound insulation to limit the interior CNEL to a maximum of 45 dBA. An acoustic, or noise, analysis report prepared by an experienced acoustic engineer is required for the issuance of a building permit for these structures. Conversely, land use changes that result in increased noise levels at residences of 60 dBA or greater must be considered in the evaluation of impacts to ambient noise levels. Table 3.2-1, *Land Use Compatibility for Community Noise Environments*, graphically depicts the acceptability of noise levels for a variety of uses.

**TABLE 3.2-1
LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS**

| Land Use Category | Community Noise Exposure L _{dn} or CNEL (dBA) | | | | | |
|---|---|----|---|----|-----------------------|----|
| | 55 | 60 | 65 | 70 | 75 | 80 |
| Residential—low-density single-family, duplex, mobile homes | Normally acceptable | | Conditionally acceptable | | Normally unacceptable | |
| Residential—multiple family | Normally acceptable | | Conditionally acceptable | | Normally unacceptable | |
| Transient lodging—motels, hotels | Normally acceptable | | Conditionally acceptable | | Normally unacceptable | |
| Schools, libraries, churches, hospitals, nursing homes | Normally acceptable | | Conditionally acceptable | | Normally unacceptable | |
| Auditoriums, concert halls, amphitheaters | Normally acceptable | | Conditionally acceptable | | Clearly unacceptable | |
| Sports area, outdoor spectator sports | Normally acceptable | | Conditionally acceptable | | Clearly unacceptable | |
| Playgrounds, neighborhood parks | Normally acceptable | | Conditionally acceptable | | Normally unacceptable | |
| Golf courses, riding stables, water recreation, cemeteries | Normally acceptable | | Conditionally acceptable | | Normally unacceptable | |
| Office buildings, business commercial and professional | Normally acceptable | | Conditionally acceptable | | Normally unacceptable | |
| Industrial, manufacturing, utilities, agriculture | Normally acceptable | | Conditionally acceptable | | Normally unacceptable | |
| INTERPRETATION: | | | | | | |
|  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. | | |  Normally unacceptable New construction or development should generally 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 included in the design. | | | |
|  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 are included in the design. Conventional construction with closed windows and fresh air supply systems or air conditioning will normally suffice. | | |  Clearly unacceptable New construction or development should not be undertaken. | | | |

NOTES:

L_{dn} = Day-Night Level
 CNEL = Community Noise Equivalent Level
 dBA = decibels in A-weighted sound levels

SOURCE:

California Department of Health Services, Office of Noise Control. February 1976. *Guidelines for the Preparation and Content of Noise Elements of the General Plan*. Sacramento, CA.

3.3 REGIONAL

County of Los Angeles Municipal Codes

Noise

The County maintains the health and welfare of its residents with respect to noise through nuisance abatement ordinances and land use planning. The County Noise Control Ordinance, Title 12 of the County Code, was adopted by the Los Angeles County Board of Supervisors in 1977 “to control unnecessary, excessive, and annoying noise and vibration.” It declares that the purpose of the County policy is to “maintain quiet in those areas which exhibit low noise levels and to implement programs aimed at reducing noise in those areas within the county where noise levels are above acceptable values.”³

On August 14, 2001, the Los Angeles County Board of Supervisors approved an ordinance amending Title 12 of the County Code to prohibit loud, unnecessary, and unusual noise that disturbs the peace and/or quiet of any neighborhood or that causes discomfort or annoyance to any reasonable person of normal sensitivity residing in the area. Regulations can include requirements for sound barriers, mitigation measures to reduce excessive noise, or the placement and orientation of buildings, and can specify the compatibility of different uses with varying noise levels, as shown in Table 3.3-1, *County of Los Angeles Community Noise Criteria*.

**TABLE 3.3-1
COUNTY OF LOS ANGELES COMMUNITY NOISE CRITERIA**

| Noise Zone | Land Use of Receptor Property | Time | Noise Levels (dBA) | | | | |
|------------|-------------------------------|------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| | | | Std 1 L50 30 min/hr | Std 2 L25 15 min/hr | Std 3 L8.3 5 min/hr | Std 4 L1.7 1 min/hr | Std 5 L0 at No Time |
| I | Noise Sensitive | Anytime | 45 | 50 | 55 | 60 | 65 |
| II | Residential | 10 p.m. – 7 a.m. | 45 | 50 | 55 | 60 | 65 |
| | | 7 a.m. – 10 p.m. | 50 | 55 | 60 | 65 | 70 |
| III | Commercial | 10 p.m. – 7 a.m. | 55 | 60 | 65 | 70 | 75 |
| | | 7 a.m. – 10 p.m. | 60 | 65 | 70 | 75 | 80 |
| IV | Industrial | Anytime | 70 | 75 | 80 | 85 | 90 |

SOURCE: County of Los Angeles. *Municipal Codes*. Title 12, Chapter 8, *Noise Control*.

In addition to the community noise criteria, the municipal codes establish interior noise standards for residential dwellings. According to Section 12.08.400 of the municipal codes, no person shall operate or cause to be operated within a dwelling unit, any source of sound, or allow the creation of any noise, which causes the noise level when measured inside a neighboring receiving dwelling to exceed the following standards:⁴

³ County of Los Angeles. *Municipal Codes*. Title 12, Chapter 8, *Noise Control*.

⁴ County of Los Angeles. *Municipal Codes*. Title 12, Chapter 8, *Noise Control*.

- Standard No. 1: The applicable interior noise level for cumulative period of more than 5 minutes in any hour; or
- Standard No. 2: The applicable interior noise level plus 5 dB for a cumulative period or more than one minute in any hour; or
- Standard No. 3: The applicable interior noise level plus 10 dB or the maximum measured ambient noise level for any period of time.

Section 12.08.440 of the municipal codes states that operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between weekday hours of 7:00 p.m. and 7:00 a.m., or at any time on Sundays or holidays, such that the sound therefrom creates a noise disturbance across a residential or commercial real property line, except for emergency work of public service utilities or by variance issued by the health office, is prohibited. If noise disturbance crosses a residential or commercial property line, the County has established maximum noise levels for both mobile and stationary equipment (Table 3.3-2, *County of Los Angeles Construction Noise Restrictions*).

**TABLE 3.3-2
COUNTY OF LOS ANGELES CONSTRUCTION NOISE RESTRICTIONS**

| Time Frame | Single-Family Residential | Multifamily Residential | Semi-residential/ Commercial |
|---|---------------------------|-------------------------|------------------------------|
| Mobile equipment* | | | |
| Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m. (daytime) | 75 dBA | 80 dBA | 85 dBA |
| Daily, 8:00 p.m. to 7:00 a.m. (nighttime) and all day Sunday and legal holidays | 60 dBA | 64 dBA | 70 dBA |
| Stationary equipment** | | | |
| Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m. (daytime) | 60 dBA | 65 dBA | 70 dBA |
| Daily, 8:00 p.m. to 7:00 a.m. (nighttime) and all day Sunday and legal holidays | 50 dBA | 55 dBA | 60 dBA |

SOURCE: County of Los Angeles. *Municipal Codes*. Title 12, Chapter 8, *Noise Control*.

NOTES:

- * = Maximum noise levels for nonscheduled, intermittent, short-term operation (less than 10 days) of mobile equipment
- ** = Maximum noise levels for repetitively scheduled and relatively long-term operation (periods of 10 days or more) of stationary equipment

Vibration

Title 12, Section 12.08.560, of the county municipal code provides criteria for construction-generated ground-borne vibration:⁵

- Operating or permitting the operation of any device that creates vibration which is above the vibration perception threshold of any individual at or beyond the property boundary of the source if on private property, or at 150 feet (46 meters) from the source if on a public space or public right-of-way is prohibited. The perception threshold shall be a motion velocity of 0.01 in/sec over the range of 1 to 100 Hertz.

⁵ County of Los Angeles. *Municipal Codes*. Title 12, Chapter 8, *Noise Control*.

Adopted County of Los Angeles General Plan 2035, Noise Element

Of the 12 policies outlined in the Los Angeles County General Plan 2035 Update related to noise, 7 are applicable to the proposed initiative:⁶

Goal N-1: The reduction of excessive noise impacts.

- **Policy N 1.1:** Utilize land uses to buffer noise-sensitive uses from adverse noise impacts.
- **Policy N 1.2:** Reduce exposure to noise impacts by promoting land use compatibility.
- **Policy N 1.3:** Minimize impacts to noise-sensitive land uses by ensuring adequate site design, acoustical construction, and use of barriers, berms, or additional engineering controls through Best Available Technologies (BAT).
- **Policy N 1.4:** Enhance and promote noise abatement programs in an effort to maintain acceptable levels of noise as defined by the Los Angeles County Exterior Noise Standards and other applicable noise standards.
- **Policy N 1.6:** Ensure cumulative impacts related to noise do not exceed health-based safety margins.
- **Policy N 1.7:** Utilize traffic management and noise suppression techniques to minimize noise from traffic and transportation systems.
- **Policy N 1.9:** Require construction of suitable noise attenuation barriers on noise sensitive uses that would be exposed to exterior noise levels of 65 dBA CNEL and above, when unavoidable impacts are identified.

There are no General Plan policies related to ground-borne vibration.

2015 Antelope Valley Area Plan – Town & Country

The planning area of the Antelope Valley Area Plan – Town & Country, a component of the adopted County of Los Angeles General Plan, provides planning policies for 1,200 square miles of elevated desert terrain bounded by the San Gabriel Mountains on the south, Kern County to the north, and extending from Gorman on the west to San Bernardino County on the east, including approximately 95 percent of the area that would be potentially affected by the proposed initiative.

Chapter V, *Policy Statements*, establishes the following relevant policy relevant to noise in consideration of the proposed initiative:⁷

⁶ Los Angeles County Department of Regional Planning. Adopted 6 October 2015. *Los Angeles County 2035 General Plan*: Chapter 11: Noise Element. Available online at: planning.lacounty.gov/assets/upl/project/gp_final-general-plan-ch6.pdf

⁷ County of Los Angeles Department of Regional Planning. 4 December 1986. *Antelope Valley Areawide General Plan: A Component of the Los Angeles County General Plan*.

Goal: Land Use and Development Controls

- **Policy 174:** Use “worst case,” or highest potential noise exposure levels within the planning period as the basis of land use and development controls to prevent future noise-use incompatibilities.

Goal: Coordination, Support and Monitoring Activities

- **Policy 176:** Encourage the reduction of the present and future impact of excessive noise from all major sources by the judicious use of technology, planning, and regulatory measures.

There are no Antelope Valley Area Plan policies related to ground-borne vibration.

2012 Santa Clarita Valley Area Plan

The Castaic / Santa Clarita / Agua Dulce Subarea is located within the planning area of the Santa Clarita Valley Area Plan, which includes 5 percent of the area potentially affected by the proposed initiative. The Noise Element of the Santa Clarita Valley Area Plan is a comprehensive program for including noise management in the planning process, providing a tool for planners to use in achieving and maintaining land uses that are compatible with existing and future environmental noise levels. The Noise Element identifies current noise conditions within the planning area, and projects future noise impacts resulting from continued growth allowed by the Land Use Element. The following goals and policies are relevant to noise in consideration of the proposed initiative:⁸

Goal N-1: Noise Environment

- **Policy N-1.1.1:** Use the Noise and Land Use Compatibility Guidelines contained in Figure N-8, which are consistent with State guidelines, as a policy basis for decisions on land use and development proposals related to noise.
- **Policy N-1.1.2:** Continue to implement the adopted Noise Ordinance and other applicable code provisions, consistent with state and federal standards, which establish noise impact thresholds for noise abatement and attenuation, in order to reduce potential health hazards associated with high noise levels.
- **Policy N-1.1.3:** Include consideration of potential noise impacts in land use planning and development review decisions.
- **Policy N-1.1.4:** Control noise sources adjacent to residential, recreational, and community facilities, and those land uses classified as noise sensitive.

⁸ County of Los Angeles Department of Regional Planning. 27 November 2012. *Santa Clarita Valley Area Plan*. Chapter 6: Noise Element.

Goal N-3: Residential Neighborhoods

- **Policy N-3.1.1:** Require that developers of new single-family and multi-family residential neighborhoods in areas where the ambient noise levels exceed 60 CNEL provide mitigation measures for new residences to reduce interior noise levels to 45 CNEL, based on future traffic and railroad noise levels.
- **Policy N-3.1.2:** Require that developers of new single-family and multi-family residential neighborhoods in areas where the projected noise levels exceed 65 CNEL provide mitigation measures for new residences to reduce outdoor noise levels to 65 CNEL. This requirement would apply to rear yard areas for single-family developments, and to private open space and common recreational and open space areas for multi-family developments.
- **Policy N.3.1.4:** Require that those responsible for construction activities develop techniques to mitigate or minimize the noise impacts on residences, and adopt standards that regulate noise from construction activities that occur in or near residential neighborhoods.
- **Policy N.3.1.6:** Ensure that new residential buildings shall not be located within 150 feet of the centerline for Interstate 5.

There are no Santa Clarita Valley Area Plan policies related to ground-borne vibration.

SECTION 4.0 ANALYSIS

The analysis provided in this section evaluates the noise impact level of significance associated with the construction and operation of the proposed initiative. Relevant regulatory framework is used to determine the consistency of the proposed initiative with federal, state, and local laws that govern the regulation of noise to determine the level of significance of the proposed initiative impacts to existing ambient noise levels and sensitive receptors. The information used in this analysis is based on a review of relevant literature and technical reports (see Section 5.0, *References*, for a list of reference materials consulted).

4.1 AFFECTED ENVIRONMENT

4.1.1 Ambient Noise Levels

Presumed ambient noise levels for the proposed initiative subareas are referenced from the *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*, prepared by the U.S. Environmental Protection Agency (U.S. EPA) Office of Noise Abatement and Control in March 1974.¹ According to the published document, the range of outdoor day-night noise levels (L_{dn}) in the United States is very large, extending from 44 dB at a farm to over 87 dB at an apartment located adjacent to a freeway. Since the proposed initiative subareas are located in undeveloped, rural areas, it is assumed that the majority of the proposed initiative subareas will experience L_{dn} noise levels of 44–53 dB, consistent with the findings of the U.S. EPA. The potential range of outdoor L_{dn} noise levels mapped in Figure 4.1.1-1, *Outdoor Day-Night L_{dn} Noise Levels* (see figure at the end of this section), was determined by the findings of the U.S. EPA and by distance to major noise sources such as highways, major arterials, trains, airports, and industrial zones. Pursuant to SB 860, and California Government Code Section 65302(f), Tables 4.1.1-1 through 4.1.1-5 indicate the number of proposed initiative parcels that are located within 0.25 mile of an existing source of noise that may be incompatible for residential development.

**TABLE 4.1.1-1
PROPOSED INITIATIVE PARCELS WITHIN 0.25 MILE OF
A HIGHWAY OR FREEWAY**

| Subarea | Number of Parcels within 0.25 Mile |
|--|------------------------------------|
| Acton | 101 |
| Castaic/Santa Clarita/Agua Dulce | 136 |
| Lake Los Angeles/Llano/Valyermo/Littlerock | 689 |
| Lake Hughes/Gorman/West of Lancaster | 1,346 |
| Lancaster Northeast | 46 |
| East San Gabriel Mountains | 0 |
| Antelope Valley Northeast | 0 |
| Total | 2,318 |

¹ United States Environmental Protection Agency. March 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health with an Adequate Margin of Safety*. Prepared by the U.S. Environmental Protection Agency Office of Noise Abatement and Control. Available at: http://www.fican.org/pdf/EPA_Noise_Levels_Safety_1974.pdf

**TABLE 4.1.1-2
PROPOSED INITIATIVE PARCELS WITHIN 0.25 MILE OF
A PRIMARY ARTERIAL OR MAJOR STREET**

| Subarea | Number of Parcels within 0.25 Mile |
|--|---|
| Acton | 1,063 |
| Castaic/Santa Clarita/Agua Dulce | 1,930 |
| Lake Los Angeles/Llano/Valyermo/Littlerock | 11,306 |
| Lake Hughes/Gorman/West of Lancaster | 11,871 |
| Lancaster Northeast | 5,086 |
| East San Gabriel Mountains | 523 |
| Antelope Valley Northeast | 1,081 |
| Total | 32,860 |

**TABLE 4.1.1-3
PROPOSED INITIATIVE PARCELS WITHIN 0.25 MILE OF A
PASSENGER/FREIGHT RAILROAD OR GROUND RAPID TRANSIT SYSTEM**

| Subarea | Number of Parcels within 0.25 Mile |
|--|---|
| Acton | 79 |
| Castaic/Santa Clarita/Agua Dulce | 82 |
| Lake Los Angeles/Llano/Valyermo/Littlerock | 456 |
| Lake Hughes/Gorman/West of Lancaster | 0 |
| Lancaster Northeast | 162 |
| East San Gabriel Mountains | 0 |
| Antelope Valley Northeast | 0 |
| Total | 779 |

**TABLE 4.1.1-4
PROPOSED INITIATIVE PARCELS WITHIN 0.25 MILE OF
AN AIRPORT/HELIPORT**

| Subarea | Number of Parcels within 0.25 Mile |
|--|---|
| Acton | 1 |
| Castaic/Santa Clarita/Agua Dulce | 13 |
| Lake Los Angeles/Llano/Valyermo/Littlerock | 35 |
| Lake Hughes/Gorman/West of Lancaster | 65 |
| Lancaster Northeast | 5 |
| East San Gabriel Mountains | 0 |
| Antelope Valley Northeast | 0 |
| Total | 114 |

**TABLE 4.1.1-5
PROPOSED INITIATIVE PARCELS WITHIN 0.25 MILE OF
AN INDUSTRIAL ZONE**

| Subarea | Number of Parcels within 0.25 Mile |
|--|------------------------------------|
| Acton | 57 |
| Castaic/Santa Clarita/Agua Dulce | 272 |
| Lake Los Angeles/Llano/Valyermo/Littlerock | 246 |
| Lake Hughes/Gorman/West of Lancaster | 2,114 |
| Lancaster Northeast | 1,634 |
| East San Gabriel Mountains | 0 |
| Antelope Valley Northeast | 0 |
| Total | 4,323 |

4.1.2 Ground-Borne Vibration Levels

Due to the fact that the proposed initiative subareas are located in largely undeveloped, rural, or agricultural areas, it is assumed that the primary source of existing ground-borne vibration in the vicinity of the proposed initiative subareas is vehicular travel (e.g., standard cars, refuse trucks, and commercial trucks) on local roadways and freeways. According to the U.S. Department of Transportation, Federal Transit Administration (FTA) technical study, *Transit Noise and Vibration Impact Assessments*, typical road traffic-induced vibration levels are unlikely to be perceptible by people. In part, the FTA study states that “it is unusual for vibration from traffic including buses and trucks to be perceptible, even in locations close to major highways.”² Additionally, there are no active mines in the vicinity of the proposed initiative subareas; therefore, there are no ground-borne vibration conditions in the area related to blasting or other activities associated with active mines.

4.1.3 Sensitive Receptors

4.1.3.1 Residential Parcels

The area that would be subject to the proposed initiative consists of 42,867 parcels in the unincorporated area of Los Angeles County, all of which could potentially be developed into single-family residences. As these parcels are undeveloped, all 42,867 parcels shall be considered sensitive receptors.

² U.S. Department of Transportation, Federal Transit Administration. May 2006. *Transit Noise and Vibration Impact Assessment*. Washington, DC.

4.1.3.2 Schools

There are 20 elementary schools, middle schools, and high schools located in the vicinity of the parcels within the proposed initiative subareas, with the exception of the Acton subarea and Antelope Valley Northeast subarea, which do not contain any elementary, middle, or high schools (see Figure 4.1.3.2-1, *Schools within 0.25 Mile of Proposed Initiative Subareas*, at the end of this section). Table 4.1.3.2-1, *Schools within 0.25 Mile of Proposed Initiative Subareas*, indicates which schools are located in the vicinity of the proposed initiative subareas.

**TABLE 4.1.3.2-1
SCHOOLS WITHIN 0.25 MILE OF PROPOSED INITIATIVE SUBAREAS**

| Subarea | School | Public/Private |
|--|---|-----------------------|
| Acton | None | Not applicable |
| Castaic/Santa Clarita/Agua Dulce | Agua Dulce Elementary School | Public |
| | Desert Canyon Academy | Private |
| | Mint Canyon Elementary School | Public |
| | Castaic Elementary School | Public |
| | Castaic Middle School | Public |
| Lake Los Angeles/Llano/Valyermo/Littlerock | Almondale Middle School | Public |
| | Lake Los Angeles Elementary School | Public |
| | Vista San Gabriel Elementary School | Public |
| Lake Hughes/Gorman/West of Lancaster | Del Sur Elementary School | Public |
| | Del Sur Middle School | Public |
| | Gorman Elementary School | Public |
| | Gorman Middle School | Public |
| | Neenach Elementary School | Public |
| | Sommer Haven Church School | Private |
| | Hughes- Elizabeth Lakes Elementary School | Public |
| | Hughes- Elizabeth Lakes Middle School | Public |
| | Shema Christian | Private |
| Lancaster Northeast | Eastside Elementary School | Public |
| East San Gabriel Mountains | Hathaway- Sycamores NPS | Private |
| | Mount Baldy Elementary School | Public |
| Antelope Valley Northeast | None | Not applicable |

4.1.3.3 Medical Centers

There are no medical centers or hospitals located within 0.25 mile of the proposed initiative subareas.

4.1.3.4 Parks

In addition to residential parcels, schools, and hospitals, parks are also considered sensitive receptors. There are 30 parks located within a 0.25-mile radius of the proposed initiative subareas (see Figure 4.1.3.4-1, *Parks within 0.25 Mile of Proposed Initiative Subareas*, at the end of this section). Of these, 27 are regional parks and three are local parks. Table 4.1.3.4-1, *Local Parks within 0.25 Mile of Proposed Initiative Subareas*, and Table 4.1.3.4-2, *Regional Parks within 0.25 Mile of Proposed Initiative Subareas*, indicate which parks are located adjoining or in the vicinity of the proposed initiative subareas.

**TABLE 4.1.3.4-1
LOCAL PARKS WITHIN 0.25 MILE OF PROPOSED INITIATIVE SUBAREAS**

| Subarea | Park | Acreage within 0.25 Mile |
|--|------------------------|---------------------------------|
| Castaic/Santa Clarita/ Agua Dulce | Oak Spring Canyon Park | 1 |
| | West Creek Park | 18 |
| Lake Los Angeles/Llano/Valyermo/ Littlerock | Everett Martin Park | 6 |
| Total | | 25 |

**TABLE 3.8.2-8
REGIONAL PARKS WITHIN 0.25 MILE OF PROPOSED INITIATIVE SUBAREAS**

| Subarea | Park | Acreage within 0.25 Mile |
|--|--|-------------------------------------|
| Acton | Angeles National Forest | 34,116 |
| Antelope Valley Northeast | Phacelia Wildflower Sanctuary | 160 |
| Castaic/Santa Clarita/Agua Dulce | Castaic Lake State Recreation Area | 956 |
| | Castaic Regional Sports Complex | 24 |
| | Los Padres National Forest | 132 |
| | Michael D Antonovich Open Space | 6 |
| | Michael D. Antonovich Regional Park at Joughin Ranch | 1 |
| | Placerita Canyon Natural Area and Nature Center | 30 |
| | Santa Clarita Woodlands Park | 1,502 |
| | Tesoro Adobe Historic Park | 18 |
| | Vasquez Rocks Natural Area and Nature Center | 507 |
| | East San Gabriel Mountains | Arcadia Wilderness Park |
| Claremont Hills Wilderness Park | | 211 |
| Dexter Park | | 38 |
| River Wilderness Park | | 11 |
| Winery Canyon Open Space | | 94 |
| Lake Hughes/Gorman/ West of Lancaster | Arthur B. Ripley Desert Woodland State Park | 434 |
| | George R Bones Wildlife Sanctuary | 99 |
| | Hungry Valley State Vehicular Recreation Area | 1,125 |
| | Neenach Habitat Preserve | 40 |
| Lake Los Angeles/Llano/Valyermo/ Littlerock | Alpine Butte Wildlife Sanctuary | 315 |
| | Big Rock Wash Wildlife Sanctuary | 80 |
| | Blalock Wildlife Sanctuary | 110 |
| | Devil's Punchbowl Natural Area and Nature Center | 235 |
| | Jackrabbit Flats Wildlife Sanctuary | 39 |
| | Mescal Wildlife Sanctuary | 99 |
| | Theodore Payne Wildlife Sanctuary | 157 |
| Total | | 40,542 |

4.1.3.5 Public and Private Airports

There are three public use airports and eight private use airports located within a 2-mile radius of the proposed initiative subareas (see Figure 4.1.4-1, *Airports within 2 Miles of Proposed Initiative Subareas*, at the end of this section). Table 4.1.4-1, *Airports within 2 Miles of Proposed Initiative Subareas*, indicates that there are a total of 5,549 parcels located within 2 miles of a public and/or private use airport.

**TABLE 4.1.4-1
AIRPORTS WITHIN 2 MILES OF PROPOSED INITIATIVE SUBAREAS**

| Subarea | Airport | Private/Public | Number of Parcels within 2 miles |
|--|----------------------------------|----------------|----------------------------------|
| Acton | None | Not applicable | 0 |
| Castaic/Santa Clarita/Agua Dulce | Agua Dulce Airport | Public | 390 |
| Lake Los Angeles/Llano/Valyermo/Littlerock | Palmdale Regional Airport | Public | 19 |
| | Brian Ranch Airport | Private | 779 |
| | Crystal Airport | Private | 602 |
| | Gray Butte Field | Private | 369 |
| | Nichols Farms Airport | Private | 644 |
| Lake Hughes/Gorman/West of Lancaster | General Williams J. Fox Airfield | Public | 105 |
| | Bohunk's Airport | Private | 925 |
| | Quail Lake Sky Park | Private | 74 |
| | Skyotee Ranch | Private | 180 |
| | Little Buttes Antique Airfield | Private | 1,462 |
| Lancaster Northeast | None | Not applicable | 0 |
| East San Gabriel Mountains | None | Not applicable | 0 |
| Antelope Valley Northeast | None | Not applicable | 0 |

4.2 SIGNIFICANCE CRITERIA

4.2.1 CEQA Thresholds

The noise impacts associated with the proposed initiative can be separated into construction-related short-term impacts and operation-related long-term, permanent impacts. According to Appendix G of the California of the State CEQA Guidelines,³ there are six questions that should be addressed to determine the potential impacts of the proposed initiative:

- Would the proposed initiative result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?
- Would the proposed initiative result in exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?

³ California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000–15387, Appendix G.

- Would the proposed initiative result in a substantial permanent increase in ambient noise levels in the proposed initiative vicinity above levels existing without the proposed initiative?
- Would the proposed initiative result in a substantial temporary or periodic increase in ambient noise levels in the proposed initiative vicinity above levels existing without the proposed initiative?
- For a proposed initiative parcel located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the proposed initiative expose people residing or working in the proposed initiative area to excessive noise levels?
- For a proposed initiative parcel within the vicinity of a private airstrip, would the proposed initiative expose people residing or working in the proposed initiative area to excessive noise levels?

4.2.2 FTA Vibration Thresholds

The FTA guidelines set forth in its technical manual, *Transit Noise and Vibration Impact Assessment*, will be utilized in determining the vibration impacts associated with the proposed initiative.⁴ The FTA measures building vibration damage in peak particle velocity (PPV), which is measured in inches per second. Table 4.2.2-1, *FTA Construction Vibration Impact Criteria for Building Damage*, provides the FTA vibration criteria applicable to construction activities. According to the FTA guidelines, a vibration criterion of 0.2 inch per second should be considered as the significant impact level for non-engineered timber and masonry buildings. Furthermore, pursuant to the FTA guidelines, a vibration damage criteria of 0.50 inch per second has been designated for structures or buildings constructed of reinforced-concrete, steel, or timber.

**TABLE 4.2.2-1
FTA CONSTRUCTION VIBRATION
IMPACT CRITERIA FOR BUILDING DAMAGE**

| Building Category | PPV (inches per second) |
|---|-------------------------|
| I. Reinforced-concrete, steel or timber (no plaster) | 0.5 |
| II. Engineered concrete and masonry (no plaster) | 0.3 |
| III. Non-engineered timber and masonry buildings | 0.2 |
| IV. Buildings extremely susceptible to vibration damage | 0.12 |

SOURCE: U.S. Department of Transportation, Federal Transit Administration. May 2006. *Transit Noise and Vibration Impact Assessment*. Washington, DC.

4.3 IMPACT ANALYSIS

The County's Noise Regulation states that the baseline ambient noise shall be the actual measured ambient noise level or the County's presumed ambient noise level, whichever is greater. As presented in Section 4.1.1, the ambient noise level is assumed to be 44–53 dB for the purposes of determining the proposed initiative's noise impacts on the surrounding communities.

⁴ U.S. Department of Transportation, Federal Transit Administration. May 2006. *Transit Noise and Vibration Impact Assessment*. Washington, DC.

4.3.1 Construction Noise

Noise impacts from construction of the proposed initiative occurring within or adjacent to the proposed initiative area would be a function of the noise generated by construction equipment, the location of the equipment, the timing and duration of the noise-generating construction activities, and the relative distance to noise sensitive receptors. Construction activities would generally include ground clearing, site grading, and building construction. Each phase of construction would involve the use of various types of construction equipment and would, therefore, have its own distinct noise characteristics. For example, site grading typically requires the use of earth-moving equipment, such as excavators, front-end loaders, and heavy-duty trucks. Noise from construction equipment generate both steady-state and periodic noise that could be heard within and adjacent to the proposed initiative area.

Individual pieces of construction equipment that would be used during construction of homes resulting from the issuance of building permits from the proposed initiative could potentially generate maximum noise levels ranging from 71 dBA to 90 dBA at a reference distance of 50 feet from the noise source, as shown in Table 4.3.1-1, *Noise Levels for Typical Construction Equipment*. These maximum noise levels would occur when equipment is operating under full power conditions (i.e., with the equipment engine at maximum speed). However, equipment on construction sites often operates under less than full power conditions.

**TABLE 4.3.1-1
NOISE LEVELS FOR TYPICAL CONSTRUCTION EQUIPMENT**

| Equipment | Estimated Usage Factor* (%) | Typical Noise Level at 50 feet from Source (dBA) |
|----------------------------|-----------------------------|--|
| Air compressor | 40 | 78 |
| Cement and mortar mixer | 50 | 80 |
| Concrete mixer truck | 40 | 79 |
| Concrete saw | 20 | 90 |
| Crane | 16 | 81 |
| Drill rig | 20 | 84 |
| Forklift | 10 | 75 |
| Generator | 50 | 81 |
| Grader | 40 | 85 |
| Dump / haul truck | 40 | 76 |
| Excavator | 40 | 81 |
| Paver | 50 | 77 |
| Pump | 50 | 71 |
| Roller | 20 | 80 |
| Rubber tired loader | 40 | 79 |
| Tractor / loader / backhoe | 40 | 80 |
| Water truck | 10 | 82 |
| Welders | 40 | 74 |

NOTE: * Usage factor represents the percentage of time the equipment would be operating at full speed.

SOURCE: Federal Highway Administration. January 2006. *FHWA Roadway Construction Noise Model User's Guide*. Prepared by: U.S. Department of Transportation, Research and Innovative Technology Administration, John A. Volpe National Transportation Systems Center Acoustics Facility. Cambridge, MA.

To more accurately characterize construction-phase noise levels, the average noise level associated with each phase of construction is calculated based on the quantity, type, and usage factors for

each type of equipment that would be used during each construction phase. These noise levels are typically associated with multiple pieces of equipment operating simultaneously.

During each phase of construction, there would be a different mix of equipment operating, and noise levels would vary based on the amount of equipment in operation and the location of the activity. The USEPA has compiled data regarding the noise-generating characteristics of specific types of construction equipment during typical construction phases. These data are presented in Table 4.3.1-2, *Typical Outdoor Construction Noise Levels*, for a reference distance of 50 feet. These activities are generally point sources, which would attenuate with distance from the construction site at a rate of approximately 6.0 dB for every doubling of distance.

**TABLE 4.3.1-2
TYPICAL OUTDOOR CONSTRUCTION NOISE LEVELS**

| Construction Phase | Noise Level (dBA Leq) | |
|--------------------|-----------------------|-----------------------|
| | 50 Feet | 50 Feet with Mufflers |
| Ground clearing | 84 | 82 |
| Excavation/grading | 89 | 86 |
| Foundations | 78 | 77 |
| Structural/paving | 85 | 83 |
| Finishing | 89 | 86 |

SOURCE: U.S. Environmental Protection Agency. 1971. *Noise from Construction Equipment and Operation, Building Equipment and Home Appliances*. PB 206717. Washington, DC.

As shown in Table 4.3.1-2, the excavation/grading phase and finishing phase of construction would generate the highest levels of noise (at 89 dBA). This is due in large part to the operation of heavy equipment, but it should be noted that only a limited amount of equipment will be operating near a given location at a particular time because not all affected parcels would initiate construction at the same time. Based on the information in Table 4.3.1-2, construction noise levels could periodically reach approximately 77 to 89 dBA at a distance of 50 feet from the proposed initiative area, depending on the use of muffler on construction equipment.

Based on these noise levels, and that noise from a point source attenuate by 6.0 dBA per doubling of distance from the source, the noise impacts on sensitive receptors can be determined by Equation 1:

$$(1) \quad L_2 = L_1 - 20 \log_{10} \left(\frac{d_1}{d_2} \right)$$

Where

L_1 = known sound level at d_1

L_2 = desired sound level at d_2

d_1 = distance of known sound level from the noise source

d_2 = distance of the sensitive receptor from the noise source

By assigning the highest potential noise level during construction at 89 dBA (L_1) at a reference distance of 50 feet (d_1), the distance at which construction activities would reach a maximum of 75 dBA (L_2) and be below the maximum allowable noise level for construction activities near a single-

family residence,⁵ is approximately 251 feet (d_2). Similarly, Equation 1 was used to calculate the distance at which the noise impacts from each construction phase would be below 75 dBA (Table 4.3.1-3, *Predicted Distance at which Noise Impact Would Be below 75 dBA*).

**TABLE 4.3.1-3
PREDICTED DISTANCE AT WHICH
NOISE IMPACT WOULD BE BELOW 75 dBA**

| Construction Phase | Distance* (feet) |
|--------------------|------------------|
| Ground clearing | 141 |
| Excavation/grading | 251 |
| Foundations | 71 |
| Structural/paving | 158 |
| Finishing | 251 |

NOTE: * According to Section 12.08.440 of the Los Angeles County Municipal Code, construction activities may not exceed 75 dBA at a distance of 50 feet between the hours of 7:00 a.m. and 8:00 p.m. in any residential zone of the County or within 500 feet thereof.

The distance at which construction noise impacts will be below the threshold of significance for a residential zone for the different phases of construction ranges from 71 to 251 feet. As Table 4.3.1-3 indicates, construction of the proposed initiative would potentially have a significant impact on sensitive receptors during all phases of construction, depending on the distance to the sensitive receptor. Therefore, construction noise related to the development of single-family residences associated with the proposed initiative has the potential to exceed the 75-dBA limit imposed by Section 12.08.440 of the Los Angeles County Municipal Code, and will require the implementation of mitigation measures.

4.3.2 Construction Vibration

Construction activities can generate varying degrees of ground-borne vibration, depending on the construction procedures and the type of construction equipment used. The operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. Propagation of vibration from source to the receiver is dependent on soil type and on the receiving building. Vibration propagates more efficiently in stiff soils than in loose soils. The vibration levels inside a building depend on how the building foundation is coupled to the soil and the construction of the building. In general, heavier buildings have a lower response to vibration than smaller, lighter buildings.

Ground-borne vibration from construction rarely results in a negative response from people who are outdoors. Negative responses are typically associated with the shaking of the building where the person is located. Since construction vibration is transient, the Caltrans guidance manual can be used to categorize the potential human response to construction-induced vibration (Table 4.3.2-1, *Human Response to Transient Vibration*).⁶

⁵ County of Los Angeles. *Municipal Codes*. Title 12, Chapter 8, *Noise Control*.

⁶ California Department of Transportation. June 2004. *Transportation- and Construction-Induced Vibration Guidance Manual*. Sacramento, CA.

**TABLE 4.3.2-1
HUMAN RESPONSE TO TRANSIENT VIBRATION**

| Average Human Response | ppv (in/sec) |
|------------------------|--------------|
| Severe | 2.000 |
| Strongly perceptible | 0.900 |
| Distinctly perceptible | 0.240 |
| Barely perceptible | 0.035 |

The proposed initiative would generate ground-borne construction vibration during excavation and grading activities where heavy construction equipment, such as large bulldozers, would be used. The FTA has published standard vibration velocities for various construction equipment operations. The typical vibration levels (in terms of inches per second PPV) at a reference distance of 25 feet, 50 feet, and 100 feet for construction equipment used during construction activities are listed in Table 4.3.2-2, *Vibration Source Levels for Construction Equipment*.

**TABLE 4.3.2-2
VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT**

| Equipment | PPV at 25 feet (inches per second) | PPV at 50 feet (inches per second) | PPV at 100 feet (inches per second) |
|----------------------------|---------------------------------------|---------------------------------------|--|
| Vibratory roller | 0.210 | 0.074 | 0.026 |
| Large bulldozer | 0.089 | 0.031 | 0.011 |
| Loaded trucks (haul truck) | 0.076 | 0.027 | 0.010 |
| Jackhammer | 0.035 | 0.012 | 0.004 |
| Small bulldozer | 0.003 | 0.001 | 0.000 |

SOURCE: Federal Transit Administration. May 2006. *Transit Noise and Vibration Impact Assessment*. Washington, DC.

Construction of the homes associated with the issuance of building permits as a result of the proposed initiative would not include demolition or pile driving methods, and as such, impacts from these activities are not included in this construction vibration analysis. As indicated in Table 4.3.2-1, vibration velocities from most heavy construction operations that would be used during construction of homes associated with the proposed initiative would range from 0.000 to 0.026 inch per second PPV at a reference distance of 100 feet from the equipment. This estimated range of vibration velocity levels at a distance of 100 feet is well below the category of “barely perceptible,” which is defined as 0.035 inch per second PPV, as indicated in Table 4.3.2-1. This estimated range is also below the vibration criterion that would be considered as the significant impact level for non-engineered timber and masonry buildings, which is defined as 0.2 inch per second PPV, as indicated in Table 4.2.2-1. Therefore, construction vibration related to the development of single-family residences associated with the proposed initiative would not likely expose people to excessive ground-borne vibration or ground-borne noise levels.

4.3.3 Operational Noise

The proposed initiative is expected to generate traffic noise associated with water trucks traveling to and from the proposed initiative area. According to the Traffic Impact Study prepared by Fehr & Peers, the proposed initiative is expected to result in approximately 134 total water hauling truck trips per day. As indicated in Table 4.3.1-1, the typical noise level of a water truck at 50 feet is 82 dBA. The noise level at other distances can be estimated using Equation 1 (Table 4.3.3-1, *Noise Level of Water Truck at Various Distances*).

**TABLE 4.3.3-1
NOISE LEVEL OF WATER TRUCK AT VARIOUS DISTANCES**

| Distance (feet) | Noise Level (dBA) |
|-----------------|-------------------|
| 50 | 82 |
| 100 | 76 |
| 150 | 72 |
| 200 | 70 |
| 250 | 68 |
| 300 | 66 |
| 350 | 65 |
| 400 | 64 |
| 450 | 63 |
| 500 | 62 |
| 550 | 61 |
| 600 | 60 |
| 650 | 60 |
| 700 | 59 |
| 750 | 58 |
| 800 | 58 |

Per the U.S. EPA, the proposed initiative area and immediate vicinity have a range of ambient noise levels, with small town and quiet suburban areas ranging from 46 to 53 dBA, suburban areas ranging from 53 to 58 dBA, and urban areas ranging from 58 to 63 dBA.⁷

As discussed in Section 2.2, one way of estimating a person’s subjective reaction to a permanent increase in ambient noise levels is to examine the difference between the new noise level and the existing ambient noise level:

- Typically, a change of 1 dBA cannot be perceived outside of controlled laboratory conditions.
- A change of 3 dBA is considered a just-perceivable difference.
- A change of at least 5 dBA is required before any noticeable change in community response would be expected. A 5-dBA increase is often considered a significant impact.
- A change of 10 dBA is subjectively heard as an approximate doubling of loudness and causes an adverse community response.

The ambient noise levels in the proposed initiative area are low relative to those generated by water trucks. At a reference distance of 100 feet, a water truck would result in a noise level of 76 dBA, which is more than 10 dBA greater than the ambient noise levels of the loudest areas (urban: 58–63 dBA). Even in the loudest areas, the water truck would have to be driving on roads located at a minimum of 450 feet away from the receptor to not result in a significant impact. In the quietest areas (small town and quiet suburban: 46–53 dBA), the water truck would have to be driving on roads located at a minimum of 1,774 feet away from the receptor to not result in a significant impact.

⁷ United States Environmental Protection Agency. March 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health with an Adequate Margin of Safety*. Prepared by the U.S. Environmental Protection Agency Office of Noise Abatement and Control. Available at: http://www.ficam.org/pdf/EPA_Noise_Levels_Safety_1974.pdf

Due to the generally quiet and rural nature of the area within and surrounding the proposed initiative parcels, the regular operation of the water trucks would result in substantial periodic increases, but not a permanent steady state increase, in ambient noise levels above levels existing without the proposed initiative. Mitigation measures would have to be implemented to reduce impacts to below the level of significance.

4.3.4 Operational Vibration

Water trucks would also generate ground-borne vibration as they travel to and from the proposed initiative area. Thus, an analysis of potential vibration impacts associated with building damage from ground-borne vibration along the local access routes to the proposed initiative area was conducted. As indicated in Table 4.3.2-2, a loaded truck would generate a ground-borne vibration level of 0.010 inch per second PPV at a reference distance of 100 feet from the truck. This is well below the “barely perceptible” category, which is defined as 0.035 inch per second PPV in Table 4.3.2-1. Therefore, potential impacts from vibration during operation would be less than significant.

4.3.5 Airport Land Use Plan and Public Airports

The proposed initiative is not anticipated to result in significant impacts from airport land use plans or public airports because there are no proposed initiative parcels located within the 60 CNEL noise contour of the three public airports that are within a 2-mile radius of the proposed initiative area. Therefore, the proposed initiative would not result in impacts from exposing people residing or working in the proposed initiative area to excessive noise levels.

4.3.6 Private Airstrips

The proposed initiative is not anticipated to result in significant impacts from private airports because there are no proposed initiative parcels located within the 60 CNEL noise contour of the eight private airstrips that are within a 2-mile radius of the proposed initiative area. Therefore, the proposed initiative would not result in impacts from exposing people residing or working in the proposed initiative area to excessive noise levels.

4.4 CUMULATIVE IMPACTS

The proposed initiative together with related projects and future growth could potentially contribute to cumulative noise impacts. The potential for cumulative noise impacts to occur is specific to the distance between each related initiative parcel and their stationary noise sources, including the cumulative traffic that these initiatives would add to the surrounding roadway network.

There are four related projects in the vicinity of the proposed initiative area (Table 4.4.1-1, *Related Projects*).

**TABLE 4.4.1-1
RELATED PROJECTS**

| Name | Project Type |
|------------------------------|----------------|
| Centennial Project | Residential |
| High Desert Corridor Project | Transportation |
| Newhall Ranch Specific Plan | Specific Plan |
| Northlake Specific Plan | Specific Plan |

Noise from construction as a result of the proposed initiative is typically localized and has the potential to affect areas in the immediate vicinity of the construction site. Were it to occur at the same time, construction noise from the proposed initiative would combine with the construction noise from the Centennial Project, which is located in the Lake Hughes/Gorman/West of Lancaster subarea, to result in cumulative construction noise impacts.

Noise from the water trucks as a result of the proposed initiative would combine with traffic noise from the Centennial Project, which is located in the Lake Hughes/Gorman/West of Lancaster subarea, and the High Desert Corridor Project, which is located in the Lake Los Angeles/Llano/Valyermo/Littlerock subarea, to result in cumulative operational noise impacts.

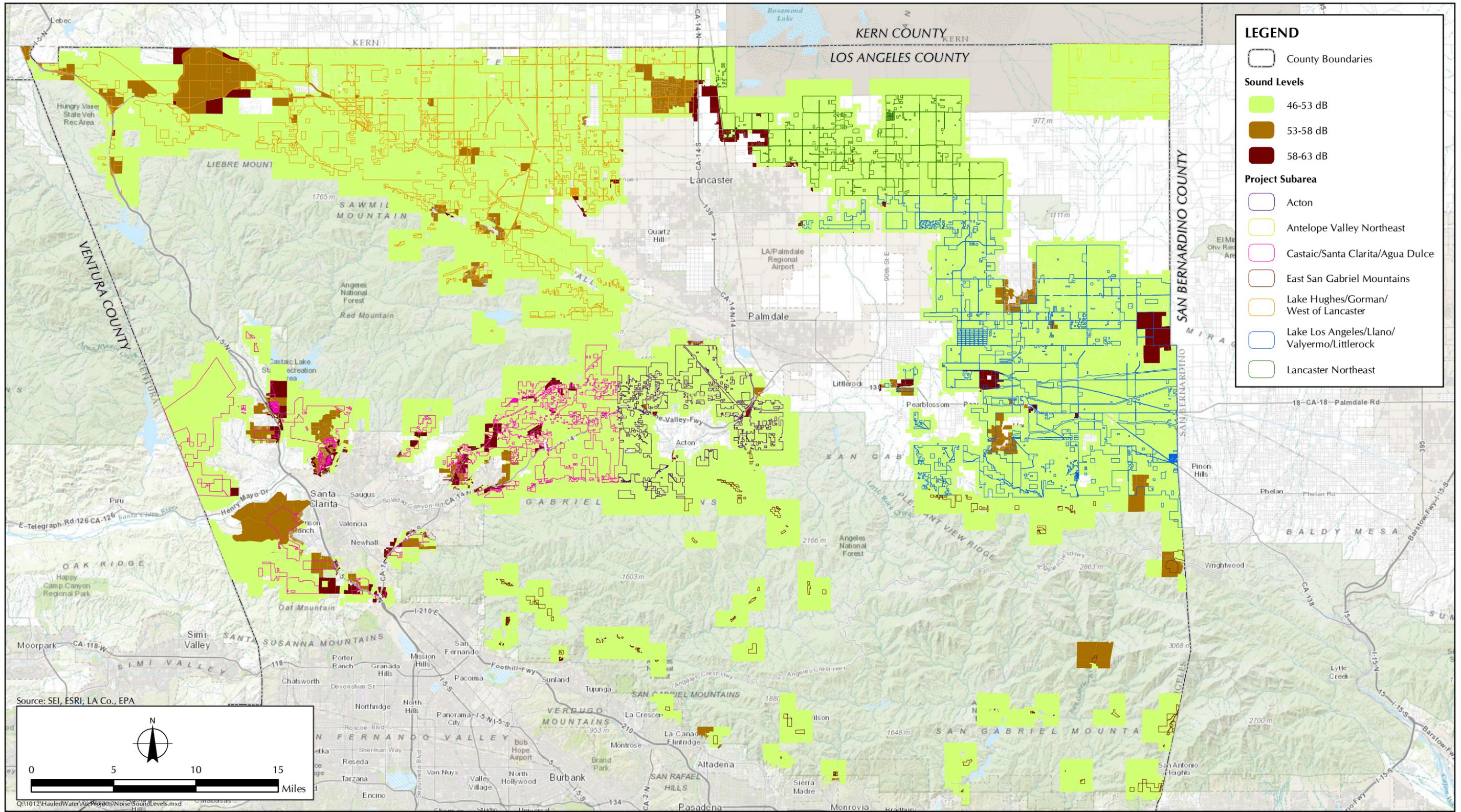


FIGURE 4.1.1-1
Outdoor Day-Night Ldn Noise Levels

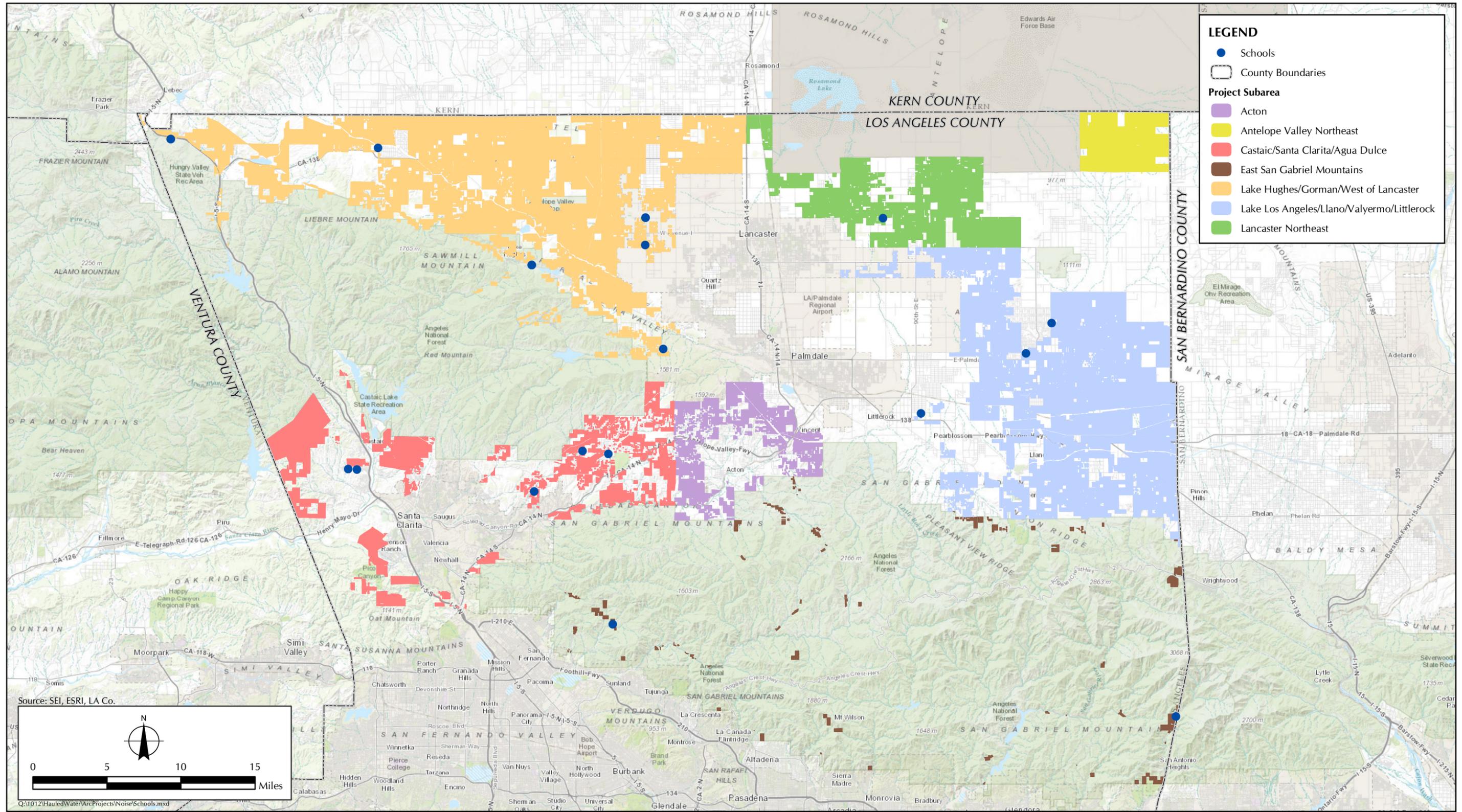


FIGURE 4.1.3.2-1

Schools Within 0.25 Mile of Proposed Initiative Subareas

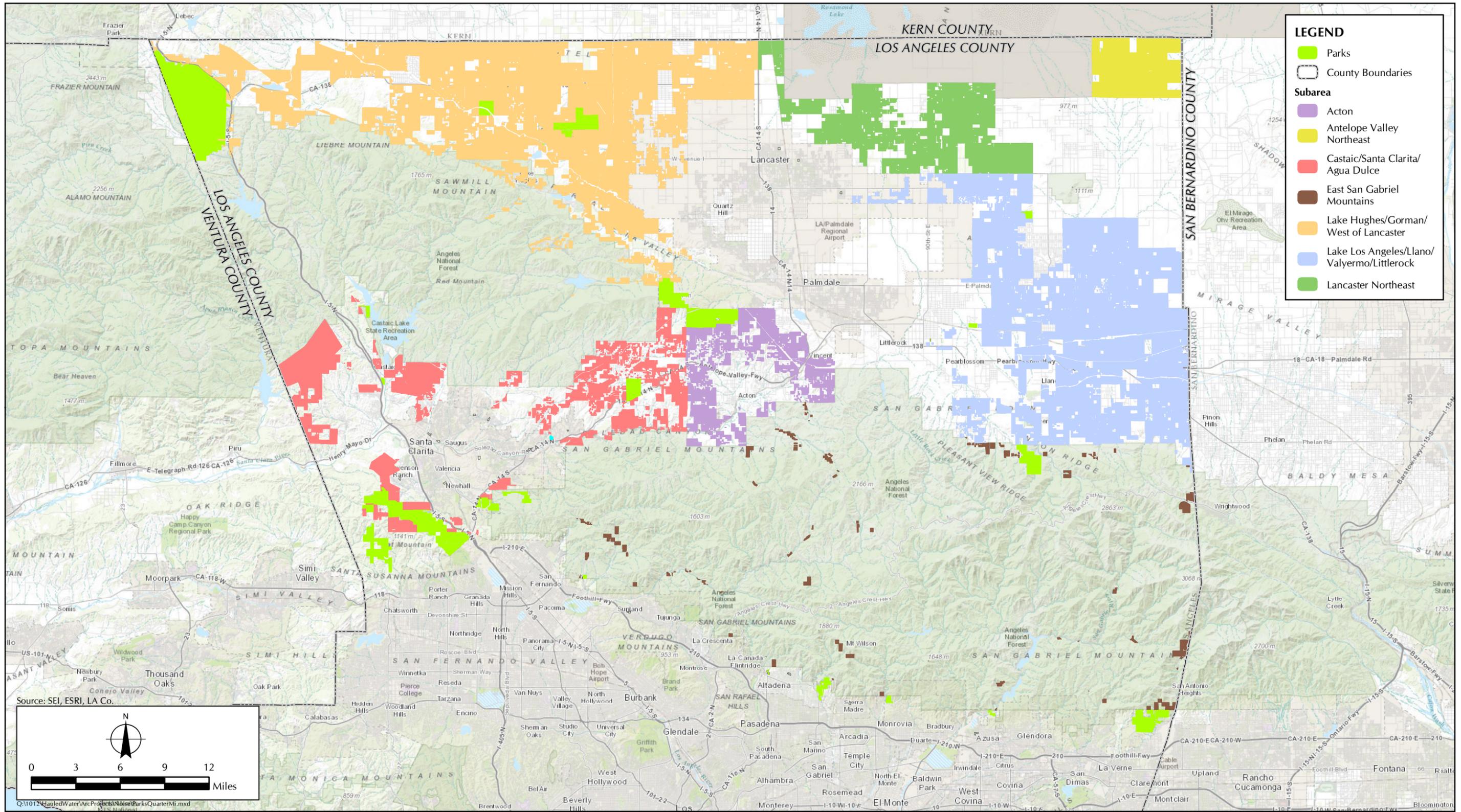


FIGURE 4.1.3.4-1
Parks Within 0.25 Mile of Proposed Initiative Subareas

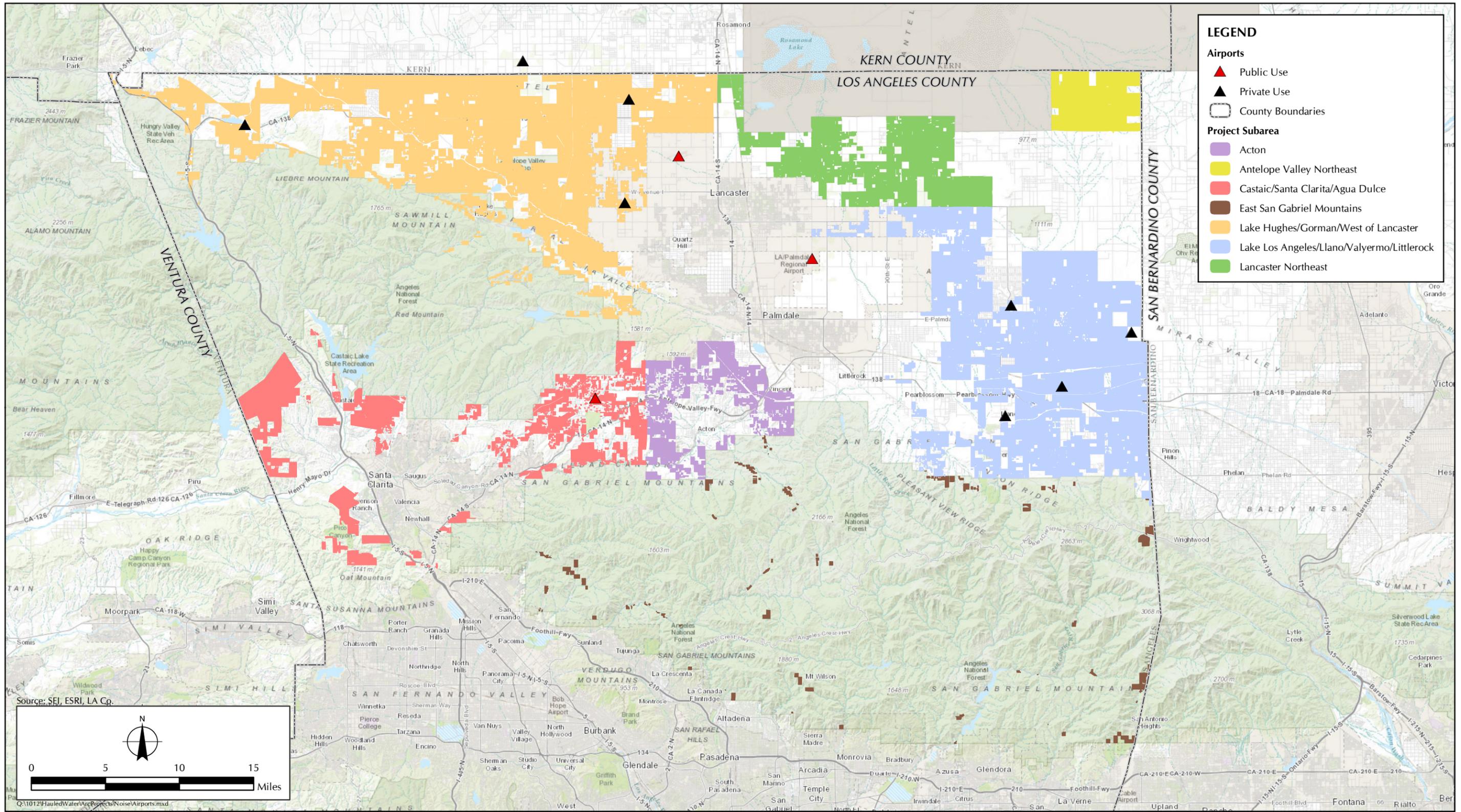


FIGURE 4.1.4-1
Airports Within 2 Miles of Proposed Initiative Subareas

SECTION 5.0 REFERENCES

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Appendix M

Traffic Analysis

Single-Family Residential Hauled Water Initiative for New Development: Traffic Analysis

Prepared for:
Sapphos Environmental, Inc.

July 2015

LA14-2680

FEHR & PEERS
Improving Communities Since 1985

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I. INTRODUCTION

This traffic impact report evaluates the potential for the implementation of the Single-Family Residential Hauled Water Initiative for New Development (proposed project) to result in transportation and traffic impacts in North Los Angeles County's unincorporated areas (study area). The study area consists of unincorporated land outside of existing water districts and outside of incorporated city planning areas, such as the Cities of Palmdale, Lancaster, and Santa Clarita. The study was conducted by Fehr & Peers in support of the Environmental Impact Report (EIR) for the Hauled Water Initiative.

PROJECT DESCRIPTION

The Los Angeles County Board of Supervisors has directed the consideration of a proposed ordinance that would allow hauled water as the primary source of potable water for new development of single-family residences on existing vacant legal lots, or lots that are eligible for a certificate of compliance, where the property owner has demonstrated that there is no other feasible source of private or municipal potable water, or capability of developing an on-site well to provide potable water to the property, and only if the property lies outside of the boundaries of the local private and municipal water districts. The ordinance is proposed for parcels that are larger than 2,000 square feet, with slopes under 50 percent (26.6 degrees). All criteria would need to be met at the effective date of the ordinance. The term vacant is used as identified by the County Assessor. The ordinance would be applicable solely to the unincorporated areas of Los Angeles County.

In order to determine which areas would be subject to the proposed initiative, Los Angeles County developed a geographic information system (GIS) suitability model in 2012 based on five criteria defined by the Task Force:

- Parcels located in the unincorporated territory of Los Angeles County
- Vacant parcels
- Parcels located in areas where there is no designated water purveyor
- Zoning and General Plan designation that allow for development of a single-family residence
- Parcel size >2,000 square feet with slopes under 50 percent (26.6 degrees)

The model was re-run in 2015 to incorporate the recently adopted Antelope Valley Town and Country Plan and General Plan amendment.

While the proposed initiative would be County-wide, the area that would be potentially eligible for the consideration of the use of hauled water consists of 42,867 parcels, wholly located in within the 2015 boundaries of the 5th Supervisorial District, in the unincorporated territory of Los Angeles County, as shown in Figure 1. The combined land area covered by the proposed initiative is approximately 340,461 acres or approximately 532 square miles.

The parcels that would potentially be eligible for the use of hauled water are located in the northern one-third of Los Angeles County, including areas located in the San Gabriel Mountains, in the Antelope Valley; areas located northeast of the City of Santa Clarita, north and south of State Route 14; areas that are southwest of the City of Palmdale in the communities of Agua Dulce and Acton. The subject parcels have been categorized into seven subareas:

1. Lake Hughes/Gorman/West of Lancaster – The Lake Hughes/Gorman/West of Lancaster subarea is located in an area generally located west of State Highway 14 and north of the Angeles National Forest. This subarea consists of 15,166 parcels and encompasses approximately 195.4 square miles (125,041.4 acres). State Highway 138 bisects the subarea in an east-west direction, and State Highway 14 forms the eastern boundary of this subarea. This subarea is adjacent to the northwestern edge of the incorporated City of Lancaster.
2. Lancaster Northeast – The Lancaster Northeast subarea is located in an area generally east of State Highway 14 and north of East Avenue J. This subarea consists of 6,794 parcels and encompasses approximately 55.2 square miles (35,324.90 acres). State Highway 14 forms the western boundary and East Avenue J forms the southern boundary of this subarea. Edwards Air Force Base is located north of the study area. This subarea is adjacent to the northeastern edge of the incorporated City of Lancaster.
3. Antelope Valley Northeast – The Antelope Valley Northeast subarea is located in an area generally located north of East Avenue E and east of 165th Street East in the far northeastern portion of Los Angeles County. This subarea consists of 1,938 parcels and encompasses approximately 22.7 square miles (14,528.23 acres). This subarea is relatively isolated and is located in the northeastern area of Los Angeles County. This subarea is located approximately 10.9 miles northeast of the incorporated City of Palmdale and approximately 11.3 miles northeast of the incorporated City of Lancaster.
4. Lake Los Angeles/Llano/Valyermo/Littlerock – The Lake Los Angeles/Llano/Valyermo/Littlerock subarea is located in an area generally south of East Avenue J, east of 47th Street East. This subarea consists of 14,822 parcels and encompasses approximately 168.8 square miles (108,067.33 acres). Avenue J forms the northern boundary, the Cities of Palmdale and Lancaster form the western boundary, and the San Bernardino County line forms the eastern boundary of this subarea. This subarea is adjacent to the eastern edge of the incorporated City of Palmdale.

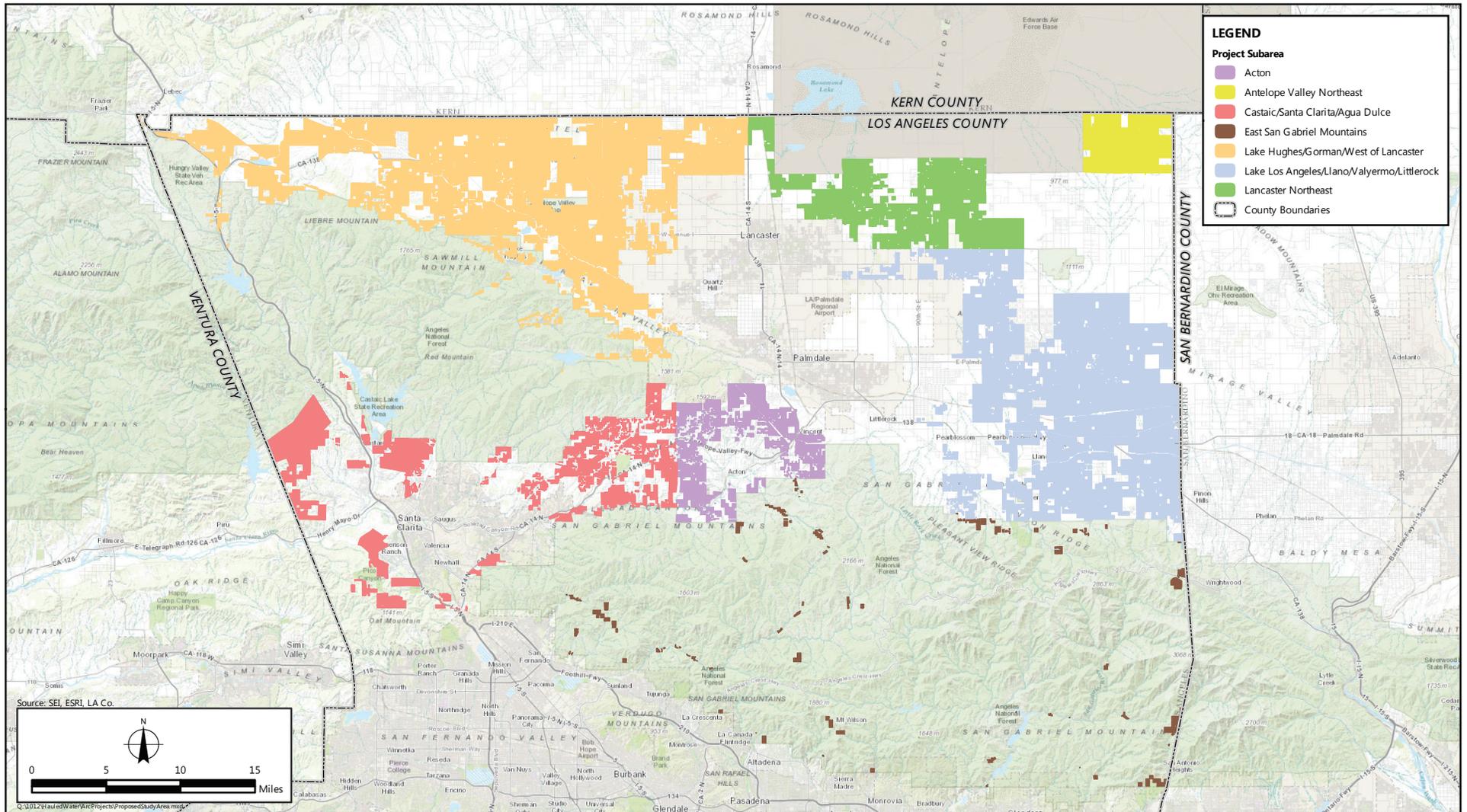


Figure 1
Study Area



5. Acton – The Acton subarea is located in an area generally east of Hubbard Road and West of 47th Street East. This subarea consists of 1,246 parcels and encompasses approximately 28.2 square miles (18,067.22 acres). The Angeles National Forest is located to the north and south of the subarea. This subarea is adjacent to the southwestern edge of the incorporated City of Palmdale.
6. Castaic/Santa Clarita/Agua Dulce – The Castaic/Santa Clarita/Agua Dulce subarea is located generally west of Hubbard Road and north of the 210 Freeway, excluding Kagel Canyon. This subarea consists of 2,243 parcels and encompasses approximately 55.2 square miles (35,340.2 acres). This subarea is adjacent to the northern, western, and southern edges of the incorporated City of Santa Clarita and the northern edge of the incorporated City of Los Angeles.
7. East San Gabriel Mountains – The East San Gabriel Mountains subarea consists of parcels generally located within the Angeles National Forest east of State Highway 14, north of the 210 freeway, south of the Pearblossom Highway, and west of the San Bernardino County line. This subarea consists of 658 parcels and encompasses approximately 6.4 square miles (4,092.26 acres). This subarea is adjacent to the northern edges of the San Gabriel and San Fernando Valleys.

STUDY SCOPE

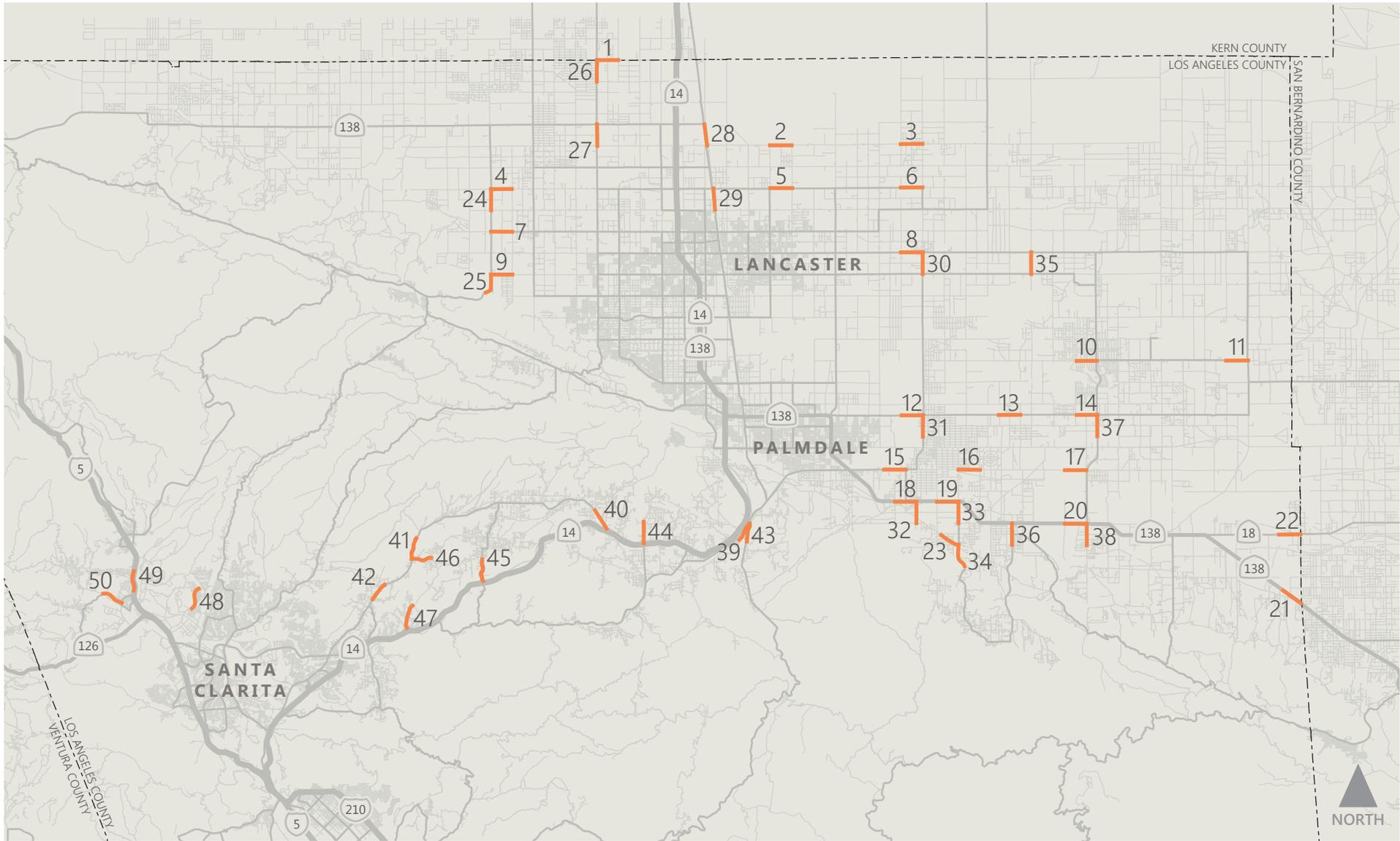
The scope of work for this study was determined in consultation with the Los Angeles County Department of Public Works, Traffic and Lighting Division (LACDPW, TLD) following direct outreach to Caltrans and the Cities of Lancaster, Palmdale, Santa Clarita and Los Angeles. The study analyzed the potential project-generated traffic impacts on the street and highway system throughout the unincorporated areas of Northern Los Angeles County near the proposed developable parcels. The following traffic scenarios were analyzed in the study:

- Existing Year (2015) Conditions – The analysis of existing traffic conditions provided a basis for the remainder of the study. The existing conditions analysis included an assessment of streets, traffic volumes and operating conditions.
- Existing Year (2015) plus Project Conditions – This traffic scenario provides forecasts of traffic volumes and an assessment of operating conditions under baseline conditions with the addition of project generated traffic. The impacts of the proposed Project on baseline traffic operating conditions were then identified.
- Horizon Year (2035) Conditions – Future traffic projections without the proposed Project were developed for the year 2035. The objective of this analysis was to project future traffic growth and operating conditions that could be expected to result from regional growth and related projects in the vicinity of the study area by the year 2035. This scenario is consistent with the land use and network in the Antelope Valley Area Plan (Town & Country) Update.

- Horizon Year (2035) plus Project Conditions – This traffic scenario provides projected traffic volumes and an assessment of operating conditions under future conditions with the addition of project-generated traffic. Outside of the study area, land use and roadway network assumptions are consistent with Horizon Year Conditions. The impacts of the proposed Project on future traffic operating conditions were then identified.

The potential for project impacts was evaluated for daily weekday conditions along 50 roadway segments in the study area. The analysis locations are shown in Figure 2 and are listed below. The highways and streets in the study area are under the jurisdiction of the County of Los Angeles. Freeways and one conventional highway (SR-138) are under the jurisdiction of the California Department of Transportation (Caltrans).

1. West Avenue A east of 60th Street W
2. East Avenue E west of 30th Street E
3. East Avenue E west of 90th Street E
4. West Avenue G east of 110th Street W
5. East Avenue G west of 30th Street E
6. East Avenue G west of 90th Street E
7. West Avenue I east of 110th Street W
8. East Avenue J west of 90th Street E
9. West Avenue K east of 110th Street W
10. East Avenue O west of 170th Street E
11. East Avenue O west of 240th Street E
12. East Palmdale Boulevard west of 90th Street E
13. East Palmdale Boulevard west of Longview Road
14. East Palmdale Boulevard west of 170th Street E
15. East Avenue T west of 87th Street E
16. East Avenue T west of 116th Street E
17. East Avenue T west of 165th Street E
18. State Route 138 west of 87th Street E
19. State Route 138 west of 106th Street E
20. State Route 138 west of 165th Street E
21. State Route 138 west of 263rd Street E
22. State Route 18 west of 263rd Street E
23. Fort Tejon Road west of 106th Street E
24. 110th Street W south of West Avenue G
25. 110th Street W south of East Avenue K
26. 60th Street W south of West Avenue A



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— STUDY SEGMENT



Figure 2
Study Locations

27. 60th Street W south of State Route 138
28. Sierra Highway south of West Avenue D
29. Sierra Highway south of West Avenue G
30. 90th Street E south of East Avenue J
31. 90th Street E south of East Palmdale Boulevard
32. 87th Street E south of State Route 138
33. 106th Street E south of State Route 138
34. 106th Street E south of Fort Tejon Road
35. 140th Street E south of East Avenue J
36. Longview Road south of State Route 138
37. 170th Street E south of E Palmdale Boulevard
38. 165th Street E south of State Route 138
39. Sierra Highway south of Angeles Forest Highway
40. Sierra Highway west of Ward Road
41. Sierra Highway north of Davenport Road
42. Sierra Highway north of Vasquez Canyon Road
43. Angeles Forest Highway south of E Carson Mesa Road
44. Crown Valley Road north of Sierra Highway
45. Aqua Dulce Canyon Road north of State Route 14 WB Ramps
46. Davenport Road east of Sierra Highway
47. Shadow Pines Boulevard north of Soledad Canyon Road
48. Copper Hill Drive east of Copperstone Drive
49. The Old Road north of I-5 SB Ramps
50. Hasley Canyon Road west of Commerce Center Drive

The study concludes with an analysis of potential project impacts on the regional highway systems in accordance with requirements of the Los Angeles County Congestion Management Program (CMP).

REPORT ORGANIZATION

This report is divided into five chapters.

- Chapter I provides an introduction to the report, including proposed initiative description and study area.
- Chapter II describes the baseline conditions for roadway system, traffic volumes, and traffic conditions within the study area.
- Chapter III provides the methodologies used to forecast horizon and project traffic volumes, and the resultant forecasts.
- Chapter IV presents an assessment of potential traffic impacts and identifies potential traffic mitigation measures where appropriate.
- Chapter V presents the results of the Congestion Management Program regional transportation system impact analysis.

II. EXISTING CONDITIONS

A broad data collection effort was undertaken to develop a description of existing conditions in the study area. The assessment of conditions relevant to this study include a description of the roadway facilities within the study area, a review of traffic volumes on these facilities and current operating conditions, and an assessment of existing transit service and pedestrian and bicycle facilities in the study area. A description of these elements is presented in this chapter.

ROADWAY SYSTEM

A large portion of northern Los Angeles County is unincorporated. Incorporated cities are Lancaster, Palmdale, and Santa Clarita. The Antelope Valley and Santa Clarita Valley, including the study area, are served by the state highway system and a network of locally-controlled roadways ranging from local and collector streets to expressways and major highways.

The study area is served by portions of the Interstate 5 (I-5) freeway as well as State Routes 14 and 138 (SR-14 and SR-138). I-5 is generally an 8-lane facility in the study area and serves north-south regional travel between Los Angeles and Kern Counties in the project vicinity as well as regional travel throughout the state. SR-14 is a 6-lane facility with directional high occupancy vehicle (HOV) lanes in the Santa Clarita Valley that operate only during weekday peak periods, and narrows to a 4-lane facility in the northern portion of the Antelope Valley. SR-138 is a key east-west connection between I-5 and SR-14 and is generally a 2-lane undivided highway. East of SR-14, SR-138 is a 4-lane undivided major highway that narrows to two lanes after 87th Street E.

Los Angeles County is responsible for the design, construction, operation, maintenance, and repair of roads in the unincorporated areas, as well as in a number of local jurisdictions that contract with the County for these services. The functional classifications of roadways within the County's Highway Plan are:

- Major Highway – This classification includes urban and rural highways that are of countywide significance and are, or are projected to be, the most highly traveled routes. These roads generally require four or more lanes of moving traffic, channelized medians and, to the extent possible, access control and limits on intersecting streets. The typical right-of-way width of a rural major highway is 108 feet.
- Secondary Highway – This classification includes urban and rural routes that serve or are planned to serve an areawide or countywide function, but are less heavily traveled than major highways. Secondary highways also frequently act as oversized collector roads that feed the countywide system. The typical right-of-way width of rural secondary highways is 86 feet.

- Limited Secondary Highway – This classification includes urban and rural routes that provide access to low-density areas. The typical right-of-way width of rural limited secondary highways is 64 feet.
- Expressway – This classification includes urban and rural controlled-access highways connecting communities. Expressways can generally accommodate six to 10 traffic lanes and are intended for through traffic, featuring full or partial control of access. The right-of-way required varies as necessary to incorporate these features, but is typically 180 feet.

Collector streets and local streets are not defined in the County's Highway Plan but these facilities are typically designed to feed local traffic onto major highways and secondary highways and carry lower volumes of traffic at lower travel speeds than the major facilities listed above. The functional classification and existing configuration of study segments in the study area are documented in the following section.

TRAFFIC VOLUMES AND OPERATING CONDITIONS

LEVEL OF SERVICE STANDARDS AND METHODOLOGY

The efficiency of traffic operations is measured in terms of Level of Service (LOS). LOS is a description of traffic performance at a particular facility, such as an intersection, roadway segment, or freeway segment. The LOS concept is a measure of average operating conditions during a specified time period and is based on a volume-to-capacity (V/C) ratio. Levels range from 'A' to 'F', with 'A' representing excellent (free-flow) conditions and 'F' representing extreme congestion. The LOS definitions from the County's General Plan are based on research from *Highway Capacity Manual* (HCM) (Transportation Research Board, 2000) and shown below in Table 1.

TABLE 1 ROADWAY LEVEL OF SERVICE STANDARDS

| LOS | Type of Flow | Description | V/C |
|-----|---------------------------|---|----------------|
| A | Free flow | Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Control delay at intersections is minimal. The travel speed exceeds 85% of the base free-flow speed. | 0.000 – 0.600 |
| B | Stable flow | The ability to maneuver within the traffic stream is only slightly restricted and control delay at intersections is no significant. The travel speed is between 67% and 85% of the base free-flow speed. | >0.600 – 0.700 |
| C | Stable flow | The ability to maneuver and change lanes at midsegment locations may be more restricted than at LOS B. Longer queues at intersections may contribute to lower travel speeds. The travel speed is between 50% and 67% of the base free-flow speed. | >0.700 – 0.800 |
| D | Approaching unstable flow | Small increases in flow may cause substantial increases in delay and decreases in travel speed. The travel speed is between 40% and 50% of the base free-flow speed. | >0.800 – 0.900 |
| E | Unstable flow | Significant delay is commonly experienced. The travel speed is between 30% and 40% of the base free-flow speed. | >0.900 – 1.000 |
| F | Forced flow | Congestion is likely occurring at intersections, as indicated by high delay and extensive queuing. The travel speed is 30% or less of the base free-flow speed. | > 1.000 |

Source: Los Angeles County General Plan, Revised Draft March 2015, Table 7.2.

The County has established daily capacity thresholds for roadways within the study area based on the roadways' functional classification and number of travel lanes. Table 2 presents the County's roadway classifications, allowable number of travel lanes, and the maximum average daily traffic volume representing LOS F conditions.

TABLE 2 ROADWAY FUNCTIONAL CLASSIFICATION CAPACITIES

| Classification | Number of Lanes | Design Maximum 2-Way ADT | Design Maximum ADT Per Lane |
|---------------------------|-----------------|-----------------------------|--------------------------------|
| Major Highway | 4 Lanes | 36,000 | 9,000 |
| | 6 Lanes | 54,000 | |
| | 8 Lanes | 72,000 | |
| Secondary Highway | 4 Lanes | 36,000 | 9,000 |
| Limited Secondary Highway | 2 Lanes | 18,000 | 9,000 |
| | 4 Lanes | 36,000 | |
| Collector Street | 2 Lanes | 15,000 | 7,500 |
| Local Street | 2 Lanes | 2,500 | 1,250 |
| Expressway | 4 Lanes | 44,000 | 11,000 |
| | 6 Lanes | 66,000 | |
| | 8 Lanes | 88,000 | |

Source: Los Angeles County General Plan Draft EIR, June 2014.

EXISTING ROADWAY OPERATIONS

The study roadway segments were analyzed by comparing the existing average daily traffic volumes to the roadway capacity based on traffic counts and field observations collected by the project team in January 2015. The existing roadway operations are summarized in Table 3. Under existing conditions, only one location currently exceeds the LOS E capacity threshold, State Route 138 west of 87th Street E (Study Location 18).

TABLE 3 ROADWAY SEGMENT LOS – EXISTING CONDITIONS

| Study ID | Location | Functional Class | Lanes | ADT | V/C | LOS |
|----------|---------------------------------|-------------------|-------|--------|-------|-----|
| 1 | W Avenue A e/o 60th St W | Major Highway | 2 | 1,795 | 0.100 | A |
| 2 | E Avenue E w/o 30th St E | Major Highway | 2 | 2,396 | 0.133 | A |
| 3 | E Avenue E w/o 90th St E | Major Highway | 2 | 2,485 | 0.138 | A |
| 4 | W Avenue G e/o 110th St W | Major Highway | 2 | 180 | 0.010 | A |
| 5 | E Avenue G w/o 30th St E | Major Highway | 2 | 457 | 0.025 | A |
| 6 | E Avenue G w/o 90th St E | Major Highway | 2 | 125 | 0.007 | A |
| 7 | W Avenue I e/o 110th St W | Major Highway | 2 | 1,054 | 0.059 | A |
| 8 | E Avenue J w/o 90th St E | Major Highway | 2 | 2,492 | 0.138 | A |
| 9 | W Avenue K e/o 110th St W | Major Highway | 2 | 2,162 | 0.120 | A |
| 10 | E Avenue O w/o 170th St E | Major Highway | 2 | 5,570 | 0.309 | A |
| 11 | E Avenue O w/o 240th St E | Secondary Highway | 2 | 1,578 | 0.088 | A |
| 12 | E Palmdale Blvd w/o 90th St E | Major Highway | 2 | 915 | 0.051 | A |
| 13 | E Palmdale Blvd w/o Longview Rd | Major Highway | 2 | 4,628 | 0.257 | A |
| 14 | E Palmdale Blvd w/o 170th St E | Major Highway | 2 | 3,092 | 0.172 | A |
| 15 | E Avenue T w/o 87th St E | Major Highway | 2 | 8,041 | 0.447 | A |
| 16 | E Avenue T w/o 116th St E | Major Highway | 2 | 1,786 | 0.099 | A |
| 17 | E Avenue T w/o 165th St E | Local / Collector | 2 | 1,233 | 0.082 | A |
| 18 | SR-138 w/o 87th St E | Major Highway | 2 | 17,219 | 0.957 | E |

TABLE 3 ROADWAY SEGMENT LOS – EXISTING CONDITIONS

| Study ID | Location | Functional Class | Lanes | ADT | V/C | LOS |
|----------|-------------------------------|---------------------------|-------|--------|-------|-----|
| 19 | SR-138 w/o 106th St E | Major Highway | 4 | 10,753 | 0.299 | A |
| 20 | SR-138 w/o 165th St E | Major Highway | 4 | 10,325 | 0.287 | A |
| 21 | SR-138 w/o 263rd St E | Major Highway | 2 | 8,230 | 0.457 | A |
| 22 | SR-18 w/o 263rd St E | Major Highway | 2 | 3,557 | 0.198 | A |
| 23 | Fort Tejon Rd w/o 106th St E | Secondary Highway | 2 | 1,589 | 0.088 | A |
| 24 | 110th St W s/o W Avenue G | Major Highway | 2 | 599 | 0.033 | A |
| 25 | 110th St W s/o E Avenue K | Major Highway | 2 | 3,281 | 0.182 | A |
| 26 | 60th St W s/o W Avenue A | Major Highway | 2 | 1,054 | 0.059 | A |
| 27 | 60th St W s/o SR-138 | Major Highway | 2 | 1,375 | 0.076 | A |
| 28 | Sierra Hwy s/o W Avenue D | Major Highway | 2 | 3,892 | 0.216 | A |
| 29 | Sierra Hwy s/o W Avenue G | Major Highway | 2 | 2,951 | 0.164 | A |
| 30 | 90th St E s/o E Avenue J | Major Highway | 2 | 1,695 | 0.094 | A |
| 31 | 90th St E s/o E Palmdale Blvd | Major Highway | 2 | 7,550 | 0.419 | A |
| 32 | 87th St E s/o SR-138 | Secondary Highway | 2 | 520 | 0.029 | A |
| 33 | 106th St E s/o SR-138 | Secondary Highway | 2 | 239 | 0.013 | A |
| 34 | 106th St E s/o Fort Tejon Rd | Limited Secondary Highway | 2 | 703 | 0.039 | A |
| 35 | 140th St E s/o E Avenue J | Major Highway | 2 | 1,275 | 0.071 | A |
| 36 | Longview Rd s/o SR-138 | Secondary Highway | 2 | 1,503 | 0.084 | A |

TABLE 3 ROADWAY SEGMENT LOS – EXISTING CONDITIONS

| Study ID | Location | Functional Class | Lanes | ADT | V/C | LOS |
|----------|---|---------------------------|-------|--------|-------|-----|
| 37 | 170th St E s/o E Palmdale Blvd | Major Highway | 2 | 2,429 | 0.135 | A |
| 38 | 165th St E s/o SR-138 | Secondary Highway | 2 | 810 | 0.045 | A |
| 39 | Sierra Hwy s/o Angeles Forest Hwy | Major Highway | 2 | 9,796 | 0.544 | A |
| 40 | Sierra Hwy w/o Ward Rd | Major Highway | 2 | 6,993 | 0.389 | A |
| 41 | Sierra Hwy n/o Davenport Rd | Major Highway | 2 | 7,048 | 0.392 | A |
| 42 | Sierra Hwy n/o Vasquez Canyon Rd | Major Highway | 2 | 9,275 | 0.515 | A |
| 43 | Angeles Forest Highway s/o E Carson Mesa Rd | Major Highway | 2 | 3,522 | 0.196 | A |
| 44 | Crown Valley Rd n/o Sierra Hwy | Limited Secondary Highway | 2 | 1,619 | 0.090 | A |
| 45 | Aqua Dulce Canyon Rd n/o SR-14 WB Ramps | Limited Secondary Highway | 2 | 2,930 | 0.163 | A |
| 46 | Davenport Rd e/o Sierra Hwy | Limited Secondary Highway | 2 | 1,798 | 0.100 | A |
| 47 | Shadow Pines Blvd n/o Soledad Canyon Rd | Secondary Highway | 2 | 7,581 | 0.421 | A |
| 48 | Copper Hill Dr e/o Copperstone Dr | Major Highway | 6 | 31,291 | 0.579 | A |
| 49 | The Old Rd n/o I-5 SB Ramps | Secondary Highway | 4 | 14,198 | 0.394 | A |
| 50 | Hasley Canyon Rd w/o Commerce Center Dr | Secondary Highway | 4 | 7,334 | 0.204 | A |

Source: Fehr & Peers, 2015.

TRANSIT NETWORK

The study area is served primarily by Antelope Valley Transit Authority (AVTA) and Santa Clarita Transit (SCT) for bus service. Los Angeles County DPW operates shuttle service in Acton and Agua Dulce to Santa Clarita three days a week. In addition to the bus network, the study area is served by the Antelope Valley Metrolink rail line, which runs nine commuter trains daily in each direction Monday through Friday to/from Lancaster and Union Station, at the following stations:

- Newhall Station
- Santa Clarita Station
- Princessa Station
- Vincent Grade/Acton Station
- Palmdale Station
- Lancaster Station

AVTA provides 11 local routes and one local express route in the Antelope Valley. In addition, AVTA operates supplemental and deviated routes to accommodate increased student ridership on routes that serve Eastside High School, and Antelope Valley High School in Lancaster, and Pete Knight High School in Palmdale. The AVTA also provides three commuter bus services:

- AVTA Line 785 – Line 785 connects Antelope Valley with Downtown Los Angeles and has an average headway of 10 to 20 minutes during weekday peak periods.
- AVTA Line 786 – Line 786 connects Antelope Valley with Century City/West Los Angeles and has an average headway of 60 minutes during weekday peak periods.
- AVTA Line 787 – Line 787 connects Antelope Valley with West San Fernando Valley and has an average headway of 20 to 30 minutes during weekday peak periods.

Antelope Valley is serviced by two regional transportation centers: the Lancaster City Park and the Palmdale Transportation Center. These centers offer free parking, and connect the study area with AVTA service, Santa Clarita Transit, AMTRAK throughway bus service, Greyhound, Metrolink, and the County of LA Beach Bus.

SCT operates nine local routes as well as two station link routes that provide service from the Santa Clarita Metrolink Station. In addition, SCT operates 20 supplemental school day service routes to alleviate overcrowding on the City's regularly scheduled local bus routes. SCT also provides four commuter bus routes:

- SCT Route 757 – Route 757 connects Santa Clarita with North Hollywood and has an average headway of 30 minutes during weekday peak periods.
- SCT Routes 796/791 – Routes 796/791 connect Santa Clarita with Chatsworth, Canoga Park, Warner Center, and Woodland Hills and has an average headway of 20 to 30 minutes during weekday peak periods.
- SCT Routes 797/792 – Routes 797/792 connect Santa Clarita with UCLA, Westwood, and Century City and has an average headway of 15 to 30 minutes during weekday peak periods.
- SCT Routes 799/794 – Routes 799/794 connect Santa Clarita with Union Station and Downtown Los Angeles and has an average headway of 15 minutes during weekday peak periods.

Both AVTA and SCT provide a dial-a-ride service to seniors over the age of 65 and disabled residents of the Antelope Valley and Santa Clarita Valley.

BICYCLE AND PEDESTRIAN FACILITIES

The study area is primarily a rural environment. Due to the nature of the built environment and surrounding land uses, most of the roadways in the area lack sidewalks, and bicycle facilities are limited. However, most of the major roadways in the developed areas, including the Cities of Lancaster, Palmdale, and Santa Clarita have sidewalks along with several bicycle facilities. In addition, a Trails Plan was adopted into the Antelope Valley General Plan by the Board of Supervisors in 2007. The study area includes a trail network that is used by hikers, bicyclists, and equestrians. This network is comprised of the Adopted County Backbone Trail System, Pacific Crest National Trail, Federal/National Forest Trails, and Incorporated City Trails.

Bicycle facilities are generally categorized into three types of facilities: Class I – bicycle paths, Class II – bicycle lanes, and Class III – bicycle routes. A description of the facility types along with existing facilities in the study area is provided below.

- Class I bike paths, also called shared-use paths or multi-use paths, are paved right-of-way for exclusive use by bicyclists, pedestrians, and other non-motorized modes of travel. They are physically separated from vehicular traffic and can be constructed in roadway right-of-way or exclusive right-of-way. The Sierra Highway Bike path is a Class I facility that connects cities of

Lancaster and Palmdale along the Metrolink tracks and Sierra Highway. The path helps commuters access the Metrolink stations and provides a recreational use for residents and visitors.

- Class II bicycle lanes are defined by pavement striping and signage used to allocate a portion of a roadway for exclusive bicycle travel. Bike lanes are one-way facilities on either side of a roadway. The study area does not currently have Class II bicycle lanes. The County of Los Angeles Bicycle Master Plan (2012) (Bicycle Plan) has proposed Class II facilities near Lake Elizabeth along Elizabeth Lake Road.
- Class III bike routes provide shared use with motor vehicle traffic within the same travel lane. Designated by signs and roadway markings, bike routes provide continuity to other bike facilities or designated preferred routes through corridors with high demand. The study area does not currently have Class III bicycle routes. The County Bicycle Plan has proposed Class III facilities along Pine Canyon Road, as well as Lake Hughes Road, San Francisquito Canyon Road, and Bouquet Canyon Road, which would provide the connection to the Santa Clarita Valley area.

The County Bicycle Plan has also proposed additional Class II and III bicycle facilities located primarily northwest of City of Lancaster. The Cities of Lancaster and Palmdale also have planned bicycle facilities that would connect with the County bicycle network.

III. TRAFFIC PROJECTIONS

In order to evaluate potential impacts of the proposed project on the street system, the project team first developed a reasonable growth scenario since development of single family residences on all 42,687 parcels affected by the ordinance is unlikely to occur. The North County Subarea Travel Demand Forecasting Model was used to analyze the potential impacts of the proposed project under both existing and future conditions. Development of the project growth forecast, model methodology, and analysis scenarios are described in this chapter.

PROJECT GROWTH FORECAST

The Hauled Water Ordinance would allow for the use of hauled water, as the primary source of water, to support an application for single family development for up to 42,687 parcels throughout the unincorporated areas of Santa Clarita Valley and Antelope Valley, where, as a result of being located outside a water district and having determined that groundwater is infeasible, based on a well test. However, the development of all these parcels is unlikely. Based on an analysis of building permits issued in the North County between 1997 and 2014, the construction of 184 new single-family residences per year is a conservative growth estimate. Therefore, between 2015 and 2035 the total forecast number of homes to be constructed is 3,680. The project scenario will analyze the potential impacts of the new vehicle trips generated by the residents of these homes and, the hauled water trucks providing potable water.

After determining the total number of parcels to analyze, the project team estimated the geographic distribution where the new development is considered most likely to occur. The areas nearest to the Cities of Lancaster, Palmdale and Santa Clarita were assumed to be the most likely for development. The following areas were determined to be unsuitable for development:

- Parcels in the Antelope Valley Northeast Subarea and the East San Gabriel Mountains Subarea because of their relative remoteness, inaccessibility, and limited construction activity.
- Parcels in the agricultural land far to the west of the City of Lancaster due to their remoteness and suitability for renewable energy production.
- Parcels in the area planned for development as part of the Tejon Ranch's Centennial project, with the expectation that that area would be part of a water district in the future, and would be served by other municipal services.
- Parcels on unincorporated islands within the Cities of Lancaster and Palmdale.

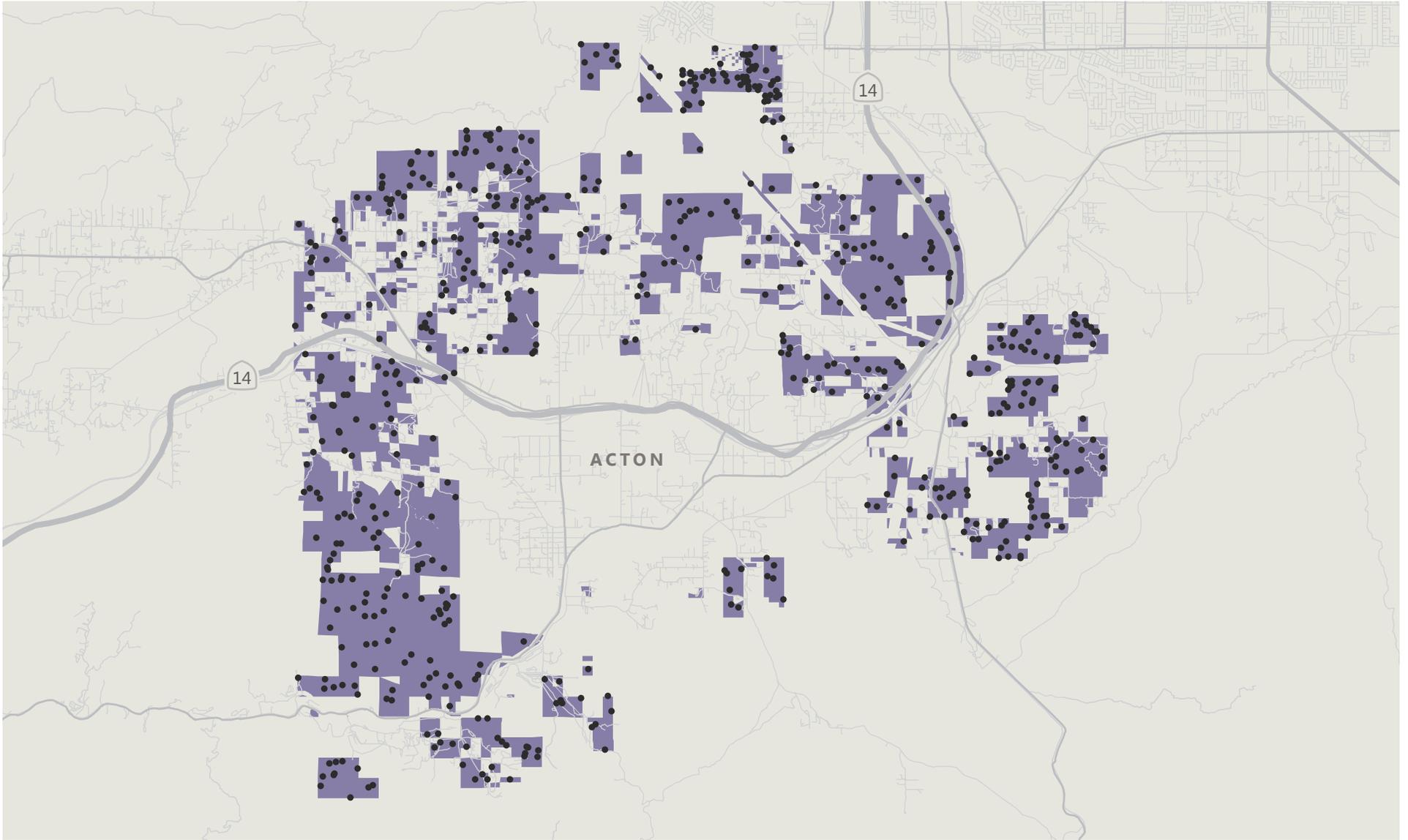
This screening analysis reduced the number of most likely developable parcels to 24,982. The distribution of 3,680 developed parcels was then distributed across the subareas using the distribution of observed building permit activity between 1997 and 2014. Within each of the seven subareas comprising the project area, the parcels to be developed were randomly distributed based on geographic distribution of available parcels. Table 4 shows a summary of how the growth forecast was determined for each subarea.

TABLE 4 GROWTH FORECASTS BY SUBAREA

| Subarea | Total Parcels | Potential Parcels | Growth Forecast |
|--------------------------------------|----------------------|----------------------|---------------------|
| Acton | 1,245 (3%) | 1,296 (5%) | 737 (20%) |
| Antelope Valley Northeast | 1,938 (4%) | 0 (0%) | 0 (0%) |
| Castaic/Santa Clarita/Agua Dolce | 2,249 (5%) | 2,038 (8%) | 735 (20%) |
| East San Gabriel Mountains | 658 (2%) | 0 (0%) | 0 (0%) |
| Lake Hughes/Gorman/West of Lancaster | 15,166 (35%) | 9,244 (37%) | 847 (23%) |
| Lake Los Angeles/Llano/Valyermo | 14,822 (35%) | 8,961 (36%) | 1,251 (34%) |
| Lancaster Northeast | 6,794 (16%) | 3,443 (14%) | 110 (3%) |
| Total | 42,872 (100%) | 24,982 (100%) | 3,680 (100%) |

Source: Fehr & Peers and Sapphos Environmental, Inc., 2015.

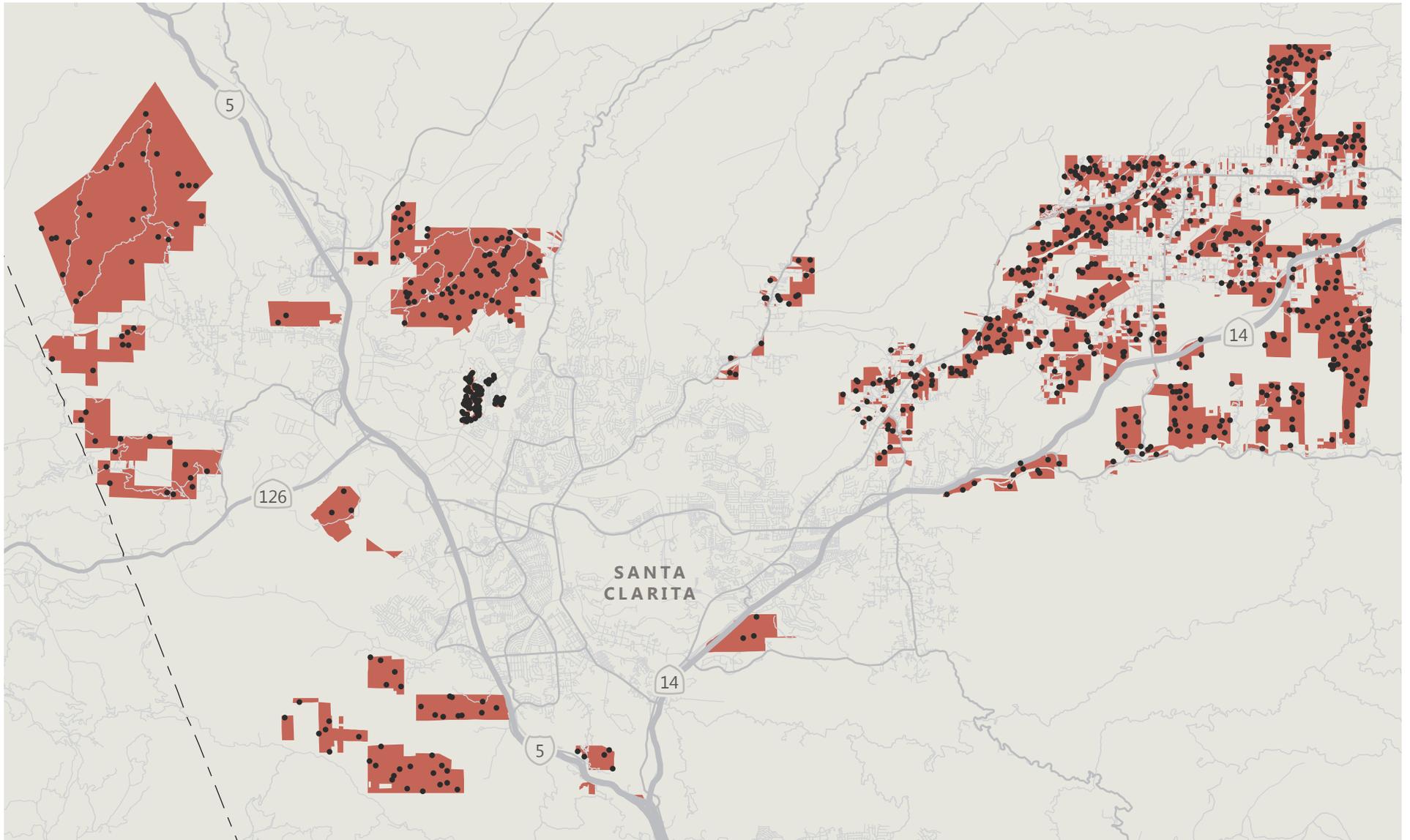
The building permit data shows that despite representing only 13 percent of the potential parcels, 40 percent of the growth is likely to occur in the Acton and Castaic/Santa Clarita/Agua Dolce subareas combined. The Lancaster Northeast Subarea however, will only include 3 percent of the growth even though 14 percent of the parcels are in this subarea. Figures 3a-e show the distribution of developed parcels across the five subareas where the growth is forecast to occur.



● 1 dot = 1 household



Figure 3a
Potential Developed Parcel Distribution
Acton



● 1 dot = 1 household

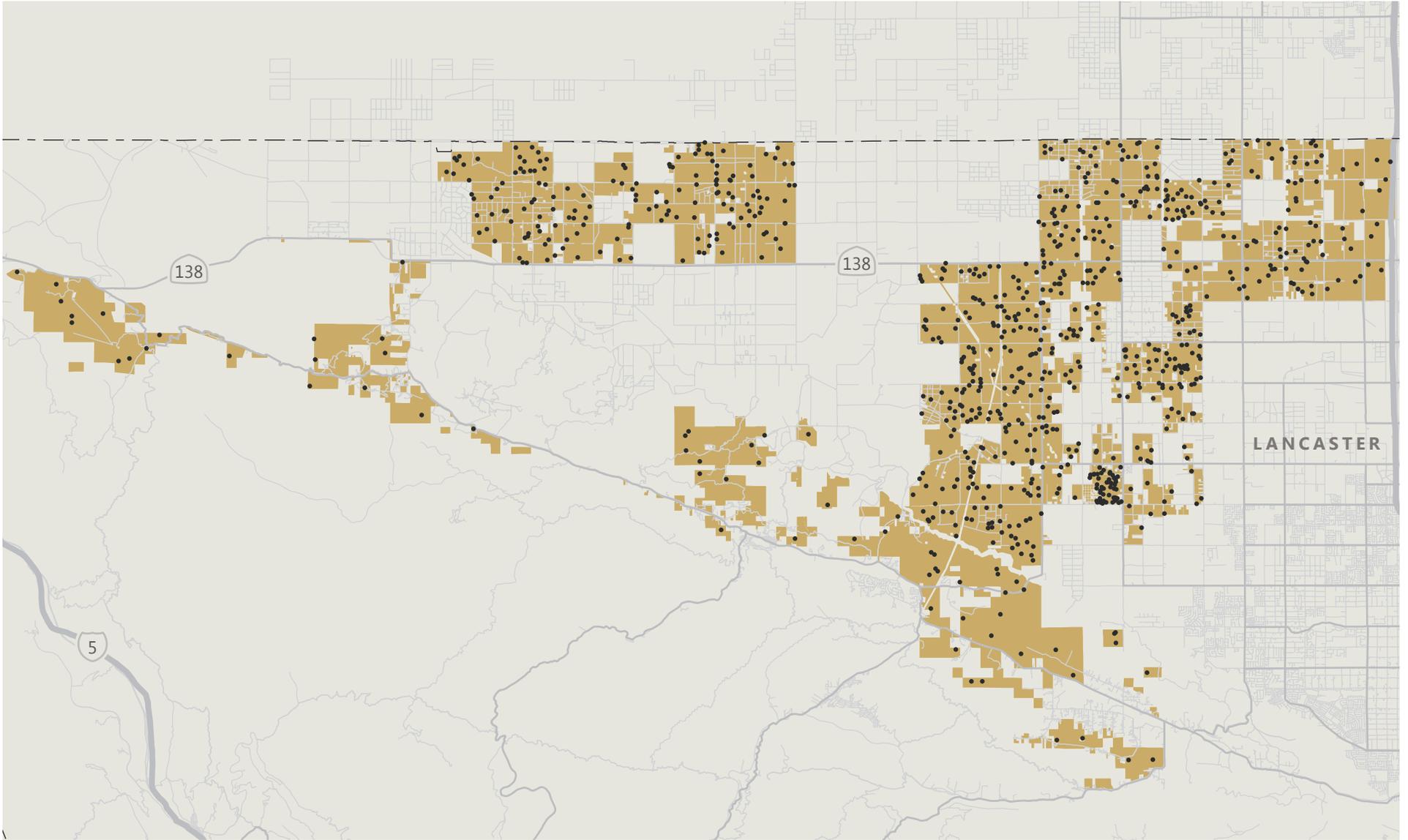


NORTH



Figure 3b

Potential Developed Parcel Distribution
Castaic/Santa Clarita/Agua Dulce

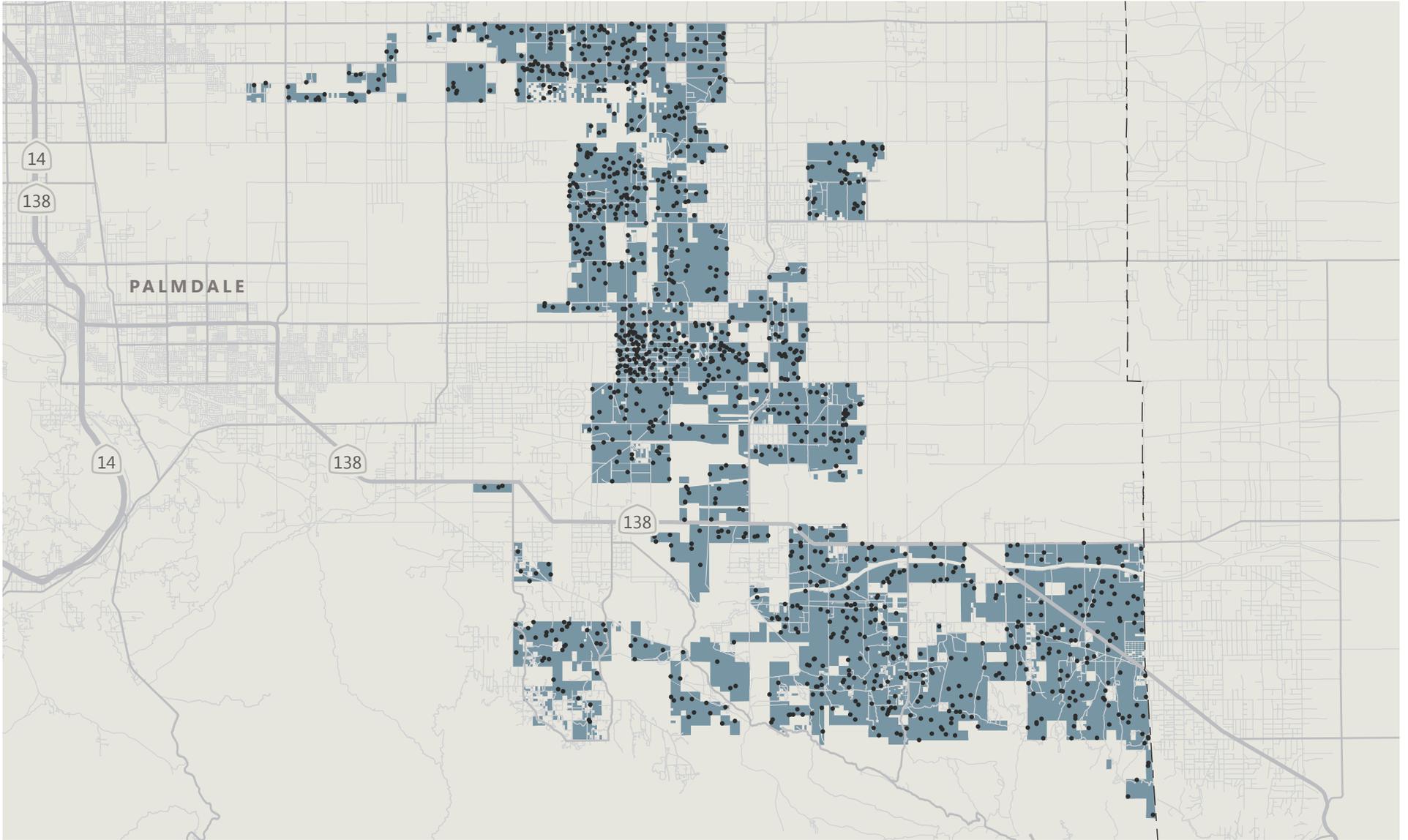


● 1 dot = 1 household



Figure 3c

Potential Developed Parcel Distribution
Lake Hughes/Gorman/West of Lancaster



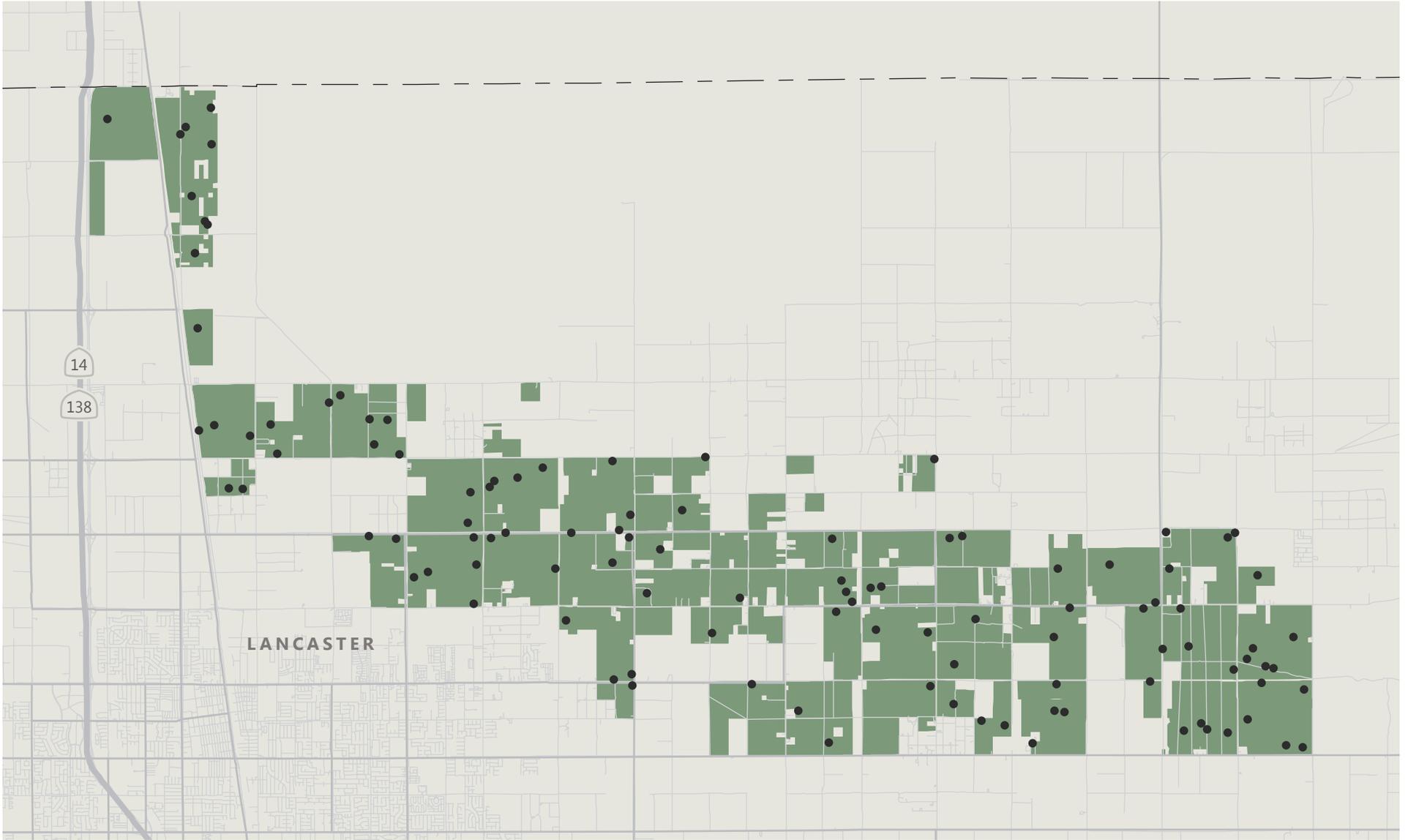
● 1 dot = 1 household



NORTH



Figure 3d
Potential Developed Parcel Distribution
Lake Los Angeles/Llano/Valyermo/Littlerock



● 1 dot = 1 household



Figure 3e
Potential Developed Parcel Distribution
Lancaster Northeast

MODEL DEVELOPMENT

The North County Subarea Travel Demand Forecasting Model was used for the proposed project analysis. The subarea model was originally developed for use in the Northwest 138 Corridor Improvement Project in conjunction with Metro and Caltrans. The North County Subarea Model reflects the socioeconomic projections and transportation network improvements contained in the Southern California Association of Governments (SCAG) 2012 Regional Transportation Plan (RTP) and Kern Council of Governments (COG) RTP models. It also reflects local land use and roadway network details from the Enhanced Antelope Valley Transportation Analysis Model (EAVTAM).

The subarea model includes the northern portion of the County, including the Cities of Lancaster, Palmdale and Santa Clarita. The subarea model also includes the southern portion of Kern County as contained in the latest version of the Kern COG model. The model contains the existing and planned highway system within the study area.

The following steps were taken to develop the North County Subarea Model:

1. Applied the SCAG regional model version 6.1 to generate a subarea model platform; extracted the trip tables and roadway network for both existing and future year
2. Added detailed traffic analysis zone (TAZ) and network structure from EAVTAM for Palmdale and Lancaster
3. Joined Kern COG TAZ and network structure
4. Refined TAZ and network structure within LA County

The subarea model was validated to the standards presented in the 2010 California Regional Transportation Plan Guidelines, produced by the California Transportation Commission. In addition to these criteria, the subarea model volume-to-count ratio was checked against a desired maximum threshold of no more than a 10 percent deviation. The model was initially validated to Year 2013 travel conditions. The additional traffic count data that was collected for this project was used to further validate the performance of the model in replicating existing conditions.

The 2012 SCAG RTP model was used for project trip generation and trip distribution, while the subarea model was used to assign project trips to the network. The subarea model was also used to assign hauled water truck trips to the roadway network.

HORIZON YEAR SCENARIO

The Horizon Year (2035) scenario is consistent with recently updated Antelope Valley Area Plan and the 2012 SCAG RTP outside of Antelope Valley. This section describes the land use growth and planned network improvements in the study area for horizon year analysis.

LAND USE/SOCIOECONOMIC GROWTH

The North County Subarea TDF Model contains the unincorporated areas of Santa Clarita Valley and Antelope Valley as well as the Cities of Lancaster, Palmdale, and Santa Clarita. Within Los Angeles County, the land use forecasts in this area are consistent with updated Antelope Valley Area Plan as well as the current 2012 SCAG RTP.

The CEQA Guidelines (Section 15130 [b][1]) state that the information utilized in an analysis of horizon impacts should come from one of two sources:

1. A list of past, present and probable future projects producing related or horizon impacts, including, if necessary, those projects outside the control of the agency; or
2. A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or areawide conditions contributing to the horizon impact. Any such planning document shall be referenced and made available to the public at a location specified by the lead agency.

The horizon impact analysis in this study uses the second method. Table 5 shows the projected growth in land use in the North County area between 2012 and 2035 from the most recent SCAG RTP.

TABLE 5 EXISTING (2012) AND HORIZON YEAR (2035) LAND USE FORECASTS

| Subarea | Households | Population | Employment |
|-------------------|----------------|----------------|----------------|
| 2012 Existing | 197,860 | 644,659 | 213,169 |
| 2035 Horizon Year | 355,878 | 1,199,357 | 395,102 |
| <i>Difference</i> | <i>158,018</i> | <i>554,698</i> | <i>181,933</i> |

Source: Fehr & Peers, 2015.

PLANNED TRANSPORTATION NETWORK

The North County Subarea Model contains the 2035 planning network identified in the 2012 SCAG RTP. The RTP's planning network includes all financially constrained projects within the SCAG region that are expected to be constructed by 2035. The following major projects are contained in the subarea model under future conditions:

- High Speed Rail – The 2035 Planning network reflects Phase I of the High Speed Rail project, with extents from the City of Anaheim into Kern County. In the model area, the High Speed Rail travels north-south between SR-14 and I-15. The High Speed Rail also travels south on SR-14 through the City of Santa Clarita with a station in the City of Palmdale.
- High Desert Corridor – New expressway route with limited access beginning at SR-14 and extending east into San Bernardino County. The High Desert Corridor would be a divided highway with three to four travel lanes in each direction.
- SR-138 between I-5 and SR-14 – Planned widening from a 2-lane full-access expressway route with at-grade crossings to a 4- to 6-lane limited-access divided highway/expressway route.
- Sierra Highway between SR-138 and Avenue E – Planned widening from a 2-lane full-access arterial to a 4-lane limited access expressway route (SR-138 extension/High Desert Corridor).
- Avenue E between Sierra Highway and 90th Street – Planned widening from a 2-lane full-access collector to a 4-lane limited access expressway route (SR-138 extension).
- 90th Street between Avenue E and Avenue L – Planned widening from a 2-lane full-access collector to a 4-lane limited access expressway route (SR-138 extension).
- I-5 between Ridge Route Road and SR-14 – Construction of an HOV lane in each direction.
- SR-14 between Avenue M and I-5 – Addition of an HOV lane in each direction.

Other minor roadway widening projects within the Cities of Lancaster, Palmdale, and Santa Clarita are included in the subarea model but are too numerous to list.

VEHICLE TRIPS GENERATED AND VEHICLE MILES TRAVELLED

The SCAG RTP model was used to calculate the trip generation and trip distribution for the vehicle trips associated with the households in the Proposed Project scenario. The trip generation and trip distribution for the trucks hauling water to the new developments were calculated separately.

Through research on residences that do not have a potable water supply, the project team determined that the average home requires 5,000 gallons of potable water per week plus an extra 5,000 gallons for fire protection that must be refilled once each year. A single water delivery truck carries approximately 5,000 gallons of water so each home will have 53 water deliveries per year. The potable water supply for these developments would be provided through an agreement with the water hauling company and the nearest water district so that the water could be drawn from the closest hydrant. The average distance between the developable parcels and the nearest hydrant is just under mile and a single truck can fill up and deliver 5,000 gallons of water in less than two hours. The project team assumed that water deliveries would be made seven days a week and that a single truck would deliver to four homes in a single day. The forecast growth in households would require a total of 134 water delivery trucks providing service each day.

There are a limited number of water haulers currently operating in Santa Clarita Valley and Antelope Valley. Under the potential growth scenario, it is likely that more water delivery businesses would operate in the project area. For the trip distribution analysis, the project team assumed that a single distribution center would serve each subarea and that it would be located in industrial areas near the edges of the water districts to minimize haul distances. While this simplifies the analysis, it does not produce substantially different results from what they would be if 50 or 60 water delivery services were assumed instead. The average distance between the water delivery trucks distribution center and the nearest hydrant is 12.4 miles. Therefore, each day a truck would drive 12.4 miles to hydrant, 7 miles making 8 trips between the hydrant and four homes to deliver water, and 12.4 miles back to its distribution center for a total of 31.8 miles.

Once the trip distribution for the truck trips was determined, these trips were manually added to the North County Subarea Model to be assigned along with all other vehicle trips. Table 6 and Table 7 show summaries of the average daily vehicle trips generated and daily vehicle miles travelled under both existing and horizon year conditions for the entire SCAG model region covering six counties.

TABLE 6 EXISTING (2015) AVERAGE VEHICLE TRIPS AND VEHICLE MILES TRAVELLED

| Scenario | Daily Vehicle Miles Travelled (VMT) | Daily Vehicle Trips (VT) |
|--------------------------------------|-------------------------------------|--------------------------|
| Existing | 428,701,000 | 41,762,200 |
| <i>New 3,680 Single Family Homes</i> | <i>588,000</i> | <i>28,400</i> |
| <i>Hauled Water Trucks</i> | <i>4,300</i> | <i>134</i> |
| Existing plus Project | 429,293,300 | 41,790,734 |

Source: Fehr & Peers, 2015

TABLE 7 HORIZON YEAR (2035) AVERAGE VEHICLE TRIPS AND VEHICLE MILES TRAVELLED

| Scenario | Daily Vehicle Miles Travelled (VMT) | Daily Vehicle Trips (VT) |
|--------------------------------------|-------------------------------------|--------------------------|
| Horizon Year | 504,198,000 | 47,707,200 |
| <i>New 3,680 Single Family Homes</i> | <i>503,000</i> | <i>26,000</i> |
| <i>Hauled Water Trucks</i> | <i>4,300</i> | <i>134</i> |
| Horizon Year plus Project | 504,705,300 | 47,733,334 |

Source: Fehr & Peers, 2015

Average vehicle trip lengths can be estimated by dividing total vehicle miles travelled (VMT) by total number of vehicle trips (VT). For both the Existing (2015) and Horizon Year (2035) scenarios, the average vehicle trip length in the SCAG six county region is approximately 10 miles. For the proposed project, the average vehicle trip length would be over 20 miles in the existing scenario. In the horizon year scenario, the proposed project generates slightly less vehicle trips and less vehicle miles travelled than the project in the existing scenario due to increases in land use density and more travel options in the North County area. Although the trip generation and VMT are slightly reduced for the project trips under the Horizon Year scenario, the average trip lengths are still much higher than the SCAG region-wide average. While the estimated average trip lengths for water-hauling trucks are longer than those for the personal vehicle trips, the truck trips represent less than one percent of the project-generated traffic. The primary reason for the increase in trip lengths above the regional average is the remoteness of the developable parcels



and lack of land use diversity near these sites; the combined effect of which is that new residents will travel above-average distances for employment, commercial and recreational purposes.

IV. IMPACT ANALYSIS

This chapter presents an analysis of the potential impacts of the traffic generated by the proposed project as well as generalized impacts that could occur during construction of the proposed project. The analysis compares the projected levels of service at each study location under Existing Year plus Project with Existing conditions and under horizon conditions both with and without the project to determine potential impacts, using significance criteria drawn from *Los Angeles County General Plan EIR* (Los Angeles County, March 2015).

TRAFFIC OPERATIONS

Under the guidelines used in the Los Angeles County General Plan EIR, a roadway segment would be significantly impacted if the project-related change in volume-to-capacity (V/C) ratio is greater than 0.02 and causes or worsens to LOS E or F conditions ($V/C > 0.900$). For those roadways operating with a V/C ratio less than 0.900 (i.e., better than LOS E), it was determined that the planned roadway capacity is adequate to handle the future volumes within acceptable operating conditions.

Tables 8 and 9 show existing and horizon year roadway segment LOS with and without the project traffic. Under horizon conditions the following roadways exceed the LOS E capacity threshold:

- 18. State Route 138 west of 87th Street E
- 36. Longview Road south of State Route 138

Under the guidelines established, there are no identified significant impacts related to project traffic in existing plus project or horizon year plus project conditions.

TABLE 8 ROADWAY SEGMENT LOS – EXISTING AND EXISTING PLUS PROJECT (2015)

| Study ID | Location | Functional Class | Lanes | Existing | | | Existing plus Project | | | |
|----------|---------------------------------|-------------------|-------|----------|-------|-----|-----------------------|-------|-----|------------|
| | | | | Count | V/C | LOS | Forecast | V/C | LOS | V/C Change |
| 1 | W Avenue A e/o 60th St W | Major Highway | 2 | 1,795 | 0.100 | A | 1,850 | 0.103 | A | 0.003 |
| 2 | E Avenue E w/o 30th St E | Major Highway | 2 | 2,396 | 0.133 | A | 2,470 | 0.137 | A | 0.004 |
| 3 | E Avenue E w/o 90th St E | Major Highway | 2 | 2,485 | 0.138 | A | 2,540 | 0.141 | A | 0.003 |
| 4 | W Avenue G e/o 110th St W | Major Highway | 2 | 180 | 0.010 | A | 260 | 0.014 | A | 0.004 |
| 5 | E Avenue G w/o 30th St E | Major Highway | 2 | 457 | 0.025 | A | 640 | 0.036 | A | 0.011 |
| 6 | E Avenue G w/o 90th St E | Major Highway | 2 | 125 | 0.007 | A | 280 | 0.016 | A | 0.009 |
| 7 | W Avenue I e/o 110th St W | Major Highway | 2 | 1,054 | 0.059 | A | 1,890 | 0.105 | A | 0.046 |
| 8 | E Avenue J w/o 90th St E | Major Highway | 2 | 2,492 | 0.138 | A | 2,560 | 0.142 | A | 0.004 |
| 9 | W Avenue K e/o 110th St W | Major Highway | 2 | 2,162 | 0.120 | A | 2,250 | 0.125 | A | 0.005 |
| 10 | E Avenue O w/o 170th St E | Major Highway | 2 | 5,570 | 0.309 | A | 5,820 | 0.323 | A | 0.014 |
| 11 | E Avenue O w/o 240th St E | Secondary Highway | 2 | 1,578 | 0.088 | A | 1,830 | 0.102 | A | 0.014 |
| 12 | E Palmdale Blvd w/o 90th St E | Major Highway | 2 | 915 | 0.051 | A | 1,440 | 0.080 | A | 0.029 |
| 13 | E Palmdale Blvd w/o Longview Rd | Major Highway | 2 | 4,628 | 0.257 | A | 5,040 | 0.280 | A | 0.023 |
| 14 | E Palmdale Blvd w/o 170th St E | Major Highway | 2 | 3,092 | 0.172 | A | 3,170 | 0.176 | A | 0.004 |
| 15 | E Avenue T w/o 87th St E | Major Highway | 2 | 8,041 | 0.447 | A | 8,460 | 0.470 | A | 0.023 |
| 16 | E Avenue T w/o 116th St E | Major Highway | 2 | 1,786 | 0.099 | A | 2,080 | 0.116 | A | 0.017 |
| 17 | E Avenue T w/o 165th St E | Local / Collector | 2 | 1,233 | 0.082 | A | 1,350 | 0.090 | A | 0.008 |
| 18 | SR-138 w/o 87th St E | Major Highway | 2 | 17,219 | 0.957 | E | 17,480 | 0.971 | E | 0.014 |

TABLE 8 ROADWAY SEGMENT LOS – EXISTING AND EXISTING PLUS PROJECT (2015)

| Study ID | Location | Functional Class | Lanes | Existing | | | Existing plus Project | | | |
|----------|-------------------------------|---------------------------|-------|----------|-------|-----|-----------------------|-------|-----|------------|
| | | | | Count | V/C | LOS | Forecast | V/C | LOS | V/C Change |
| 19 | SR-138 w/o 106th St E | Major Highway | 4 | 10,753 | 0.299 | A | 10,860 | 0.302 | A | 0.003 |
| 20 | SR-138 w/o 165th St E | Major Highway | 4 | 10,325 | 0.287 | A | 10,520 | 0.292 | A | 0.005 |
| 21 | SR-138 w/o 263rd St E | Major Highway | 2 | 8,230 | 0.457 | A | 8,620 | 0.479 | A | 0.022 |
| 22 | SR-18 w/o 263rd St E | Major Highway | 2 | 3,557 | 0.198 | A | 3,690 | 0.205 | A | 0.007 |
| 23 | Fort Tejon Rd w/o 106th St E | Secondary Highway | 2 | 1,589 | 0.088 | A | 2,080 | 0.116 | A | 0.028 |
| 24 | 110th St W s/o W Avenue G | Major Highway | 2 | 599 | 0.033 | A | 710 | 0.039 | A | 0.006 |
| 25 | 110th St W s/o E Avenue K | Major Highway | 2 | 3,281 | 0.182 | A | 3,420 | 0.190 | A | 0.008 |
| 26 | 60th St W s/o W Avenue A | Major Highway | 2 | 1,054 | 0.059 | A | 1,110 | 0.062 | A | 0.003 |
| 27 | 60th St W s/o SR-138 | Major Highway | 2 | 1,375 | 0.076 | A | 1,460 | 0.081 | A | 0.005 |
| 28 | Sierra Hwy s/o W Avenue D | Major Highway | 2 | 3,892 | 0.216 | A | 4,030 | 0.224 | A | 0.008 |
| 29 | Sierra Hwy s/o W Avenue G | Major Highway | 2 | 2,951 | 0.164 | A | 3,040 | 0.169 | A | 0.005 |
| 30 | 90th St E s/o E Avenue J | Major Highway | 2 | 1,695 | 0.094 | A | 1,850 | 0.103 | A | 0.009 |
| 31 | 90th St E s/o E Palmdale Blvd | Major Highway | 2 | 7,550 | 0.419 | A | 8,090 | 0.449 | A | 0.030 |
| 32 | 87th St E s/o SR-138 | Secondary Highway | 2 | 520 | 0.029 | A | 580 | 0.032 | A | 0.003 |
| 33 | 106th St E s/o SR-138 | Secondary Highway | 2 | 239 | 0.013 | A | 310 | 0.017 | A | 0.004 |
| 34 | 106th St E s/o Fort Tejon Rd | Limited Secondary Highway | 2 | 703 | 0.039 | A | 960 | 0.053 | A | 0.014 |
| 35 | 140th St E s/o E Avenue J | Major Highway | 2 | 1,275 | 0.071 | A | 1,400 | 0.078 | A | 0.007 |
| 36 | Longview Rd s/o SR-138 | Secondary Highway | 2 | 1,503 | 0.084 | A | 1,730 | 0.096 | A | 0.012 |

TABLE 8 ROADWAY SEGMENT LOS – EXISTING AND EXISTING PLUS PROJECT (2015)

| Study ID | Location | Functional Class | Lanes | Existing | | | Existing plus Project | | | |
|----------|---|---------------------------|-------|----------|-------|-----|-----------------------|-------|-----|------------|
| | | | | Count | V/C | LOS | Forecast | V/C | LOS | V/C Change |
| 37 | 170th St E s/o E Palmdale Blvd | Major Highway | 2 | 2,429 | 0.135 | A | 2,680 | 0.149 | A | 0.014 |
| 38 | 165th St E s/o SR-138 | Secondary Highway | 2 | 810 | 0.045 | A | 1,020 | 0.057 | A | 0.012 |
| 39 | Sierra Hwy s/o Angeles Forest Hwy | Major Highway | 2 | 9,796 | 0.544 | A | 9,860 | 0.548 | A | 0.004 |
| 40 | Sierra Hwy w/o Ward Rd | Major Highway | 2 | 6,993 | 0.389 | A | 7,150 | 0.397 | A | 0.008 |
| 41 | Sierra Hwy n/o Davenport Rd | Major Highway | 2 | 7,048 | 0.392 | A | 7,270 | 0.404 | A | 0.012 |
| 42 | Sierra Hwy n/o Vasquez Canyon Rd | Major Highway | 2 | 9,275 | 0.515 | A | 9,830 | 0.546 | A | 0.031 |
| 43 | Angeles Forest Highway s/o E Carson Mesa Rd | Major Highway | 2 | 3,522 | 0.196 | A | 3,810 | 0.212 | A | 0.016 |
| 44 | Crown Valley Rd n/o Sierra Hwy | Limited Secondary Highway | 2 | 1,619 | 0.090 | A | 2,480 | 0.138 | A | 0.048 |
| 45 | Aqua Dulce Canyon Rd n/o SR-14 WB Ramps | Limited Secondary Highway | 2 | 2,930 | 0.163 | A | 4,220 | 0.234 | A | 0.071 |
| 46 | Davenport Rd e/o Sierra Hwy | Limited Secondary Highway | 2 | 1,798 | 0.100 | A | 1,990 | 0.111 | A | 0.011 |
| 47 | Shadow Pines Blvd n/o Soledad Canyon Rd | Secondary Highway | 2 | 7,581 | 0.421 | A | 8,120 | 0.451 | A | 0.030 |
| 48 | Copper Hill Dr e/o Copperstone Dr | Major Highway | 6 | 31,291 | 0.579 | A | 31,550 | 0.584 | A | 0.005 |
| 49 | The Old Rd n/o I-5 SB Ramps | Secondary Highway | 4 | 14,198 | 0.394 | A | 14,230 | 0.395 | A | 0.001 |
| 50 | Hasley Canyon Rd w/o Commerce Center Dr | Secondary Highway | 4 | 7,334 | 0.204 | A | 7,380 | 0.205 | A | 0.001 |

Source: Fehr & Peers, 2015.

TABLE 9 ROADWAY SEGMENT LOS – HORIZON YEAR AND HORIZON YEAR PLUS PROJECT (2035)

| Study ID | Location | Functional Class | Lanes | Horizon Year | | | Horizon Year plus Project | | | |
|----------|---------------------------------|-------------------|-------|--------------|-------|------|---------------------------|-------|------|------------|
| | | | | Forecast | V/C | LOS | Forecast | V/C | LOS | V/C Change |
| 1 | W Avenue A e/o 60th St W | Major Highway | 2 | 10,300 | 0.572 | A | 10,350 | 0.575 | A | 0.003 |
| 2 | E Avenue E w/o 30th St E | Expressway | 4 | 7,900 | 0.180 | A | 7,980 | 0.181 | A | 0.001 |
| 3 | E Avenue E w/o 90th St E | Expressway | 4 | 7,200 | 0.164 | A | 7,260 | 0.165 | A | 0.001 |
| 4 | W Avenue G e/o 110th St W | Major Highway | 2 | 5,700 | 0.317 | A | 5,780 | 0.321 | A | 0.004 |
| 5 | E Avenue G w/o 30th St E | Major Highway | 2 | 4,900 | 0.272 | A | 5,070 | 0.282 | A | 0.010 |
| 6 | E Avenue G w/o 90th St E | Major Highway | 2 | 200 | 0.011 | A | 350 | 0.019 | A | 0.008 |
| 7 | W Avenue I e/o 110th St W | Major Highway | 2 | 3,700 | 0.206 | A | 4,480 | 0.249 | A | 0.043 |
| 8 | E Avenue J w/o 90th St E | Major Highway | 2 | 3,100 | 0.172 | A | 3,160 | 0.176 | A | 0.004 |
| 9 | W Avenue K e/o 110th St W | Major Highway | 2 | 6,900 | 0.383 | A | 6,990 | 0.388 | A | 0.005 |
| 10 | E Avenue O w/o 170th St E | Major Highway | 2 | 8,700 | 0.483 | A | 8,940 | 0.497 | A | 0.014 |
| 11 | E Avenue O w/o 240th St E | Secondary Highway | 2 | 1,600 | 0.089 | A | 1,830 | 0.102 | A | 0.013 |
| 12 | E Palmdale Blvd w/o 90th St E | Major Highway | 2 | 7,700 | 0.428 | A | 8,180 | 0.454 | A | 0.026 |
| 13 | E Palmdale Blvd w/o Longview Rd | Major Highway | 2 | 6,100 | 0.339 | A | 6,480 | 0.360 | A | 0.021 |
| 14 | E Palmdale Blvd w/o 170th St E | Major Highway | 2 | 7,100 | 0.394 | A | 7,180 | 0.399 | A | 0.005 |
| 15 | E Avenue T w/o 87th St E | Major Highway | 2 | 13,100 | 0.728 | C | 13,490 | 0.749 | C | 0.021 |
| 16 | E Avenue T w/o 116th St E | Major Highway | 2 | 6,200 | 0.344 | A | 6,470 | 0.359 | A | 0.015 |
| 17 | E Avenue T w/o 165th St E | Local / Collector | 2 | 3,800 | 0.253 | A | 3,910 | 0.261 | A | 0.008 |
| 18 | SR-138 w/o 87th St E | Expressway | 2 | 28,500 | 1.295 | F(1) | 28,750 | 1.307 | F(1) | 0.012 |

TABLE 9 ROADWAY SEGMENT LOS – HORIZON YEAR AND HORIZON YEAR PLUS PROJECT (2035)

| Study ID | Location | Functional Class | Lanes | Horizon Year | | | Horizon Year plus Project | | | |
|----------|-------------------------------|---------------------------|-------|--------------|-------|-----|---------------------------|-------|-----|------------|
| | | | | Forecast | V/C | LOS | Forecast | V/C | LOS | V/C Change |
| 19 | SR-138 w/o 106th St E | Expressway | 4 | 23,500 | 0.534 | A | 23,600 | 0.536 | A | 0.002 |
| 20 | SR-138 w/o 165th St E | Expressway | 4 | 12,200 | 0.277 | A | 12,390 | 0.282 | A | 0.005 |
| 21 | SR-138 w/o 263rd St E | Expressway | 2 | 13,200 | 0.600 | A | 13,570 | 0.617 | B | 0.017 |
| 22 | SR-18 w/o 263rd St E | Major Highway | 2 | 3,600 | 0.200 | A | 3,730 | 0.207 | A | 0.007 |
| 23 | Fort Tejon Rd w/o 106th St E | Secondary Highway | 2 | 4,800 | 0.267 | A | 5,260 | 0.292 | A | 0.025 |
| 24 | 110th St W s/o W Avenue G | Major Highway | 2 | 4,000 | 0.222 | A | 4,110 | 0.228 | A | 0.006 |
| 25 | 110th St W s/o E Avenue K | Major Highway | 2 | 8,300 | 0.461 | A | 8,430 | 0.468 | A | 0.007 |
| 26 | 60th St W s/o W Avenue A | Major Highway | 2 | 7,900 | 0.439 | A | 7,960 | 0.442 | A | 0.003 |
| 27 | 60th St W s/o SR-138 | Major Highway | 2 | 12,600 | 0.700 | B | 12,680 | 0.704 | C | 0.004 |
| 28 | Sierra Hwy s/o W Avenue D | Expressway | 4 | 16,200 | 0.368 | A | 16,330 | 0.371 | A | 0.003 |
| 29 | Sierra Hwy s/o W Avenue G | Major Highway | 2 | 12,400 | 0.689 | B | 12,490 | 0.694 | B | 0.005 |
| 30 | 90th St E s/o E Avenue J | Expressway | 4 | 10,200 | 0.232 | A | 10,350 | 0.235 | A | 0.003 |
| 31 | 90th St E s/o E Palmdale Blvd | Major Highway | 4 | 19,500 | 0.542 | A | 20,000 | 0.556 | A | 0.014 |
| 32 | 87th St E s/o SR-138 | Secondary Highway | 2 | 2,500 | 0.139 | A | 2,560 | 0.142 | A | 0.003 |
| 33 | 106th St E s/o SR-138 | Secondary Highway | 2 | 7,000 | 0.389 | A | 7,070 | 0.393 | A | 0.004 |
| 34 | 106th St E s/o Fort Tejon Rd | Limited Secondary Highway | 2 | 15,100 | 0.839 | D | 15,340 | 0.852 | D | 0.013 |
| 35 | 140th St E s/o E Avenue J | Major Highway | 2 | 2,400 | 0.133 | A | 2,520 | 0.140 | A | 0.007 |
| 36 | Longview Rd s/o SR-138 | Secondary Highway | 2 | 17,200 | 0.956 | E | 17,410 | 0.967 | E | 0.011 |

TABLE 9 ROADWAY SEGMENT LOS – HORIZON YEAR AND HORIZON YEAR PLUS PROJECT (2035)

| Study ID | Location | Functional Class | Lanes | Horizon Year | | | Horizon Year plus Project | | | |
|----------|---|---------------------------|-------|--------------|-------|-----|---------------------------|-------|-----|------------|
| | | | | Forecast | V/C | LOS | Forecast | V/C | LOS | V/C Change |
| 37 | 170th St E s/o E Palmdale Blvd | Major Highway | 2 | 11,300 | 0.628 | B | 11,540 | 0.641 | B | 0.013 |
| 38 | 165th St E s/o SR-138 | Secondary Highway | 2 | 5,100 | 0.283 | A | 5,300 | 0.294 | A | 0.011 |
| 39 | Sierra Hwy s/o Angeles Forest Hwy | Major Highway | 2 | 16,200 | 0.900 | D | 16,270 | 0.904 | E | 0.004 |
| 40 | Sierra Hwy w/o Ward Rd | Major Highway | 2 | 7,300 | 0.406 | A | 7,450 | 0.414 | A | 0.008 |
| 41 | Sierra Hwy n/o Davenport Rd | Major Highway | 2 | 7,100 | 0.394 | A | 7,310 | 0.406 | A | 0.012 |
| 42 | Sierra Hwy n/o Vasquez Canyon Rd | Major Highway | 2 | 12,900 | 0.717 | C | 13,410 | 0.745 | C | 0.028 |
| 43 | Angeles Forest Highway s/o E Carson Mesa Rd | Major Highway | 2 | 7,500 | 0.417 | A | 7,770 | 0.432 | A | 0.015 |
| 44 | Crown Valley Rd n/o Sierra Hwy | Limited Secondary Highway | 2 | 8,300 | 0.461 | A | 9,090 | 0.505 | A | 0.044 |
| 45 | Aqua Dulce Canyon Rd n/o SR-14 WB Ramps | Limited Secondary Highway | 2 | 3,000 | 0.167 | A | 4,200 | 0.233 | A | 0.066 |
| 46 | Davenport Rd e/o Sierra Hwy | Limited Secondary Highway | 2 | 3,700 | 0.206 | A | 3,880 | 0.216 | A | 0.010 |
| 47 | Shadow Pines Blvd n/o Soledad Canyon Rd | Secondary Highway | 2 | 13,600 | 0.756 | C | 14,100 | 0.783 | C | 0.027 |
| 48 | Copper Hill Dr e/o Copperstone Dr | Major Highway | 6 | 33,700 | 0.624 | B | 33,940 | 0.629 | B | 0.005 |
| 49 | The Old Rd n/o I-5 SB Ramps | Secondary Highway | 4 | 14,200 | 0.394 | A | 14,230 | 0.395 | A | 0.001 |
| 50 | Hasley Canyon Rd w/o Commerce Center Dr | Secondary Highway | 4 | 13,800 | 0.383 | A | 13,850 | 0.385 | A | 0.002 |

Source: Fehr & Peers, 2015.

CONSTRUCTION

During the construction period for each new single-family residence, temporary construction impacts could include temporary closure of travel and/or parking lanes, temporary closure of bicycle lanes and sidewalks, temporary relocation of bus stops, and limitations on local access where these facilities are present. In addition to the construction activity associated with building a new home, these new developments could require grading of the parcel or access to the parcel and new roadway construction.

Because the precise location of the planned residences and the nature of each parcel are not known at this time, the specific location of these potential impacts cannot be determined. The construction would result in the temporary addition of worker trips and truck trips (material delivery and removal of excavated soil) to the surrounding regional and local transportation system.

However, the limited number of sites forecast to be developed each year, at most 184 parcels per year, and the significant area over which the development would occur limit the potential for concentrated impacts to a single roadway facility for an extended period of time. Also, the construction on these parcels would likely occur one at a time rather than multiple parcels under a single developer. The construction activity on each site would be expected to occur mostly within the parcel property area, so the potential for facility closures within the public right-of-way is minimal. Therefore, construction-related traffic effects are considered to be less than significant.

V. REGIONAL TRANSPORTATION SYSTEM IMPACT ANALYSIS

This section presents an analysis of potential impacts on the regional transportation system. This analysis was conducted in accordance with the procedures outlined in *2010 Congestion Management Program for Los Angeles County* (Los Angeles County Metropolitan Transportation Authority, October 2010). The CMP requires that, when an environmental impact report is prepared for a project, traffic impact analyses be conducted for select regional facilities based on the quantity of project traffic expected to utilize these facilities.

LEVEL OF SERVICE STANDARDS AND METHODOLOGY

The CMP guidelines require that the first issue to be addressed is the determination of the geographic scope of the study area. The criteria for determining the study area for CMP arterial monitoring intersections or segments and for freeway monitoring locations are:

- All CMP arterial monitoring intersections or segments where the proposed project will add 50 or more trips during either the AM or PM peak hours of adjacent street traffic.
- All CMP mainline freeway monitoring locations where the proposed project will add 150 or more trips, in either direction, during either the AM or PM peak hours.

The CMP traffic impact analysis guidelines establish that a significant project impact occurs when the following threshold is exceeded:

- The proposed project increases traffic demand on a CMP facility by 2% of capacity (V/C 0.02), causing LOS F (V/C > 1.00).
- If the facility is already at LOS F, a significant impact occurs when the proposed project increases traffic demand on a CMP facility by 2% of capacity (V/C 0.02).

The CMP guidelines also allow arterial segment analysis between arterial monitoring intersections in lieu of intersection LOS calculations. The design capacity for this analysis is 800 vehicle hours per lane regardless of functional classification. Freeway operating conditions during peak hours are evaluated using the general procedures established by the CMP. LOS is estimated with calculation of the demand-to-capacity (D/C) ratio. Calculation of LOS based on D/C ratios is a surrogate for the speed-based LOS used by the Caltrans for traffic operational analysis. Capacity is determined based on a capacity of 2,000 vehicles per hour per lane. The level of service standards for the arterial and freeway analysis are shown in Table 10.

TABLE 10 CMP SEGMENT AND FREEWAY MAINLINE LEVEL OF SERVICE STANDARDS

| LOS | Segment V/C | Freeway Mainline D/C |
|------|---------------|----------------------|
| A | 0.00 – 0.60 | 0.00 – 0.35 |
| B | >0.00 – 0.70 | >0.35 – 0.54 |
| C | >0.70 – 0.80 | >0.54 – 0.77 |
| D | >0.80 – 0.90 | >0.77 – 0.93 |
| E | >0.90 – 1.00 | >0.93 – 1.00 |
| F(0) | > 1.00 – 1.25 | > 1.00 – 1.25 |
| F(1) | > 1.25 – 1.35 | > 1.25 – 1.35 |
| F(2) | >1.35 – 1.45 | >1.35 – 1.45 |
| F(3) | > 1.45 | > 1.45 |

Source: Congestion Management Plan, 2010.

IMPACT ANALYSIS

For the impact analysis, all CMP arterial and freeway monitoring locations in the study area were analyzed regardless of the trip threshold. There are seven arterial segment locations and five freeway mainline locations:

- 90. SR-138 e/o 60th St W
- 93. Henry Mayo Dr w/o Commerce Center Dr
- 96. SR-138 e/o 300th St W
- 98. SR-138 w/o 87th St E
- 99. SR-138 w/o 263rd St E
- 102. Sierra Hwy w/o Ward Rd
- 103. Sierra Hwy n/o Vasquez Canyon Rd
- 1008. Route 5 n/o Route 14
- 1009. Route 5 n/o Route 126 West
- 1022. Route 14 n/o Route 5
- 1023. Route 14 s/o Angeles Forest Highway
- 1024. Route 14 s/o Route 48 (Avenue D)

Tables 11 through 14 present existing and horizon year peak hour CMP arterial and freeway operating conditions. No significant impacts were identified due to the relatively minor project-related increases in traffic volumes.

TABLE 11 CMP SEGMENT LOS – EXISTING AND EXISTING PLUS PROJECT (2015)

| CMP ID | Location | Functional Class | Lanes | Existing | | | Existing plus Project | | | |
|-------------------------------------|--------------------------------------|------------------|-------|----------|-------|-----|-----------------------|-------|-----|------------|
| | | | | Count | V/C | LOS | Forecast | V/C | LOS | V/C Change |
| AM Peak Hour Segment Results | | | | | | | | | | |
| 90 | SR-138 e/o 60th St W | Major Highway | 2 | 276 | 0.173 | A | 330 | 0.206 | A | 0.033 |
| 93 | Henry Mayo Dr w/o Commerce Center Dr | Expressway | 4 | 2,700 | 0.844 | D | 2,710 | 0.847 | D | 0.003 |
| 96 | SR-138 e/o 300th St W | Major Highway | 2 | 243 | 0.152 | A | 270 | 0.169 | A | 0.017 |
| 98 | SR-138 w/o 87th St E | Major Highway | 2 | 963 | 0.602 | B | 990 | 0.619 | B | 0.017 |
| 99 | SR-138 w/o 263rd St E | Major Highway | 2 | 529 | 0.331 | A | 540 | 0.338 | A | 0.007 |
| 102 | Sierra Hwy w/o Ward Rd | Major Highway | 2 | 752 | 0.470 | A | 770 | 0.481 | A | 0.011 |
| 103 | Sierra Hwy n/o Vasquez Canyon Rd | Major Highway | 2 | 993 | 0.621 | B | 1,060 | 0.663 | B | 0.042 |
| PM Peak Hour Segment Results | | | | | | | | | | |
| 90 | SR-138 e/o 60th St W | Major Highway | 2 | 396 | 0.248 | A | 450 | 0.281 | A | 0.033 |
| 93 | Henry Mayo Dr w/o Commerce Center Dr | Expressway | 4 | 3,100 | 0.969 | E | 3,110 | 0.972 | E | 0.003 |
| 96 | SR-138 e/o 300th St W | Major Highway | 2 | 376 | 0.235 | A | 410 | 0.256 | A | 0.021 |
| 98 | SR-138 w/o 87th St E | Major Highway | 2 | 1,434 | 0.896 | D | 1,480 | 0.925 | E | 0.029 |
| 99 | SR-138 w/o 263rd St E | Major Highway | 2 | 773 | 0.483 | A | 810 | 0.506 | A | 0.023 |
| 102 | Sierra Hwy w/o Ward Rd | Major Highway | 2 | 744 | 0.465 | A | 760 | 0.475 | A | 0.010 |
| 103 | Sierra Hwy n/o Vasquez Canyon Rd | Major Highway | 2 | 895 | 0.559 | A | 950 | 0.594 | A | 0.035 |

Source: Fehr & Peers, 2015.

TABLE 12 CMP FREEWAY MAINLINE LOS – EXISTING AND EXISTING PLUS PROJECT (2015)

| CMP ID | Location | Functional Class | Lanes | Existing | | | Existing plus Project | | | |
|--|--|------------------|-------|----------|-------|-----|-----------------------|-------|-----|------------|
| | | | | Count | D/C | LOS | Forecast | D/C | LOS | D/C Change |
| AM Peak Hour Freeway Mainline Results | | | | | | | | | | |
| 1008 | Route 5 n/o Route 14 NB | Freeway | 5 | 7,900 | 0.790 | D | 7,910 | 0.791 | D | 0.001 |
| 1008 | Route 5 n/o Route 14 SB | Freeway | 5 | 9,700 | 0.970 | E | 9,750 | 0.975 | E | 0.005 |
| 1009 | Route 5 n/o Route 126 West NB | Freeway | 4 | 4,000 | 0.500 | B | 4,010 | 0.501 | B | 0.001 |
| 1009 | Route 5 n/o Route 126 West SB | Freeway | 4 | 4,600 | 0.575 | C | 4,650 | 0.581 | C | 0.006 |
| 1022 | Route 14 n/o Route 5 NB | Freeway | 6 | 3,000 | 0.250 | A | 3,010 | 0.251 | A | 0.001 |
| 1022 | Route 14 n/o Route 5 SB | Freeway | 6 | 8,100 | 0.675 | C | 8,220 | 0.685 | C | 0.010 |
| 1023 | Route 14 s/o Angeles Forest Highway NB | Freeway | 3 | 2,100 | 0.350 | A | 2,200 | 0.367 | B | 0.017 |
| 1023 | Route 14 s/o Angeles Forest Highway SB | Freeway | 3 | 4,900 | 0.817 | D | 4,980 | 0.830 | D | 0.013 |
| 1024 | Route 14 s/o Route 48 (Avenue D) NB | Freeway | 2 | 1,200 | 0.300 | A | 1,210 | 0.303 | A | 0.003 |
| 1024 | Route 14 s/o Route 48 (Avenue D) SB | Freeway | 2 | 1,400 | 0.350 | A | 1,460 | 0.365 | B | 0.015 |
| PM Peak Hour Freeway Mainline Results | | | | | | | | | | |
| 1008 | Route 5 n/o Route 14 NB | Freeway | 5 | 9,700 | 0.970 | E | 9,770 | 0.977 | E | 0.007 |
| 1008 | Route 5 n/o Route 14 SB | Freeway | 5 | 7,700 | 0.770 | C | 7,710 | 0.771 | D | 0.001 |
| 1009 | Route 5 n/o Route 126 West NB | Freeway | 4 | 4,900 | 0.613 | C | 4,950 | 0.619 | C | 0.006 |
| 1009 | Route 5 n/o Route 126 West SB | Freeway | 4 | 3,600 | 0.450 | B | 3,640 | 0.455 | B | 0.005 |
| 1022 | Route 14 n/o Route 5 NB | Freeway | 6 | 7,800 | 0.650 | C | 7,960 | 0.663 | C | 0.013 |
| 1022 | Route 14 n/o Route 5 SB | Freeway | 6 | 4,200 | 0.350 | A | 4,250 | 0.354 | B | 0.004 |
| 1023 | Route 14 s/o Angeles Forest Highway NB | Freeway | 3 | 5,100 | 0.850 | D | 5,210 | 0.868 | D | 0.018 |
| 1023 | Route 14 s/o Angeles Forest Highway SB | Freeway | 3 | 2,500 | 0.417 | B | 2,590 | 0.432 | B | 0.015 |
| 1024 | Route 14 s/o Route 48 (Avenue D) NB | Freeway | 2 | 1,700 | 0.425 | B | 1,750 | 0.438 | B | 0.013 |
| 1024 | Route 14 s/o Route 48 (Avenue D) SB | Freeway | 2 | 1,700 | 0.425 | B | 1,720 | 0.430 | B | 0.005 |

Source: Fehr & Peers, 2015.



TABLE 13 CMP SEGMENT LOS – HORIZON YEAR AND HORIZON YEAR PLUS PROJECT (2035)

| CMP ID | Location | Functional Class | Lanes | Horizon Year | | | Horizon Year plus Project | | | |
|-------------------------------------|--------------------------------------|------------------|-------|--------------|-------|------|---------------------------|-------|------|------------|
| | | | | Forecast | V/C | LOS | Forecast | V/C | LOS | V/C Change |
| AM Peak Hour Segment Results | | | | | | | | | | |
| 90 | SR-138 e/o 60th St W | Freeway | 4 | 4,200 | 0.525 | A | 4,250 | 0.531 | A | 0.006 |
| 93 | Henry Mayo Dr w/o Commerce Center Dr | Expressway | 4 | 3,000 | 0.938 | E | 3,010 | 0.941 | E | 0.003 |
| 96 | SR-138 e/o 300th St W | Freeway | 4 | 4,000 | 0.500 | A | 4,030 | 0.504 | A | 0.004 |
| 98 | SR-138 w/o 87th St E | Expressway | 4 | 2,000 | 0.625 | B | 2,030 | 0.634 | B | 0.009 |
| 99 | SR-138 w/o 263rd St E | Expressway | 2 | 900 | 0.563 | A | 920 | 0.575 | A | 0.012 |
| 102 | Sierra Hwy w/o Ward Rd | Major Highway | 2 | 800 | 0.500 | A | 820 | 0.513 | A | 0.013 |
| 103 | Sierra Hwy n/o Vasquez Canyon Rd | Major Highway | 2 | 1,300 | 0.813 | D | 1,360 | 0.850 | D | 0.037 |
| PM Peak Hour Segment Results | | | | | | | | | | |
| 90 | SR-138 e/o 60th St W | Freeway | 4 | 4,500 | 0.563 | A | 4,560 | 0.570 | A | 0.007 |
| 93 | Henry Mayo Dr w/o Commerce Center Dr | Expressway | 4 | 3,300 | 1.031 | F(0) | 3,310 | 1.034 | F(0) | 0.003 |
| 96 | SR-138 e/o 300th St W | Freeway | 4 | 4,300 | 0.538 | A | 4,330 | 0.541 | A | 0.003 |
| 98 | SR-138 w/o 87th St E | Expressway | 4 | 2,500 | 0.781 | C | 2,550 | 0.797 | C | 0.016 |
| 99 | SR-138 w/o 263rd St E | Expressway | 2 | 1,000 | 0.625 | B | 1,040 | 0.650 | B | 0.025 |
| 102 | Sierra Hwy w/o Ward Rd | Major Highway | 2 | 800 | 0.500 | A | 820 | 0.513 | A | 0.013 |
| 103 | Sierra Hwy n/o Vasquez Canyon Rd | Major Highway | 2 | 1,200 | 0.750 | C | 1,260 | 0.788 | C | 0.038 |

Source: Fehr & Peers, 2015.

TABLE 14 CMP FREEWAY MAINLINE LOS – HORIZON YEAR AND HORIZON YEAR PLUS PROJECT (2035)

| CMP ID | Location | Functional Class | Lanes | Horizon Year | | | Horizon Year plus Project | | | |
|--|--|------------------|-------|--------------|-------|------|---------------------------|-------|------|------------|
| | | | | Count | D/C | LOS | Forecast | D/C | LOS | D/C Change |
| AM Peak Hour Freeway Mainline Results | | | | | | | | | | |
| 1008 | Route 5 n/o Route 14 NB | Freeway | 6 | 9,200 | 0.767 | C | 9,210 | 0.768 | C | 0.001 |
| 1008 | Route 5 n/o Route 14 SB | Freeway | 6 | 14,100 | 1.175 | F(0) | 14,150 | 1.179 | F(0) | 0.004 |
| 1009 | Route 5 n/o Route 126 West NB | Freeway | 5 | 5,100 | 0.510 | B | 5,110 | 0.511 | B | 0.001 |
| 1009 | Route 5 n/o Route 126 West SB | Freeway | 5 | 7,400 | 0.740 | C | 7,460 | 0.746 | C | 0.006 |
| 1022 | Route 14 n/o Route 5 NB | Freeway | 6 | 3,400 | 0.283 | A | 3,410 | 0.284 | A | 0.001 |
| 1022 | Route 14 n/o Route 5 SB | Freeway | 6 | 8,700 | 0.725 | C | 8,810 | 0.734 | C | 0.009 |
| 1023 | Route 14 s/o Angeles Forest Highway NB | Freeway | 3 | 3,600 | 0.600 | C | 3,690 | 0.615 | C | 0.015 |
| 1023 | Route 14 s/o Angeles Forest Highway SB | Freeway | 3 | 5,800 | 0.967 | E | 5,880 | 0.980 | E | 0.013 |
| 1024 | Route 14 s/o Route 48 (Avenue D) NB | Freeway | 2 | 3,500 | 0.875 | D | 3,510 | 0.878 | D | 0.003 |
| 1024 | Route 14 s/o Route 48 (Avenue D) SB | Freeway | 2 | 3,300 | 0.825 | D | 3,360 | 0.840 | D | 0.015 |
| PM Peak Hour Freeway Mainline Results | | | | | | | | | | |
| 1008 | Route 5 n/o Route 14 NB | Freeway | 6 | 13,900 | 1.158 | F(0) | 13,970 | 1.164 | F(0) | 0.006 |
| 1008 | Route 5 n/o Route 14 SB | Freeway | 6 | 9,700 | 0.808 | D | 9,710 | 0.809 | D | 0.001 |
| 1009 | Route 5 n/o Route 126 West NB | Freeway | 5 | 8,200 | 0.820 | D | 8,250 | 0.825 | D | 0.005 |
| 1009 | Route 5 n/o Route 126 West SB | Freeway | 5 | 4,900 | 0.490 | B | 4,940 | 0.494 | B | 0.004 |
| 1022 | Route 14 n/o Route 5 NB | Freeway | 6 | 8,300 | 0.692 | C | 8,450 | 0.704 | C | 0.012 |
| 1022 | Route 14 n/o Route 5 SB | Freeway | 6 | 4,700 | 0.392 | B | 4,750 | 0.396 | B | 0.004 |
| 1023 | Route 14 s/o Angeles Forest Highway NB | Freeway | 3 | 5,700 | 0.950 | E | 5,810 | 0.968 | E | 0.018 |
| 1023 | Route 14 s/o Angeles Forest Highway SB | Freeway | 3 | 4,300 | 0.717 | C | 4,390 | 0.732 | C | 0.015 |
| 1024 | Route 14 s/o Route 48 (Avenue D) NB | Freeway | 2 | 4,000 | 1.000 | E | 4,050 | 1.013 | F(0) | 0.013 |
| 1024 | Route 14 s/o Route 48 (Avenue D) SB | Freeway | 2 | 3,700 | 0.925 | D | 3,730 | 0.933 | E | 0.008 |

Source: Fehr & Peers, 2015.



REFERENCES

2010 Congestion Management Program for Los Angeles County (Los Angeles County Metropolitan Transportation Authority, October 2010)

Highway Capacity Manual (HCM) (Transportation Research Board, 2000)

Los Angeles County General Plan (Los Angeles County, Revised Draft March 2015)

Los Angeles County General Plan EIR (Los Angeles County, March 2015)

APPENDIX A: TRAFFIC COUNTS



VOLUME

E Avenue O W/O 240th St E

Day: Wednesday
Date: 1/28/2015

City: Lancaster
Project #: CA15_5025_002

| DAILY TOTALS | | | | | NB | SB | | | | | | Total |
|----------------|----|----|----|-------|-------|--------------|----------------|-----|----|-------|-------|--------------|
| | | | | | 0 | 0 | | | | | | 1,578 |
| | | | | | | | EB | WB | | | | |
| | | | | | | | 853 | 725 | | | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL | |
| 00:00 | | | 1 | 1 | 2 | 12:00 | | | 3 | 7 | 10 | |
| 00:15 | | | 2 | 4 | 6 | 12:15 | | | 7 | 13 | 20 | |
| 00:30 | | | 1 | 3 | 4 | 12:30 | | | 11 | 5 | 16 | |
| 00:45 | | | 1 | 5 | 2 | 12:45 | | | 13 | 34 | 23 | |
| | | | | 10 | 3 | 15 | | | 10 | 35 | 69 | |
| 01:00 | | | 3 | 0 | 3 | 13:00 | | | 8 | 13 | 21 | |
| 01:15 | | | 0 | 1 | 1 | 13:15 | | | 10 | 10 | 20 | |
| 01:30 | | | 2 | 0 | 2 | 13:30 | | | 10 | 11 | 21 | |
| 01:45 | | | 1 | 6 | 2 | 13:45 | | | 11 | 39 | 23 | |
| | | | | 3 | 3 | 9 | | | 12 | 46 | 85 | |
| 02:00 | | | 4 | 0 | 4 | 14:00 | | | 14 | 19 | 33 | |
| 02:15 | | | 2 | 0 | 2 | 14:15 | | | 8 | 8 | 16 | |
| 02:30 | | | 0 | 1 | 1 | 14:30 | | | 16 | 7 | 23 | |
| 02:45 | | | 1 | 7 | 4 | 14:45 | | | 17 | 55 | 32 | |
| | | | | 5 | 5 | 12 | | | 15 | 49 | 104 | |
| 03:00 | | | 1 | 0 | 1 | 15:00 | | | 12 | 16 | 28 | |
| 03:15 | | | 0 | 1 | 1 | 15:15 | | | 7 | 7 | 14 | |
| 03:30 | | | 1 | 1 | 2 | 15:30 | | | 20 | 22 | 42 | |
| 03:45 | | | 1 | 3 | 0 | 15:45 | | | 23 | 62 | 48 | |
| | | | | 2 | 1 | 5 | | | 25 | 70 | 132 | |
| 04:00 | | | 3 | 4 | 7 | 16:00 | | | 36 | 18 | 54 | |
| 04:15 | | | 5 | 7 | 12 | 16:15 | | | 30 | 9 | 39 | |
| 04:30 | | | 10 | 11 | 21 | 16:30 | | | 36 | 8 | 44 | |
| 04:45 | | | 9 | 27 | 4 | 16:45 | | | 28 | 130 | 43 | |
| | | | | 26 | 13 | 53 | | | 15 | 50 | 180 | |
| 05:00 | | | 11 | 15 | 26 | 17:00 | | | 20 | 9 | 29 | |
| 05:15 | | | 23 | 13 | 36 | 17:15 | | | 21 | 7 | 28 | |
| 05:30 | | | 33 | 16 | 49 | 17:30 | | | 17 | 10 | 27 | |
| 05:45 | | | 16 | 83 | 16 | 17:45 | | | 16 | 74 | 24 | |
| | | | | 60 | 32 | 143 | | | 8 | 34 | 108 | |
| 06:00 | | | 12 | 13 | 25 | 18:00 | | | 12 | 7 | 19 | |
| 06:15 | | | 19 | 17 | 36 | 18:15 | | | 14 | 5 | 19 | |
| 06:30 | | | 8 | 17 | 25 | 18:30 | | | 9 | 8 | 17 | |
| 06:45 | | | 12 | 51 | 22 | 18:45 | | | 6 | 41 | 10 | |
| | | | | 69 | 34 | 120 | | | 4 | 24 | 65 | |
| 07:00 | | | 10 | 10 | 20 | 19:00 | | | 2 | 5 | 7 | |
| 07:15 | | | 11 | 18 | 29 | 19:15 | | | 6 | 5 | 11 | |
| 07:30 | | | 6 | 16 | 22 | 19:30 | | | 2 | 5 | 7 | |
| 07:45 | | | 11 | 38 | 14 | 19:45 | | | 2 | 12 | 6 | |
| | | | | 58 | 25 | 96 | | | 4 | 19 | 31 | |
| 08:00 | | | 7 | 18 | 25 | 20:00 | | | 3 | 8 | 11 | |
| 08:15 | | | 10 | 8 | 18 | 20:15 | | | 7 | 3 | 10 | |
| 08:30 | | | 9 | 5 | 14 | 20:30 | | | 3 | 2 | 5 | |
| 08:45 | | | 5 | 31 | 7 | 20:45 | | | 7 | 20 | 13 | |
| | | | | 38 | 12 | 69 | | | 6 | 19 | 39 | |
| 09:00 | | | 9 | 7 | 16 | 21:00 | | | 2 | 2 | 4 | |
| 09:15 | | | 18 | 11 | 29 | 21:15 | | | 4 | 1 | 5 | |
| 09:30 | | | 6 | 10 | 16 | 21:30 | | | 4 | 3 | 7 | |
| 09:45 | | | 7 | 40 | 5 | 21:45 | | | 5 | 15 | 9 | |
| | | | | 33 | 12 | 73 | | | 4 | 10 | 25 | |
| 10:00 | | | 5 | 6 | 11 | 22:00 | | | 3 | 4 | 7 | |
| 10:15 | | | 9 | 2 | 11 | 22:15 | | | 5 | 2 | 7 | |
| 10:30 | | | 8 | 3 | 11 | 22:30 | | | 2 | 3 | 5 | |
| 10:45 | | | 5 | 27 | 6 | 22:45 | | | 3 | 13 | 3 | |
| | | | | 17 | 11 | 44 | | | 0 | 9 | 22 | |
| 11:00 | | | 5 | 10 | 15 | 23:00 | | | 4 | 2 | 6 | |
| 11:15 | | | 6 | 6 | 12 | 23:15 | | | 6 | 0 | 6 | |
| 11:30 | | | 9 | 9 | 18 | 23:30 | | | 3 | 5 | 8 | |
| 11:45 | | | 4 | 24 | 5 | 23:45 | | | 3 | 16 | 5 | |
| | | | | 30 | 9 | 54 | | | 2 | 9 | 25 | |
| TOTALS | | | | 342 | 351 | 693 | TOTALS | | | 511 | 374 | 885 |
| SPLIT % | | | | 49.4% | 50.6% | 43.9% | SPLIT % | | | 57.7% | 42.3% | 56.1% |

| DAILY TOTALS | | | | | NB | SB | | | | | | Total |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|-------|-------|
| | | | | | 0 | 0 | | | | | | 1,578 |
| | | | | | | | EB | WB | | | | |
| | | | | | | | 853 | 725 | | | | |
| AM Peak Hour | | | 05:15 | 06:00 | 05:00 | PM Peak Hour | | | 16:00 | 15:30 | 15:45 | |
| AM Pk Volume | | | 84 | 69 | 143 | PM Pk Volume | | | 130 | 74 | 185 | |
| Pk Hr Factor | | | 0.636 | 0.784 | 0.730 | Pk Hr Factor | | | 0.903 | 0.740 | 0.856 | |
| 7 - 9 Volume | 0 | 0 | 69 | 96 | 165 | 4 - 6 Volume | 0 | 0 | 204 | 84 | 288 | |
| 7 - 9 Peak Hour | | | 07:00 | 07:15 | 07:15 | 4 - 6 Peak Hour | | | 16:00 | 16:00 | 16:00 | |
| 7 - 9 Pk Volume | 0 | 0 | 38 | 66 | 101 | 4 - 6 Pk Volume | 0 | 0 | 130 | 50 | 180 | |
| Pk Hr Factor | 0.000 | 0.000 | 0.864 | 0.917 | 0.871 | Pk Hr Factor | 0.000 | 0.000 | 0.903 | 0.694 | 0.833 | |

VOLUME
SR-18 W/O 263rd St E

Day: Wednesday
Date: 1/28/2015

City: Lancaster
Project #: CA15_5025_004

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|--------------|----|----|-------|-------|-------|-----------|-------|-------|-------|-------|-------|
| | | | | | 0 | 0 | 1,887 | 1,670 | 3,557 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | | | 5 | 3 | 8 | 12:00 | | | 21 | 7 | 28 |
| 00:15 | | | 5 | 3 | 8 | 12:15 | | | 27 | 24 | 51 |
| 00:30 | | | 2 | 2 | 4 | 12:30 | | | 26 | 28 | 54 |
| 00:45 | | | 2 | 14 | 2 | 12:45 | | | 29 | 103 | 59 |
| | | | | 10 | 4 | 24 | | | 30 | 89 | 192 |
| 01:00 | | | 2 | 0 | 2 | 13:00 | | | 29 | 17 | 46 |
| 01:15 | | | 2 | 3 | 5 | 13:15 | | | 31 | 29 | 60 |
| 01:30 | | | 2 | 2 | 4 | 13:30 | | | 17 | 24 | 41 |
| 01:45 | | | 4 | 10 | 2 | 13:45 | | | 32 | 109 | 64 |
| | | | | 7 | 6 | 17 | | | 32 | 102 | 211 |
| 02:00 | | | 3 | 5 | 8 | 14:00 | | | 38 | 22 | 60 |
| 02:15 | | | 1 | 6 | 7 | 14:15 | | | 35 | 32 | 67 |
| 02:30 | | | 5 | 3 | 8 | 14:30 | | | 31 | 27 | 58 |
| 02:45 | | | 2 | 11 | 5 | 14:45 | | | 24 | 128 | 51 |
| | | | | 19 | 7 | 30 | | | 27 | 108 | 236 |
| 03:00 | | | 2 | 8 | 10 | 15:00 | | | 30 | 28 | 58 |
| 03:15 | | | 10 | 3 | 13 | 15:15 | | | 23 | 22 | 45 |
| 03:30 | | | 1 | 7 | 8 | 15:30 | | | 35 | 29 | 64 |
| 03:45 | | | 3 | 16 | 14 | 15:45 | | | 33 | 121 | 54 |
| | | | | 32 | 17 | 48 | | | 21 | 100 | 221 |
| 04:00 | | | 4 | 18 | 22 | 16:00 | | | 42 | 24 | 66 |
| 04:15 | | | 3 | 18 | 21 | 16:15 | | | 46 | 23 | 69 |
| 04:30 | | | 6 | 17 | 23 | 16:30 | | | 49 | 26 | 75 |
| 04:45 | | | 8 | 21 | 23 | 16:45 | | | 51 | 188 | 78 |
| | | | | 76 | 31 | 97 | | | 27 | 100 | 288 |
| 05:00 | | | 6 | 21 | 27 | 17:00 | | | 51 | 20 | 71 |
| 05:15 | | | 11 | 22 | 33 | 17:15 | | | 39 | 26 | 65 |
| 05:30 | | | 8 | 17 | 25 | 17:30 | | | 34 | 32 | 66 |
| 05:45 | | | 11 | 36 | 30 | 17:45 | | | 42 | 166 | 66 |
| | | | | 90 | 41 | 126 | | | 24 | 102 | 268 |
| 06:00 | | | 10 | 28 | 38 | 18:00 | | | 48 | 26 | 74 |
| 06:15 | | | 18 | 27 | 45 | 18:15 | | | 36 | 26 | 62 |
| 06:30 | | | 19 | 39 | 58 | 18:30 | | | 41 | 21 | 62 |
| 06:45 | | | 13 | 60 | 34 | 18:45 | | | 36 | 161 | 46 |
| | | | | 128 | 47 | 188 | | | 10 | 83 | 244 |
| 07:00 | | | 13 | 29 | 42 | 19:00 | | | 32 | 13 | 45 |
| 07:15 | | | 22 | 32 | 54 | 19:15 | | | 28 | 11 | 39 |
| 07:30 | | | 16 | 33 | 49 | 19:30 | | | 33 | 17 | 50 |
| 07:45 | | | 19 | 70 | 28 | 19:45 | | | 24 | 117 | 35 |
| | | | | 122 | 47 | 192 | | | 11 | 52 | 169 |
| 08:00 | | | 31 | 29 | 60 | 20:00 | | | 9 | 14 | 23 |
| 08:15 | | | 23 | 32 | 55 | 20:15 | | | 15 | 14 | 29 |
| 08:30 | | | 21 | 23 | 44 | 20:30 | | | 19 | 14 | 33 |
| 08:45 | | | 21 | 96 | 21 | 20:45 | | | 6 | 49 | 13 |
| | | | | 105 | 42 | 201 | | | 7 | 49 | 98 |
| 09:00 | | | 16 | 28 | 44 | 21:00 | | | 7 | 5 | 12 |
| 09:15 | | | 23 | 29 | 52 | 21:15 | | | 12 | 5 | 17 |
| 09:30 | | | 23 | 14 | 37 | 21:30 | | | 14 | 13 | 27 |
| 09:45 | | | 19 | 81 | 26 | 21:45 | | | 7 | 40 | 4 |
| | | | | 97 | 45 | 178 | | | 4 | 27 | 11 |
| 10:00 | | | 28 | 20 | 48 | 22:00 | | | 14 | 8 | 22 |
| 10:15 | | | 33 | 19 | 52 | 22:15 | | | 11 | 1 | 12 |
| 10:30 | | | 27 | 23 | 50 | 22:30 | | | 6 | 7 | 13 |
| 10:45 | | | 24 | 112 | 19 | 22:45 | | | 10 | 41 | 4 |
| | | | | 81 | 43 | 193 | | | 4 | 20 | 14 |
| 11:00 | | | 24 | 17 | 41 | 23:00 | | | 6 | 4 | 10 |
| 11:15 | | | 31 | 10 | 41 | 23:15 | | | 8 | 1 | 9 |
| 11:30 | | | 31 | 21 | 52 | 23:30 | | | 4 | 2 | 6 |
| 11:45 | | | 29 | 115 | 14 | 23:45 | | | 4 | 22 | 2 |
| | | | | 62 | 43 | 177 | | | 2 | 9 | 6 |
| TOTALS | | | 642 | 829 | 1471 | TOTALS | | | 1245 | 841 | 2086 |
| SPLIT % | | | 43.6% | 56.4% | 41.4% | SPLIT % | | | 59.7% | 40.3% | 58.6% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|-------|
| | | | | | 0 | 0 | 1,887 | 1,670 | 3,557 | | |
| AM Peak Hour | | | 11:00 | 06:30 | 07:30 | PM Peak Hour | | | 16:15 | 14:15 | 16:15 |
| AM Pk Volume | | | 115 | 134 | 211 | PM Pk Volume | | | 197 | 114 | 293 |
| Pk Hr Factor | | | 0.927 | 0.859 | 0.879 | Pk Hr Factor | | | 0.966 | 0.891 | 0.939 |
| 7 - 9 Volume | 0 | 0 | 166 | 227 | 393 | 4 - 6 Volume | 0 | 0 | 354 | 202 | 556 |
| 7 - 9 Peak Hour | | | 08:00 | 07:00 | 07:30 | 4 - 6 Peak Hour | | | 16:15 | 16:45 | 16:15 |
| 7 - 9 Pk Volume | 0 | 0 | 96 | 122 | 211 | 4 - 6 Pk Volume | 0 | 0 | 197 | 105 | 293 |
| Pk Hr Factor | 0.000 | 0.000 | 0.774 | 0.924 | 0.879 | Pk Hr Factor | 0.000 | 0.000 | 0.966 | 0.820 | 0.939 |

VOLUME

SR-138 W/O 263rd St E

Day: Wednesday
Date: 1/28/2015

City: Lancaster
Project #: CA15_5025_005

| DAILY TOTALS | | | | | NB | SB | | | | | | Total |
|----------------|----|----|-------|-------|-------|----------------|-------|----|-------|-------|-------|-------|
| | | | | | 0 | 0 | | | | | | 8,230 |
| | | | | | | | 4,575 | | | | | 3,655 |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL | |
| 00:00 | | | 5 | 5 | 10 | 12:00 | | | 42 | 44 | 86 | |
| 00:15 | | | 11 | 17 | 28 | 12:15 | | | 57 | 39 | 96 | |
| 00:30 | | | 17 | 13 | 30 | 12:30 | | | 66 | 44 | 110 | |
| 00:45 | | | 11 | 44 | 11 | 46 | 12:45 | | 65 | 230 | 35 | 162 |
| 01:00 | | | 12 | 12 | 24 | 13:00 | | | 70 | 37 | 107 | |
| 01:15 | | | 11 | 16 | 27 | 13:15 | | | 50 | 47 | 97 | |
| 01:30 | | | 5 | 7 | 12 | 13:30 | | | 59 | 36 | 95 | |
| 01:45 | | | 3 | 31 | 3 | 38 | 13:45 | | 71 | 250 | 39 | 159 |
| 02:00 | | | 8 | 5 | 13 | 14:00 | | | 65 | 51 | 116 | |
| 02:15 | | | 10 | 16 | 26 | 14:15 | | | 66 | 37 | 103 | |
| 02:30 | | | 11 | 5 | 16 | 14:30 | | | 75 | 40 | 115 | |
| 02:45 | | | 5 | 34 | 8 | 34 | 14:45 | | 85 | 291 | 42 | 170 |
| 03:00 | | | 10 | 10 | 20 | 15:00 | | | 80 | 43 | 123 | |
| 03:15 | | | 9 | 10 | 19 | 15:15 | | | 82 | 61 | 143 | |
| 03:30 | | | 14 | 10 | 24 | 15:30 | | | 114 | 68 | 182 | |
| 03:45 | | | 17 | 50 | 22 | 52 | 15:45 | | 128 | 404 | 63 | 235 |
| 04:00 | | | 24 | 30 | 54 | 16:00 | | | 133 | 61 | 194 | |
| 04:15 | | | 31 | 31 | 62 | 16:15 | | | 152 | 49 | 201 | |
| 04:30 | | | 39 | 32 | 71 | 16:30 | | | 142 | 65 | 207 | |
| 04:45 | | | 21 | 115 | 38 | 131 | 16:45 | | 111 | 538 | 52 | 227 |
| 05:00 | | | 56 | 57 | 113 | 17:00 | | | 119 | 67 | 186 | |
| 05:15 | | | 43 | 52 | 95 | 17:15 | | | 105 | 57 | 162 | |
| 05:30 | | | 55 | 66 | 121 | 17:30 | | | 113 | 35 | 148 | |
| 05:45 | | | 56 | 210 | 80 | 255 | 17:45 | | 93 | 430 | 59 | 218 |
| 06:00 | | | 42 | 95 | 137 | 18:00 | | | 87 | 47 | 134 | |
| 06:15 | | | 46 | 70 | 116 | 18:15 | | | 99 | 34 | 133 | |
| 06:30 | | | 41 | 83 | 124 | 18:30 | | | 67 | 21 | 88 | |
| 06:45 | | | 44 | 173 | 78 | 326 | 18:45 | | 62 | 315 | 21 | 123 |
| 07:00 | | | 27 | 71 | 98 | 19:00 | | | 54 | 38 | 92 | |
| 07:15 | | | 49 | 49 | 98 | 19:15 | | | 52 | 47 | 99 | |
| 07:30 | | | 46 | 49 | 95 | 19:30 | | | 53 | 46 | 99 | |
| 07:45 | | | 49 | 171 | 65 | 234 | 19:45 | | 38 | 197 | 44 | 175 |
| 08:00 | | | 41 | 52 | 93 | 20:00 | | | 43 | 28 | 71 | |
| 08:15 | | | 51 | 44 | 95 | 20:15 | | | 19 | 27 | 46 | |
| 08:30 | | | 45 | 56 | 101 | 20:30 | | | 17 | 23 | 40 | |
| 08:45 | | | 66 | 203 | 55 | 207 | 20:45 | | 16 | 95 | 18 | 96 |
| 09:00 | | | 46 | 64 | 110 | 21:00 | | | 18 | 19 | 37 | |
| 09:15 | | | 57 | 61 | 118 | 21:15 | | | 13 | 30 | 43 | |
| 09:30 | | | 38 | 51 | 89 | 21:30 | | | 12 | 21 | 33 | |
| 09:45 | | | 75 | 216 | 40 | 216 | 21:45 | | 23 | 66 | 22 | 92 |
| 10:00 | | | 43 | 29 | 72 | 22:00 | | | 16 | 24 | 40 | |
| 10:15 | | | 52 | 43 | 95 | 22:15 | | | 17 | 19 | 36 | |
| 10:30 | | | 53 | 56 | 109 | 22:30 | | | 19 | 37 | 56 | |
| 10:45 | | | 44 | 192 | 29 | 157 | 22:45 | | 22 | 74 | 7 | 87 |
| 11:00 | | | 48 | 48 | 96 | 23:00 | | | 16 | 24 | 40 | |
| 11:15 | | | 32 | 41 | 73 | 23:15 | | | 8 | 11 | 19 | |
| 11:30 | | | 65 | 41 | 106 | 23:30 | | | 10 | 6 | 16 | |
| 11:45 | | | 43 | 188 | 34 | 164 | 23:45 | | 24 | 58 | 10 | 51 |
| TOTALS | | | 1627 | 1860 | 3487 | TOTALS | | | 2948 | 1795 | 4743 | |
| SPLIT % | | | 46.7% | 53.3% | 42.4% | SPLIT % | | | 62.2% | 37.8% | 57.6% | |

| DAILY TOTALS | | | | | NB | SB | | | | | | Total |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|-------|-------|
| | | | | | 0 | 0 | | | | | | 8,230 |
| | | | | | | | 4,575 | | | | | 3,655 |
| AM Peak Hour | | | 09:45 | 05:45 | 05:45 | PM Peak Hour | | | 15:45 | 15:15 | 15:45 | |
| AM Pk Volume | | | 223 | 328 | 513 | PM Pk Volume | | | 555 | 253 | 793 | |
| Pk Hr Factor | | | 0.743 | 0.863 | 0.936 | Pk Hr Factor | | | 0.913 | 0.930 | 0.958 | |
| 7 - 9 Volume | 0 | 0 | 374 | 441 | 815 | 4 - 6 Volume | 0 | 0 | 968 | 445 | 1413 | |
| 7 - 9 Peak Hour | | | 08:00 | 07:00 | 08:00 | 4 - 6 Peak Hour | | | 16:00 | 16:30 | 16:00 | |
| 7 - 9 Pk Volume | 0 | 0 | 203 | 234 | 410 | 4 - 6 Pk Volume | 0 | 0 | 538 | 241 | 765 | |
| Pk Hr Factor | 0.000 | 0.000 | 0.769 | 0.824 | 0.847 | Pk Hr Factor | 0.000 | 0.000 | 0.885 | 0.899 | 0.924 | |

VOLUME

E Avenue O W/O 170th St E

Day: Wednesday
Date: 1/28/2015

City: Lake Los Angeles
Project #: CA15_5025_007

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | | | | |
|----------------|----|----|-------|-------|-------|----------------|-------|-------|-------|-------|-------|-----|-----|-----|
| | | | | | 0 | 0 | 2,695 | 2,875 | 5,570 | | | | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL | | | |
| 00:00 | | | 3 | 5 | 8 | 12:00 | | | 34 | 50 | 84 | | | |
| 00:15 | | | 2 | 10 | 12 | 12:15 | | | 45 | 32 | 77 | | | |
| 00:30 | | | 4 | 5 | 9 | 12:30 | | | 41 | 37 | 78 | | | |
| 00:45 | | | 3 | 12 | 4 | 24 | 12:45 | | 41 | 161 | 57 | 176 | 98 | 337 |
| 01:00 | | | 5 | 0 | 5 | 13:00 | | | 35 | 41 | 76 | | | |
| 01:15 | | | 2 | 2 | 4 | 13:15 | | | 36 | 46 | 82 | | | |
| 01:30 | | | 1 | 2 | 3 | 13:30 | | | 32 | 48 | 80 | | | |
| 01:45 | | | 0 | 8 | 2 | 6 | 13:45 | | 43 | 146 | 42 | 177 | 85 | 323 |
| 02:00 | | | 1 | 3 | 4 | 14:00 | | | 59 | 42 | 101 | | | |
| 02:15 | | | 1 | 4 | 5 | 14:15 | | | 57 | 37 | 94 | | | |
| 02:30 | | | 2 | 7 | 9 | 14:30 | | | 53 | 44 | 97 | | | |
| 02:45 | | | 3 | 7 | 1 | 15 | 14:45 | | 46 | 215 | 42 | 165 | 88 | 380 |
| 03:00 | | | 1 | 3 | 4 | 15:00 | | | 48 | 44 | 92 | | | |
| 03:15 | | | 10 | 5 | 15 | 15:15 | | | 64 | 58 | 122 | | | |
| 03:30 | | | 4 | 1 | 5 | 15:30 | | | 62 | 51 | 113 | | | |
| 03:45 | | | 7 | 22 | 8 | 17 | 15:45 | | 56 | 230 | 53 | 206 | 109 | 436 |
| 04:00 | | | 10 | 9 | 19 | 16:00 | | | 68 | 74 | 142 | | | |
| 04:15 | | | 17 | 6 | 23 | 16:15 | | | 76 | 79 | 155 | | | |
| 04:30 | | | 15 | 10 | 25 | 16:30 | | | 62 | 44 | 106 | | | |
| 04:45 | | | 10 | 52 | 11 | 36 | 16:45 | | 46 | 252 | 47 | 244 | 93 | 496 |
| 05:00 | | | 4 | 15 | 19 | 17:00 | | | 66 | 47 | 113 | | | |
| 05:15 | | | 8 | 9 | 17 | 17:15 | | | 68 | 43 | 111 | | | |
| 05:30 | | | 14 | 13 | 27 | 17:30 | | | 64 | 60 | 124 | | | |
| 05:45 | | | 9 | 35 | 25 | 62 | 17:45 | | 68 | 266 | 63 | 213 | 131 | 479 |
| 06:00 | | | 16 | 15 | 31 | 18:00 | | | 46 | 74 | 120 | | | |
| 06:15 | | | 13 | 27 | 40 | 18:15 | | | 58 | 65 | 123 | | | |
| 06:30 | | | 21 | 47 | 68 | 18:30 | | | 41 | 45 | 86 | | | |
| 06:45 | | | 29 | 79 | 30 | 119 | 18:45 | | 41 | 186 | 46 | 230 | 87 | 416 |
| 07:00 | | | 21 | 37 | 58 | 19:00 | | | 38 | 31 | 69 | | | |
| 07:15 | | | 27 | 57 | 84 | 19:15 | | | 46 | 31 | 77 | | | |
| 07:30 | | | 36 | 29 | 65 | 19:30 | | | 24 | 32 | 56 | | | |
| 07:45 | | | 24 | 108 | 42 | 165 | 19:45 | | 27 | 135 | 25 | 119 | 52 | 254 |
| 08:00 | | | 30 | 31 | 61 | 20:00 | | | 29 | 42 | 71 | | | |
| 08:15 | | | 36 | 23 | 59 | 20:15 | | | 32 | 42 | 74 | | | |
| 08:30 | | | 60 | 47 | 107 | 20:30 | | | 21 | 26 | 47 | | | |
| 08:45 | | | 41 | 167 | 49 | 150 | 20:45 | | 20 | 102 | 24 | 134 | 44 | 236 |
| 09:00 | | | 29 | 39 | 68 | 21:00 | | | 12 | 16 | 28 | | | |
| 09:15 | | | 33 | 46 | 79 | 21:15 | | | 13 | 21 | 34 | | | |
| 09:30 | | | 25 | 33 | 58 | 21:30 | | | 9 | 17 | 26 | | | |
| 09:45 | | | 31 | 118 | 31 | 149 | 21:45 | | 11 | 45 | 15 | 69 | 26 | 114 |
| 10:00 | | | 25 | 37 | 62 | 22:00 | | | 19 | 19 | 38 | | | |
| 10:15 | | | 34 | 44 | 78 | 22:15 | | | 11 | 9 | 20 | | | |
| 10:30 | | | 24 | 23 | 47 | 22:30 | | | 5 | 12 | 17 | | | |
| 10:45 | | | 28 | 111 | 48 | 152 | 22:45 | | 7 | 42 | 6 | 46 | 13 | 88 |
| 11:00 | | | 32 | 40 | 72 | 23:00 | | | 10 | 13 | 23 | | | |
| 11:15 | | | 56 | 48 | 104 | 23:15 | | | 4 | 4 | 8 | | | |
| 11:30 | | | 41 | 35 | 76 | 23:30 | | | 7 | 7 | 14 | | | |
| 11:45 | | | 39 | 168 | 47 | 170 | 23:45 | | 7 | 28 | 7 | 31 | 14 | 59 |
| TOTALS | | | 887 | 1065 | 1952 | TOTALS | | | 1808 | 1810 | 3618 | | | |
| SPLIT % | | | 45.4% | 54.6% | 35.0% | SPLIT % | | | 50.0% | 50.0% | 65.0% | | | |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|-------|
| | | | | | 0 | 0 | 2,695 | 2,875 | 5,570 | | |
| AM Peak Hour | | | 11:15 | 08:30 | 11:15 | PM Peak Hour | | | 17:00 | 17:30 | 15:30 |
| AM Pk Volume | | | 170 | 181 | 350 | PM Pk Volume | | | 266 | 262 | 519 |
| Pk Hr Factor | | | 0.759 | 0.923 | 0.841 | Pk Hr Factor | | | 0.978 | 0.885 | 0.837 |
| 7 - 9 Volume | 0 | 0 | 275 | 315 | 590 | 4 - 6 Volume | 0 | 0 | 518 | 457 | 975 |
| 7 - 9 Peak Hour | | | 08:00 | 07:00 | 08:00 | 4 - 6 Peak Hour | | | 17:00 | 16:00 | 16:00 |
| 7 - 9 Pk Volume | 0 | 0 | 167 | 165 | 317 | 4 - 6 Pk Volume | 0 | 0 | 266 | 244 | 496 |
| Pk Hr Factor | 0.000 | 0.000 | 0.696 | 0.724 | 0.741 | Pk Hr Factor | 0.000 | 0.000 | 0.978 | 0.772 | 0.800 |

VOLUME

E Palmdale Blvd W/O 170th St E

Day: Tuesday
Date: 2/3/2015

City: Palmdale
Project #: CA15_5025_008

| DAILY TOTALS | | | | | NB | SB | | | | | | Total |
|----------------|----|----|----|-------|-------|--------------|----------------|-------|-------|-------|--------------|-------|
| | | | | | 0 | 0 | | | | | | 3,092 |
| | | | | | | | EB | WB | | | | |
| | | | | | | | 1,627 | 1,465 | | | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL | |
| 00:00 | | | 3 | 4 | 7 | 12:00 | | | 23 | 23 | 46 | |
| 00:15 | | | 0 | 1 | 1 | 12:15 | | | 20 | 23 | 43 | |
| 00:30 | | | 2 | 2 | 4 | 12:30 | | | 19 | 19 | 38 | |
| 00:45 | | | 1 | 6 | 4 | 12:45 | | | 27 | 89 | 47 | |
| | | | | 11 | 5 | 17 | | | 20 | 85 | 174 | |
| 01:00 | | | 3 | 3 | 6 | 13:00 | | | 25 | 24 | 49 | |
| 01:15 | | | 2 | 1 | 3 | 13:15 | | | 27 | 21 | 48 | |
| 01:30 | | | 1 | 4 | 5 | 13:30 | | | 17 | 14 | 31 | |
| 01:45 | | | 3 | 9 | 1 | 13:45 | | | 35 | 104 | 50 | |
| | | | | 9 | 4 | 18 | | | 15 | 74 | 178 | |
| 02:00 | | | 4 | 1 | 5 | 14:00 | | | 22 | 16 | 38 | |
| 02:15 | | | 0 | 1 | 1 | 14:15 | | | 19 | 26 | 45 | |
| 02:30 | | | 1 | 1 | 2 | 14:30 | | | 19 | 32 | 51 | |
| 02:45 | | | 4 | 9 | 2 | 14:45 | | | 47 | 107 | 67 | |
| | | | | 5 | 6 | 14 | | | 20 | 94 | 201 | |
| 03:00 | | | 1 | 3 | 4 | 15:00 | | | 27 | 33 | 60 | |
| 03:15 | | | 2 | 3 | 5 | 15:15 | | | 35 | 28 | 63 | |
| 03:30 | | | 2 | 1 | 3 | 15:30 | | | 28 | 49 | 77 | |
| 03:45 | | | 4 | 9 | 5 | 15:45 | | | 40 | 130 | 105 | |
| | | | | 12 | 9 | 21 | | | 65 | 175 | 305 | |
| 04:00 | | | 4 | 7 | 11 | 16:00 | | | 40 | 36 | 76 | |
| 04:15 | | | 7 | 6 | 13 | 16:15 | | | 19 | 40 | 59 | |
| 04:30 | | | 15 | 20 | 35 | 16:30 | | | 31 | 27 | 58 | |
| 04:45 | | | 8 | 34 | 6 | 16:45 | | | 30 | 120 | 50 | |
| | | | | 39 | 14 | 73 | | | 20 | 123 | 243 | |
| 05:00 | | | 15 | 12 | 27 | 17:00 | | | 32 | 28 | 60 | |
| 05:15 | | | 25 | 9 | 34 | 17:15 | | | 31 | 20 | 51 | |
| 05:30 | | | 42 | 11 | 53 | 17:30 | | | 32 | 23 | 55 | |
| 05:45 | | | 22 | 104 | 12 | 17:45 | | | 36 | 131 | 61 | |
| | | | | 44 | 34 | 148 | | | 25 | 96 | 227 | |
| 06:00 | | | 13 | 11 | 24 | 18:00 | | | 40 | 14 | 54 | |
| 06:15 | | | 16 | 19 | 35 | 18:15 | | | 26 | 16 | 42 | |
| 06:30 | | | 15 | 26 | 41 | 18:30 | | | 24 | 19 | 43 | |
| 06:45 | | | 14 | 58 | 30 | 18:45 | | | 31 | 121 | 38 | |
| | | | | 86 | 44 | 144 | | | 7 | 56 | 177 | |
| 07:00 | | | 13 | 32 | 45 | 19:00 | | | 27 | 12 | 39 | |
| 07:15 | | | 10 | 23 | 33 | 19:15 | | | 29 | 10 | 39 | |
| 07:30 | | | 23 | 27 | 50 | 19:30 | | | 24 | 6 | 30 | |
| 07:45 | | | 16 | 62 | 19 | 19:45 | | | 21 | 101 | 34 | |
| | | | | 101 | 35 | 163 | | | 13 | 41 | 142 | |
| 08:00 | | | 18 | 23 | 41 | 20:00 | | | 18 | 9 | 27 | |
| 08:15 | | | 13 | 22 | 35 | 20:15 | | | 24 | 7 | 31 | |
| 08:30 | | | 14 | 21 | 35 | 20:30 | | | 9 | 7 | 16 | |
| 08:45 | | | 19 | 64 | 18 | 20:45 | | | 13 | 64 | 20 | |
| | | | | 84 | 37 | 148 | | | 7 | 30 | 94 | |
| 09:00 | | | 13 | 21 | 34 | 21:00 | | | 14 | 7 | 21 | |
| 09:15 | | | 18 | 11 | 29 | 21:15 | | | 10 | 7 | 17 | |
| 09:30 | | | 16 | 17 | 33 | 21:30 | | | 15 | 7 | 22 | |
| 09:45 | | | 20 | 67 | 18 | 21:45 | | | 15 | 54 | 19 | |
| | | | | 67 | 38 | 134 | | | 4 | 25 | 79 | |
| 10:00 | | | 10 | 20 | 30 | 22:00 | | | 6 | 7 | 13 | |
| 10:15 | | | 19 | 17 | 36 | 22:15 | | | 5 | 10 | 15 | |
| 10:30 | | | 19 | 28 | 47 | 22:30 | | | 14 | 5 | 19 | |
| 10:45 | | | 16 | 64 | 22 | 22:45 | | | 3 | 28 | 12 | |
| | | | | 87 | 38 | 151 | | | 9 | 31 | 59 | |
| 11:00 | | | 23 | 18 | 41 | 23:00 | | | 5 | 5 | 10 | |
| 11:15 | | | 14 | 20 | 34 | 23:15 | | | 6 | 1 | 7 | |
| 11:30 | | | 19 | 19 | 38 | 23:30 | | | 4 | 6 | 10 | |
| 11:45 | | | 19 | 75 | 18 | 23:45 | | | 2 | 17 | 5 | |
| | | | | 75 | 37 | 150 | | | 3 | 15 | 32 | |
| TOTALS | | | | 561 | 620 | 1181 | TOTALS | | 1066 | 845 | 1911 | |
| SPLIT % | | | | 47.5% | 52.5% | 38.2% | SPLIT % | | 55.8% | 44.2% | 61.8% | |

| DAILY TOTALS | | | | | NB | SB | | | | | | Total |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|-------|-------|
| | | | | | 0 | 0 | | | | | | 3,092 |
| | | | | | | | EB | WB | | | | |
| | | | | | | | 1,627 | 1,465 | | | | |
| AM Peak Hour | | | 05:00 | 06:45 | 06:45 | PM Peak Hour | | | 15:15 | 15:30 | 15:15 | |
| AM Pk Volume | | | 104 | 112 | 172 | PM Pk Volume | | | 143 | 190 | 321 | |
| Pk Hr Factor | | | 0.619 | 0.875 | 0.860 | Pk Hr Factor | | | 0.894 | 0.731 | 0.764 | |
| 7 - 9 Volume | 0 | 0 | 126 | 185 | 311 | 4 - 6 Volume | 0 | 0 | 251 | 219 | 470 | |
| 7 - 9 Peak Hour | | | 07:30 | 07:00 | 07:00 | 4 - 6 Peak Hour | | | 17:00 | 16:00 | 16:00 | |
| 7 - 9 Pk Volume | 0 | 0 | 70 | 101 | 163 | 4 - 6 Pk Volume | 0 | 0 | 131 | 123 | 243 | |
| Pk Hr Factor | 0.000 | 0.000 | 0.761 | 0.789 | 0.815 | Pk Hr Factor | 0.000 | 0.000 | 0.910 | 0.769 | 0.799 | |

VOLUME

E Avenue T W/O 165th St E

Day: Wednesday
Date: 1/28/2015

City: Llano
Project #: CA15_5025_009

| DAILY TOTALS | | | | | | NB | SB | EB | WB | Total | | | | |
|----------------|----|----|-------|-------|-------|----------------|-------|-----|-------|-------|-------|----|----|-----|
| | | | | | | 0 | 0 | 653 | 580 | 1,233 | | | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL | | | |
| 00:00 | | | 1 | 1 | 2 | 12:00 | | | 10 | 4 | 14 | | | |
| 00:15 | | | 2 | 0 | 2 | 12:15 | | | 5 | 4 | 9 | | | |
| 00:30 | | | 3 | 0 | 3 | 12:30 | | | 7 | 6 | 13 | | | |
| 00:45 | | | 1 | 7 | 2 | 3 | 12:45 | | 12 | 34 | 4 | 18 | 16 | 52 |
| 01:00 | | | 1 | 0 | 1 | 13:00 | | | 9 | 7 | 16 | | | |
| 01:15 | | | 2 | 0 | 2 | 13:15 | | | 8 | 5 | 13 | | | |
| 01:30 | | | 1 | 1 | 2 | 13:30 | | | 12 | 13 | 25 | | | |
| 01:45 | | | 2 | 6 | 1 | 2 | 13:45 | | 7 | 36 | 6 | 31 | 13 | 67 |
| 02:00 | | | 1 | 2 | 3 | 14:00 | | | 9 | 8 | 17 | | | |
| 02:15 | | | 1 | 0 | 1 | 14:15 | | | 5 | 6 | 11 | | | |
| 02:30 | | | 1 | 3 | 4 | 14:30 | | | 9 | 5 | 14 | | | |
| 02:45 | | | 0 | 3 | 1 | 6 | 14:45 | | 12 | 35 | 10 | 29 | 22 | 64 |
| 03:00 | | | 3 | 1 | 4 | 15:00 | | | 10 | 14 | 24 | | | |
| 03:15 | | | 2 | 2 | 4 | 15:15 | | | 12 | 10 | 22 | | | |
| 03:30 | | | 1 | 4 | 5 | 15:30 | | | 8 | 7 | 15 | | | |
| 03:45 | | | 1 | 7 | 4 | 11 | 15:45 | | 31 | 61 | 16 | 47 | 17 | 108 |
| 04:00 | | | 1 | 9 | 10 | 16:00 | | | 26 | 12 | 38 | | | |
| 04:15 | | | 6 | 20 | 26 | 16:15 | | | 19 | 13 | 32 | | | |
| 04:30 | | | 3 | 11 | 14 | 16:30 | | | 14 | 10 | 24 | | | |
| 04:45 | | | 4 | 14 | 8 | 48 | 16:45 | | 17 | 76 | 15 | 50 | 32 | 126 |
| 05:00 | | | 6 | 11 | 17 | 17:00 | | | 16 | 4 | 20 | | | |
| 05:15 | | | 6 | 7 | 13 | 17:15 | | | 16 | 6 | 22 | | | |
| 05:30 | | | 3 | 8 | 11 | 17:30 | | | 11 | 5 | 16 | | | |
| 05:45 | | | 2 | 17 | 13 | 39 | 17:45 | | 19 | 62 | 2 | 17 | 21 | 79 |
| 06:00 | | | 4 | 12 | 16 | 18:00 | | | 11 | 7 | 18 | | | |
| 06:15 | | | 4 | 10 | 14 | 18:15 | | | 16 | 5 | 21 | | | |
| 06:30 | | | 5 | 11 | 16 | 18:30 | | | 7 | 3 | 10 | | | |
| 06:45 | | | 6 | 19 | 17 | 50 | 18:45 | | 11 | 45 | 4 | 19 | 15 | 64 |
| 07:00 | | | 7 | 6 | 13 | 19:00 | | | 11 | 6 | 17 | | | |
| 07:15 | | | 4 | 8 | 12 | 19:15 | | | 16 | 5 | 21 | | | |
| 07:30 | | | 4 | 18 | 22 | 19:30 | | | 10 | 3 | 13 | | | |
| 07:45 | | | 4 | 19 | 15 | 47 | 19:45 | | 14 | 51 | 6 | 20 | 20 | 71 |
| 08:00 | | | 4 | 5 | 9 | 20:00 | | | 7 | 1 | 8 | | | |
| 08:15 | | | 4 | 9 | 13 | 20:15 | | | 5 | 2 | 7 | | | |
| 08:30 | | | 7 | 6 | 13 | 20:30 | | | 7 | 1 | 8 | | | |
| 08:45 | | | 3 | 18 | 8 | 28 | 20:45 | | 6 | 25 | 3 | 7 | 9 | 32 |
| 09:00 | | | 5 | 9 | 14 | 21:00 | | | 5 | 4 | 9 | | | |
| 09:15 | | | 7 | 9 | 16 | 21:15 | | | 4 | 1 | 5 | | | |
| 09:30 | | | 4 | 12 | 16 | 21:30 | | | 6 | 4 | 10 | | | |
| 09:45 | | | 7 | 23 | 8 | 38 | 21:45 | | 5 | 20 | 0 | 9 | 5 | 29 |
| 10:00 | | | 5 | 6 | 11 | 22:00 | | | 6 | 5 | 11 | | | |
| 10:15 | | | 7 | 4 | 11 | 22:15 | | | 4 | 2 | 6 | | | |
| 10:30 | | | 7 | 7 | 14 | 22:30 | | | 2 | 3 | 5 | | | |
| 10:45 | | | 9 | 28 | 2 | 19 | 22:45 | | 5 | 17 | 2 | 12 | 7 | 29 |
| 11:00 | | | 3 | 4 | 7 | 23:00 | | | 2 | 3 | 5 | | | |
| 11:15 | | | 6 | 11 | 17 | 23:15 | | | 3 | 1 | 4 | | | |
| 11:30 | | | 7 | 6 | 13 | 23:30 | | | 1 | 1 | 2 | | | |
| 11:45 | | | 6 | 22 | 2 | 23 | 23:45 | | 2 | 8 | 2 | 7 | 4 | 15 |
| TOTALS | | | 183 | 314 | 497 | TOTALS | | | 470 | 266 | 736 | | | |
| SPLIT % | | | 36.8% | 63.2% | 40.3% | SPLIT % | | | 63.9% | 36.1% | 59.7% | | | |

| DAILY TOTALS | | | | | | NB | SB | EB | WB | Total | |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|-------|
| | | | | | | 0 | 0 | 653 | 580 | 1,233 | |
| AM Peak Hour | | | 11:15 | 04:15 | 06:45 | PM Peak Hour | | | 15:45 | 15:45 | 15:45 |
| AM Pk Volume | | | 29 | 50 | 70 | PM Pk Volume | | | 90 | 51 | 141 |
| Pk Hr Factor | | | 0.725 | 0.625 | 0.761 | Pk Hr Factor | | | 0.726 | 0.797 | 0.750 |
| 7 - 9 Volume | 0 | 0 | 37 | 75 | 112 | 4 - 6 Volume | 0 | 0 | 138 | 67 | 205 |
| 7 - 9 Peak Hour | | | 07:00 | 07:00 | 07:00 | 4 - 6 Peak Hour | | | 16:00 | 16:00 | 16:00 |
| 7 - 9 Pk Volume | 0 | 0 | 19 | 47 | 66 | 4 - 6 Pk Volume | 0 | 0 | 76 | 50 | 126 |
| Pk Hr Factor | 0.000 | 0.000 | 0.679 | 0.653 | 0.750 | Pk Hr Factor | 0.000 | 0.000 | 0.731 | 0.833 | 0.829 |

VOLUME

SR-138 W/O 165th St E

Day: Wednesday
Date: 1/28/2015

City: Llano
Project #: CA15_5025_010

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|----|----|-------|-------|--------------|----------------|-------|-------|--------|-------|--------------|
| | | | | | 0 | 0 | 5,390 | 4,935 | 10,325 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | | | 17 | 14 | 31 | 12:00 | | | 64 | 42 | 106 |
| 00:15 | | | 9 | 18 | 27 | 12:15 | | | 74 | 60 | 134 |
| 00:30 | | | 16 | 9 | 25 | 12:30 | | | 76 | 59 | 135 |
| 00:45 | | | 13 | 55 | 7 | 12:45 | | | 90 | 304 | 168 |
| | | | | 48 | 20 | 103 | | | 78 | 239 | 543 |
| 01:00 | | | 11 | 16 | 27 | 13:00 | | | 68 | 59 | 127 |
| 01:15 | | | 8 | 13 | 21 | 13:15 | | | 72 | 57 | 129 |
| 01:30 | | | 6 | 9 | 15 | 13:30 | | | 79 | 60 | 139 |
| 01:45 | | | 14 | 39 | 11 | 13:45 | | | 77 | 296 | 136 |
| | | | | 49 | 25 | 88 | | | 59 | 235 | 531 |
| 02:00 | | | 8 | 14 | 22 | 14:00 | | | 80 | 67 | 147 |
| 02:15 | | | 7 | 10 | 17 | 14:15 | | | 88 | 59 | 147 |
| 02:30 | | | 10 | 13 | 23 | 14:30 | | | 104 | 72 | 176 |
| 02:45 | | | 9 | 34 | 8 | 14:45 | | | 87 | 359 | 152 |
| | | | | 45 | 17 | 79 | | | 65 | 263 | 622 |
| 03:00 | | | 14 | 18 | 32 | 15:00 | | | 91 | 74 | 165 |
| 03:15 | | | 14 | 13 | 27 | 15:15 | | | 107 | 67 | 174 |
| 03:30 | | | 13 | 15 | 28 | 15:30 | | | 125 | 92 | 217 |
| 03:45 | | | 10 | 51 | 16 | 15:45 | | | 122 | 445 | 205 |
| | | | | 62 | 26 | 113 | | | 83 | 316 | 761 |
| 04:00 | | | 16 | 42 | 58 | 16:00 | | | 143 | 73 | 216 |
| 04:15 | | | 23 | 56 | 79 | 16:15 | | | 157 | 68 | 225 |
| 04:30 | | | 31 | 46 | 77 | 16:30 | | | 137 | 73 | 210 |
| 04:45 | | | 33 | 103 | 45 | 16:45 | | | 126 | 563 | 183 |
| | | | | 189 | 78 | 292 | | | 57 | 271 | 834 |
| 05:00 | | | 39 | 58 | 97 | 17:00 | | | 106 | 78 | 184 |
| 05:15 | | | 38 | 73 | 111 | 17:15 | | | 108 | 79 | 187 |
| 05:30 | | | 49 | 67 | 116 | 17:30 | | | 119 | 76 | 195 |
| 05:45 | | | 52 | 178 | 84 | 17:45 | | | 145 | 478 | 215 |
| | | | | 282 | 136 | 460 | | | 70 | 303 | 781 |
| 06:00 | | | 42 | 78 | 120 | 18:00 | | | 123 | 79 | 202 |
| 06:15 | | | 47 | 95 | 142 | 18:15 | | | 96 | 62 | 158 |
| 06:30 | | | 48 | 91 | 139 | 18:30 | | | 92 | 49 | 141 |
| 06:45 | | | 33 | 170 | 109 | 18:45 | | | 83 | 394 | 120 |
| | | | | 373 | 142 | 543 | | | 37 | 227 | 621 |
| 07:00 | | | 65 | 105 | 170 | 19:00 | | | 63 | 37 | 100 |
| 07:15 | | | 58 | 81 | 139 | 19:15 | | | 67 | 42 | 109 |
| 07:30 | | | 61 | 83 | 144 | 19:30 | | | 57 | 50 | 107 |
| 07:45 | | | 57 | 241 | 85 | 19:45 | | | 46 | 233 | 89 |
| | | | | 354 | 142 | 595 | | | 43 | 172 | 405 |
| 08:00 | | | 68 | 73 | 141 | 20:00 | | | 34 | 39 | 73 |
| 08:15 | | | 56 | 84 | 140 | 20:15 | | | 34 | 41 | 75 |
| 08:30 | | | 76 | 74 | 150 | 20:30 | | | 25 | 33 | 58 |
| 08:45 | | | 49 | 249 | 73 | 20:45 | | | 23 | 116 | 51 |
| | | | | 304 | 122 | 553 | | | 28 | 141 | 257 |
| 09:00 | | | 67 | 78 | 145 | 21:00 | | | 25 | 18 | 43 |
| 09:15 | | | 60 | 79 | 139 | 21:15 | | | 26 | 18 | 44 |
| 09:30 | | | 71 | 93 | 164 | 21:30 | | | 31 | 31 | 62 |
| 09:45 | | | 66 | 264 | 57 | 21:45 | | | 23 | 105 | 46 |
| | | | | 307 | 123 | 571 | | | 23 | 90 | 195 |
| 10:00 | | | 77 | 68 | 145 | 22:00 | | | 32 | 20 | 52 |
| 10:15 | | | 69 | 66 | 135 | 22:15 | | | 19 | 23 | 42 |
| 10:30 | | | 62 | 76 | 138 | 22:30 | | | 24 | 16 | 40 |
| 10:45 | | | 72 | 280 | 72 | 22:45 | | | 22 | 97 | 47 |
| | | | | 282 | 144 | 562 | | | 25 | 84 | 181 |
| 11:00 | | | 67 | 59 | 126 | 23:00 | | | 13 | 20 | 33 |
| 11:15 | | | 69 | 59 | 128 | 23:15 | | | 17 | 22 | 39 |
| 11:30 | | | 74 | 53 | 127 | 23:30 | | | 21 | 10 | 31 |
| 11:45 | | | 67 | 277 | 73 | 23:45 | | | 8 | 59 | 11 |
| | | | | 244 | 140 | 521 | | | 3 | 55 | 114 |
| TOTALS | | | 1941 | 2539 | 4480 | TOTALS | | | 3449 | 2396 | 5845 |
| SPLIT % | | | 43.3% | 56.7% | 43.4% | SPLIT % | | | 59.0% | 41.0% | 56.6% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|--------|-------|-------|
| | | | | | 0 | 0 | 5,390 | 4,935 | 10,325 | | |
| AM Peak Hour | | | 09:30 | 06:15 | 06:45 | PM Peak Hour | | | 16:00 | 15:00 | 15:30 |
| AM Pk Volume | | | 283 | 400 | 595 | PM Pk Volume | | | 563 | 316 | 863 |
| Pk Hr Factor | | | 0.919 | 0.917 | 0.875 | Pk Hr Factor | | | 0.896 | 0.859 | 0.959 |
| 7 - 9 Volume | 0 | 0 | 490 | 658 | 1148 | 4 - 6 Volume | 0 | 0 | 1041 | 574 | 1615 |
| 7 - 9 Peak Hour | | | 07:45 | 07:00 | 07:00 | 4 - 6 Peak Hour | | | 16:00 | 17:00 | 16:00 |
| 7 - 9 Pk Volume | 0 | 0 | 257 | 354 | 595 | 4 - 6 Pk Volume | 0 | 0 | 563 | 303 | 834 |
| Pk Hr Factor | 0.000 | 0.000 | 0.845 | 0.843 | 0.875 | Pk Hr Factor | 0.000 | 0.000 | 0.896 | 0.959 | 0.927 |

VOLUME

E Palmdale Blvd W/O Longview Rd

Day: Wednesday
Date: 1/28/2015

City: Palmdale
Project #: CA15_5025_013

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|--------------|----|----|-------|-------|-------|-----------|-------|-------|-------|-------|-------|
| | | | | | 0 | 0 | 2,302 | 2,326 | 4,628 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | | | 0 | 4 | 4 | 12:00 | | | 27 | 27 | 54 |
| 00:15 | | | 6 | 2 | 8 | 12:15 | | | 24 | 30 | 54 |
| 00:30 | | | 5 | 2 | 7 | 12:30 | | | 31 | 27 | 58 |
| 00:45 | | | 3 | 14 | 5 | 12:45 | | | 33 | 115 | 62 |
| | | | | | 27 | | | | 29 | 113 | 228 |
| 01:00 | | | 2 | 1 | 3 | 13:00 | | | 32 | 26 | 58 |
| 01:15 | | | 3 | 3 | 6 | 13:15 | | | 26 | 26 | 52 |
| 01:30 | | | 1 | 2 | 3 | 13:30 | | | 33 | 34 | 67 |
| 01:45 | | | 2 | 8 | 2 | 13:45 | | | 36 | 127 | 60 |
| | | | | | 16 | | | | 24 | 110 | 237 |
| 02:00 | | | 1 | 3 | 4 | 14:00 | | | 33 | 40 | 73 |
| 02:15 | | | 2 | 4 | 6 | 14:15 | | | 34 | 34 | 68 |
| 02:30 | | | 2 | 3 | 5 | 14:30 | | | 39 | 49 | 88 |
| 02:45 | | | 2 | 7 | 3 | 14:45 | | | 72 | 178 | 109 |
| | | | | | 20 | | | | 37 | 160 | 338 |
| 03:00 | | | 0 | 5 | 5 | 15:00 | | | 52 | 35 | 87 |
| 03:15 | | | 1 | 6 | 7 | 15:15 | | | 49 | 44 | 93 |
| 03:30 | | | 4 | 8 | 12 | 15:30 | | | 44 | 40 | 84 |
| 03:45 | | | 5 | 10 | 10 | 15:45 | | | 74 | 219 | 141 |
| | | | | | 29 | | | | 67 | 186 | 405 |
| 04:00 | | | 9 | 14 | 23 | 16:00 | | | 65 | 35 | 100 |
| 04:15 | | | 8 | 13 | 21 | 16:15 | | | 54 | 55 | 109 |
| 04:30 | | | 11 | 24 | 35 | 16:30 | | | 44 | 54 | 98 |
| 04:45 | | | 8 | 36 | 21 | 16:45 | | | 53 | 216 | 108 |
| | | | | | 108 | | | | 55 | 199 | 415 |
| 05:00 | | | 4 | 29 | 33 | 17:00 | | | 53 | 41 | 94 |
| 05:15 | | | 24 | 29 | 53 | 17:15 | | | 41 | 40 | 81 |
| 05:30 | | | 27 | 27 | 54 | 17:30 | | | 66 | 37 | 103 |
| 05:45 | | | 19 | 74 | 30 | 17:45 | | | 61 | 221 | 79 |
| | | | | | 189 | | | | 18 | 136 | 357 |
| 06:00 | | | 11 | 32 | 43 | 18:00 | | | 67 | 32 | 99 |
| 06:15 | | | 15 | 41 | 56 | 18:15 | | | 45 | 28 | 73 |
| 06:30 | | | 19 | 48 | 67 | 18:30 | | | 34 | 21 | 55 |
| 06:45 | | | 13 | 58 | 40 | 18:45 | | | 50 | 196 | 75 |
| | | | | | 161 | | | | 25 | 106 | 302 |
| 07:00 | | | 18 | 68 | 86 | 19:00 | | | 41 | 21 | 62 |
| 07:15 | | | 30 | 74 | 104 | 19:15 | | | 38 | 16 | 54 |
| 07:30 | | | 28 | 46 | 74 | 19:30 | | | 28 | 15 | 43 |
| 07:45 | | | 17 | 93 | 24 | 19:45 | | | 27 | 134 | 39 |
| | | | | | 212 | | | | 12 | 64 | 198 |
| 08:00 | | | 19 | 33 | 52 | 20:00 | | | 23 | 11 | 34 |
| 08:15 | | | 22 | 38 | 60 | 20:15 | | | 26 | 15 | 41 |
| 08:30 | | | 24 | 38 | 62 | 20:30 | | | 15 | 15 | 30 |
| 08:45 | | | 20 | 85 | 40 | 20:45 | | | 15 | 79 | 20 |
| | | | | | 149 | | | | 5 | 46 | 125 |
| 09:00 | | | 16 | 30 | 46 | 21:00 | | | 15 | 10 | 25 |
| 09:15 | | | 27 | 29 | 56 | 21:15 | | | 29 | 11 | 40 |
| 09:30 | | | 28 | 27 | 55 | 21:30 | | | 19 | 6 | 25 |
| 09:45 | | | 21 | 92 | 32 | 21:45 | | | 10 | 73 | 23 |
| | | | | | 118 | | | | 13 | 40 | 113 |
| 10:00 | | | 25 | 37 | 62 | 22:00 | | | 12 | 8 | 20 |
| 10:15 | | | 29 | 18 | 47 | 22:15 | | | 9 | 8 | 17 |
| 10:30 | | | 20 | 31 | 51 | 22:30 | | | 13 | 10 | 23 |
| 10:45 | | | 20 | 94 | 22 | 22:45 | | | 11 | 45 | 14 |
| | | | | | 108 | | | | 3 | 29 | 74 |
| 11:00 | | | 25 | 31 | 56 | 23:00 | | | 12 | 5 | 17 |
| 11:15 | | | 17 | 26 | 43 | 23:15 | | | 5 | 2 | 7 |
| 11:30 | | | 23 | 31 | 54 | 23:30 | | | 7 | 2 | 9 |
| 11:45 | | | 36 | 101 | 33 | 23:45 | | | 3 | 27 | 12 |
| | | | | | 121 | | | | 9 | 18 | 45 |
| TOTALS | | | 672 | 1119 | 1791 | TOTALS | | | 1630 | 1207 | 2837 |
| SPLIT % | | | 37.5% | 62.5% | 38.7% | SPLIT % | | | 57.5% | 42.5% | 61.3% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|-------|
| | | | | | 0 | 0 | 2,302 | 2,326 | 4,628 | | |
| AM Peak Hour | | | 11:45 | 06:30 | 06:45 | PM Peak Hour | | | 17:30 | 15:45 | 15:45 |
| AM Pk Volume | | | 118 | 230 | 317 | PM Pk Volume | | | 239 | 211 | 448 |
| Pk Hr Factor | | | 0.819 | 0.777 | 0.762 | Pk Hr Factor | | | 0.892 | 0.787 | 0.794 |
| 7 - 9 Volume | 0 | 0 | 178 | 361 | 539 | 4 - 6 Volume | 0 | 0 | 437 | 335 | 772 |
| 7 - 9 Peak Hour | | | 07:15 | 07:00 | 07:00 | 4 - 6 Peak Hour | | | 17:00 | 16:15 | 16:00 |
| 7 - 9 Pk Volume | 0 | 0 | 94 | 212 | 305 | 4 - 6 Pk Volume | 0 | 0 | 221 | 205 | 415 |
| Pk Hr Factor | 0.000 | 0.000 | 0.783 | 0.716 | 0.733 | Pk Hr Factor | 0.000 | 0.000 | 0.837 | 0.932 | 0.952 |

VOLUME

E Avenue T W/O 116th St E

Day: Wednesday
Date: 1/28/2015

City: Palmdale
Project #: CA15_5025_014

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | | | | |
|----------------|----|----|----|-------|-------|--------------|----------------|-----|-------|-------|-------|--------------|----|-----|
| | | | | | 0 | 0 | 935 | 851 | 1,786 | | | | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL | | | |
| 00:00 | | | 0 | 2 | 2 | 12:00 | | | 24 | 13 | 37 | | | |
| 00:15 | | | 2 | 0 | 2 | 12:15 | | | 12 | 9 | 21 | | | |
| 00:30 | | | 4 | 0 | 4 | 12:30 | | | 15 | 8 | 23 | | | |
| 00:45 | | | 1 | 7 | 1 | 12:45 | | | 12 | 63 | 15 | 45 | 27 | 108 |
| 01:00 | | | 2 | 1 | 3 | 13:00 | | | 11 | 10 | 21 | | | |
| 01:15 | | | 1 | 0 | 1 | 13:15 | | | 10 | 6 | 16 | | | |
| 01:30 | | | 2 | 1 | 3 | 13:30 | | | 11 | 15 | 26 | | | |
| 01:45 | | | 3 | 8 | 1 | 13:45 | | | 11 | 43 | 9 | 40 | 20 | 83 |
| 02:00 | | | 1 | 1 | 2 | 14:00 | | | 11 | 3 | 14 | | | |
| 02:15 | | | 2 | 2 | 4 | 14:15 | | | 7 | 13 | 20 | | | |
| 02:30 | | | 1 | 1 | 2 | 14:30 | | | 22 | 9 | 31 | | | |
| 02:45 | | | 1 | 5 | 1 | 14:45 | | | 15 | 55 | 11 | 36 | 26 | 91 |
| 03:00 | | | 2 | 5 | 7 | 15:00 | | | 15 | 20 | 35 | | | |
| 03:15 | | | 3 | 1 | 4 | 15:15 | | | 14 | 16 | 30 | | | |
| 03:30 | | | 1 | 2 | 3 | 15:30 | | | 21 | 17 | 38 | | | |
| 03:45 | | | 1 | 7 | 5 | 15:45 | | | 26 | 76 | 20 | 73 | 46 | 149 |
| 04:00 | | | 5 | 9 | 14 | 16:00 | | | 23 | 25 | 48 | | | |
| 04:15 | | | 4 | 19 | 23 | 16:15 | | | 23 | 19 | 42 | | | |
| 04:30 | | | 4 | 25 | 29 | 16:30 | | | 15 | 17 | 32 | | | |
| 04:45 | | | 5 | 18 | 7 | 16:45 | | | 22 | 83 | 17 | 78 | 39 | 161 |
| 05:00 | | | 9 | 14 | 23 | 17:00 | | | 27 | 13 | 40 | | | |
| 05:15 | | | 5 | 9 | 14 | 17:15 | | | 19 | 13 | 32 | | | |
| 05:30 | | | 5 | 7 | 12 | 17:30 | | | 20 | 14 | 34 | | | |
| 05:45 | | | 5 | 24 | 9 | 17:45 | | | 17 | 83 | 6 | 46 | 23 | 129 |
| 06:00 | | | 7 | 10 | 17 | 18:00 | | | 24 | 9 | 33 | | | |
| 06:15 | | | 10 | 18 | 28 | 18:15 | | | 15 | 10 | 25 | | | |
| 06:30 | | | 9 | 10 | 19 | 18:30 | | | 14 | 3 | 17 | | | |
| 06:45 | | | 9 | 35 | 19 | 18:45 | | | 11 | 64 | 3 | 25 | 14 | 89 |
| 07:00 | | | 7 | 16 | 23 | 19:00 | | | 28 | 7 | 35 | | | |
| 07:15 | | | 9 | 16 | 25 | 19:15 | | | 20 | 7 | 27 | | | |
| 07:30 | | | 9 | 19 | 28 | 19:30 | | | 19 | 6 | 25 | | | |
| 07:45 | | | 5 | 30 | 26 | 19:45 | | | 11 | 78 | 6 | 26 | 17 | 104 |
| 08:00 | | | 5 | 17 | 22 | 20:00 | | | 16 | 5 | 21 | | | |
| 08:15 | | | 7 | 14 | 21 | 20:15 | | | 11 | 3 | 14 | | | |
| 08:30 | | | 11 | 14 | 25 | 20:30 | | | 12 | 1 | 13 | | | |
| 08:45 | | | 9 | 32 | 11 | 20:45 | | | 12 | 51 | 3 | 12 | 15 | 63 |
| 09:00 | | | 8 | 16 | 24 | 21:00 | | | 11 | 3 | 14 | | | |
| 09:15 | | | 12 | 8 | 20 | 21:15 | | | 6 | 5 | 11 | | | |
| 09:30 | | | 8 | 14 | 22 | 21:30 | | | 3 | 4 | 7 | | | |
| 09:45 | | | 8 | 36 | 14 | 21:45 | | | 5 | 25 | 1 | 13 | 6 | 38 |
| 10:00 | | | 11 | 9 | 20 | 22:00 | | | 12 | 3 | 15 | | | |
| 10:15 | | | 8 | 13 | 21 | 22:15 | | | 3 | 3 | 6 | | | |
| 10:30 | | | 13 | 8 | 21 | 22:30 | | | 4 | 6 | 10 | | | |
| 10:45 | | | 8 | 40 | 5 | 22:45 | | | 7 | 26 | 2 | 14 | 9 | 40 |
| 11:00 | | | 7 | 7 | 14 | 23:00 | | | 4 | 0 | 4 | | | |
| 11:15 | | | 7 | 11 | 18 | 23:15 | | | 2 | 5 | 7 | | | |
| 11:30 | | | 7 | 12 | 19 | 23:30 | | | 2 | 2 | 4 | | | |
| 11:45 | | | 13 | 34 | 4 | 23:45 | | | 4 | 12 | 2 | 9 | 6 | 21 |
| TOTALS | | | | 276 | 434 | 710 | TOTALS | | | 659 | 417 | 1076 | | |
| SPLIT % | | | | 38.9% | 61.1% | 39.8% | SPLIT % | | | 61.2% | 38.8% | 60.2% | | |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|-------|
| | | | | | 0 | 0 | 935 | 851 | 1,786 | | |
| AM Peak Hour | | | 11:45 | 07:15 | 07:00 | PM Peak Hour | | | 15:30 | 15:30 | 15:30 |
| AM Pk Volume | | | 64 | 78 | 107 | PM Pk Volume | | | 93 | 81 | 174 |
| Pk Hr Factor | | | 0.667 | 0.750 | 0.863 | Pk Hr Factor | | | 0.894 | 0.810 | 0.906 |
| 7 - 9 Volume | 0 | 0 | 62 | 133 | 195 | 4 - 6 Volume | 0 | 0 | 166 | 124 | 290 |
| 7 - 9 Peak Hour | | | 08:00 | 07:15 | 07:00 | 4 - 6 Peak Hour | | | 16:45 | 16:00 | 16:00 |
| 7 - 9 Pk Volume | 0 | 0 | 32 | 78 | 107 | 4 - 6 Pk Volume | 0 | 0 | 88 | 78 | 161 |
| Pk Hr Factor | 0.000 | 0.000 | 0.727 | 0.750 | 0.863 | Pk Hr Factor | 0.000 | 0.000 | 0.815 | 0.780 | 0.839 |

VOLUME

SR-138 W/O 106th St E

Day: Wednesday
Date: 1/28/2015

City: Pearblossom
Project #: CA15_5025_015

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | | |
|----------------|----|----|-------|-------|--------------|----------------|-------|-------|--------|-------|--------------|-----|
| | | | | | 0 | 0 | 5,581 | 5,172 | 10,753 | | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL | |
| 00:00 | | | 21 | 8 | 29 | 12:00 | | | 78 | 75 | 153 | |
| 00:15 | | | 11 | 10 | 21 | 12:15 | | | 96 | 49 | 145 | |
| 00:30 | | | 13 | 18 | 31 | 12:30 | | | 83 | 67 | 150 | |
| 00:45 | | | 11 | 56 | 13 | 49 | 12:45 | | 70 | 327 | 74 | 265 |
| 01:00 | | | 16 | 11 | 27 | 13:00 | | | 87 | 67 | 154 | |
| 01:15 | | | 4 | 15 | 19 | 13:15 | | | 73 | 66 | 139 | |
| 01:30 | | | 7 | 13 | 20 | 13:30 | | | 95 | 69 | 164 | |
| 01:45 | | | 13 | 40 | 4 | 43 | 13:45 | | 84 | 339 | 65 | 267 |
| 02:00 | | | 7 | 17 | 24 | 14:00 | | | 97 | 77 | 174 | |
| 02:15 | | | 8 | 10 | 18 | 14:15 | | | 86 | 63 | 149 | |
| 02:30 | | | 10 | 6 | 16 | 14:30 | | | 111 | 68 | 179 | |
| 02:45 | | | 12 | 37 | 14 | 47 | 14:45 | | 91 | 385 | 60 | 268 |
| 03:00 | | | 11 | 9 | 20 | 15:00 | | | 98 | 88 | 186 | |
| 03:15 | | | 16 | 11 | 27 | 15:15 | | | 114 | 71 | 185 | |
| 03:30 | | | 12 | 19 | 31 | 15:30 | | | 121 | 109 | 230 | |
| 03:45 | | | 15 | 54 | 18 | 57 | 15:45 | | 136 | 469 | 74 | 342 |
| 04:00 | | | 11 | 40 | 51 | 16:00 | | | 145 | 73 | 218 | |
| 04:15 | | | 22 | 53 | 75 | 16:15 | | | 138 | 81 | 219 | |
| 04:30 | | | 24 | 52 | 76 | 16:30 | | | 133 | 69 | 202 | |
| 04:45 | | | 34 | 91 | 48 | 193 | 16:45 | | 116 | 532 | 65 | 288 |
| 05:00 | | | 41 | 56 | 97 | 17:00 | | | 101 | 75 | 176 | |
| 05:15 | | | 44 | 67 | 111 | 17:15 | | | 100 | 66 | 166 | |
| 05:30 | | | 48 | 78 | 126 | 17:30 | | | 124 | 72 | 196 | |
| 05:45 | | | 39 | 172 | 70 | 271 | 17:45 | | 117 | 442 | 74 | 287 |
| 06:00 | | | 46 | 80 | 126 | 18:00 | | | 114 | 71 | 185 | |
| 06:15 | | | 39 | 116 | 155 | 18:15 | | | 94 | 65 | 159 | |
| 06:30 | | | 61 | 74 | 135 | 18:30 | | | 88 | 57 | 145 | |
| 06:45 | | | 47 | 193 | 81 | 351 | 18:45 | | 79 | 375 | 45 | 238 |
| 07:00 | | | 68 | 118 | 186 | 19:00 | | | 57 | 38 | 95 | |
| 07:15 | | | 67 | 86 | 153 | 19:15 | | | 73 | 44 | 117 | |
| 07:30 | | | 60 | 76 | 136 | 19:30 | | | 54 | 42 | 96 | |
| 07:45 | | | 71 | 266 | 80 | 360 | 19:45 | | 43 | 227 | 48 | 172 |
| 08:00 | | | 65 | 86 | 151 | 20:00 | | | 41 | 48 | 89 | |
| 08:15 | | | 71 | 108 | 179 | 20:15 | | | 37 | 45 | 82 | |
| 08:30 | | | 76 | 78 | 154 | 20:30 | | | 34 | 35 | 69 | |
| 08:45 | | | 50 | 262 | 88 | 360 | 20:45 | | 32 | 144 | 38 | 166 |
| 09:00 | | | 62 | 82 | 144 | 21:00 | | | 30 | 20 | 50 | |
| 09:15 | | | 70 | 97 | 167 | 21:15 | | | 31 | 21 | 52 | |
| 09:30 | | | 75 | 78 | 153 | 21:30 | | | 20 | 25 | 45 | |
| 09:45 | | | 84 | 291 | 75 | 332 | 21:45 | | 35 | 116 | 35 | 101 |
| 10:00 | | | 82 | 74 | 156 | 22:00 | | | 28 | 20 | 48 | |
| 10:15 | | | 76 | 72 | 148 | 22:15 | | | 27 | 22 | 49 | |
| 10:30 | | | 61 | 59 | 120 | 22:30 | | | 30 | 14 | 44 | |
| 10:45 | | | 75 | 294 | 91 | 296 | 22:45 | | 12 | 97 | 23 | 79 |
| 11:00 | | | 72 | 63 | 135 | 23:00 | | | 16 | 19 | 35 | |
| 11:15 | | | 81 | 67 | 148 | 23:15 | | | 20 | 27 | 47 | |
| 11:30 | | | 75 | 76 | 151 | 23:30 | | | 18 | 9 | 27 | |
| 11:45 | | | 78 | 306 | 70 | 276 | 23:45 | | 12 | 66 | 9 | 64 |
| TOTALS | | | 2062 | 2635 | 4697 | TOTALS | | | 3519 | 2537 | 6056 | |
| SPLIT % | | | 43.9% | 56.1% | 43.7% | SPLIT % | | | 58.1% | 41.9% | 56.3% | |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|--------|-------|-------|
| | | | | | 0 | 0 | 5,581 | 5,172 | 10,753 | | |
| AM Peak Hour | | | 11:45 | 06:15 | 07:45 | PM Peak Hour | | | 15:45 | 15:00 | 15:30 |
| AM Pk Volume | | | 335 | 389 | 635 | PM Pk Volume | | | 552 | 342 | 877 |
| Pk Hr Factor | | | 0.872 | 0.824 | 0.887 | Pk Hr Factor | | | 0.952 | 0.784 | 0.953 |
| 7 - 9 Volume | 0 | 0 | 528 | 720 | 1248 | 4 - 6 Volume | 0 | 0 | 974 | 575 | 1549 |
| 7 - 9 Peak Hour | | | 07:45 | 07:00 | 07:45 | 4 - 6 Peak Hour | | | 16:00 | 16:15 | 16:00 |
| 7 - 9 Pk Volume | 0 | 0 | 283 | 360 | 635 | 4 - 6 Pk Volume | 0 | 0 | 532 | 290 | 820 |
| Pk Hr Factor | 0.000 | 0.000 | 0.931 | 0.763 | 0.887 | Pk Hr Factor | 0.000 | 0.000 | 0.917 | 0.895 | 0.936 |

VOLUME

Fort Tejon Rd W/O 106th St E

Day: Wednesday
Date: 1/28/2015

City: Pearblossom
Project #: CA15_5025_016

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|----|----|-------|-------|-------|----------------|-----|-----|-------|-------|-------|
| | | | | | 0 | 0 | 803 | 786 | 1,589 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | | | 2 | 1 | 3 | 12:00 | | | 14 | 11 | 25 |
| 00:15 | | | 0 | 0 | 0 | 12:15 | | | 13 | 20 | 33 |
| 00:30 | | | 0 | 2 | 2 | 12:30 | | | 12 | 6 | 18 |
| 00:45 | | | 1 | 3 | 0 | 12:45 | | | 15 | 54 | 32 |
| | | | | | 3 | | | | 17 | 54 | 108 |
| 01:00 | | | 2 | 1 | 3 | 13:00 | | | 7 | 14 | 21 |
| 01:15 | | | 2 | 0 | 2 | 13:15 | | | 7 | 11 | 18 |
| 01:30 | | | 2 | 0 | 2 | 13:30 | | | 20 | 15 | 35 |
| 01:45 | | | 0 | 6 | 1 | 13:45 | | | 10 | 44 | 22 |
| | | | | | 8 | | | | 12 | 52 | 96 |
| 02:00 | | | 0 | 0 | 0 | 14:00 | | | 15 | 7 | 22 |
| 02:15 | | | 0 | 0 | 0 | 14:15 | | | 13 | 12 | 25 |
| 02:30 | | | 0 | 0 | 0 | 14:30 | | | 17 | 11 | 28 |
| 02:45 | | | 0 | 1 | 1 | 14:45 | | | 19 | 64 | 24 |
| | | | | | 1 | | | | 5 | 35 | 99 |
| 03:00 | | | 0 | 1 | 1 | 15:00 | | | 17 | 8 | 25 |
| 03:15 | | | 2 | 3 | 5 | 15:15 | | | 15 | 14 | 29 |
| 03:30 | | | 0 | 1 | 1 | 15:30 | | | 15 | 15 | 30 |
| 03:45 | | | 2 | 4 | 3 | 15:45 | | | 10 | 57 | 16 |
| | | | | | 8 | | | | 6 | 43 | 100 |
| 04:00 | | | 1 | 8 | 9 | 16:00 | | | 20 | 7 | 27 |
| 04:15 | | | 0 | 7 | 7 | 16:15 | | | 24 | 7 | 31 |
| 04:30 | | | 0 | 9 | 9 | 16:30 | | | 26 | 13 | 39 |
| 04:45 | | | 2 | 3 | 11 | 16:45 | | | 27 | 97 | 43 |
| | | | | | 35 | | | | 16 | 43 | 140 |
| 05:00 | | | 1 | 11 | 12 | 17:00 | | | 21 | 10 | 31 |
| 05:15 | | | 0 | 14 | 14 | 17:15 | | | 18 | 8 | 26 |
| 05:30 | | | 0 | 16 | 16 | 17:30 | | | 34 | 9 | 43 |
| 05:45 | | | 1 | 2 | 11 | 17:45 | | | 31 | 104 | 39 |
| | | | | | 52 | | | | 8 | 35 | 139 |
| 06:00 | | | 3 | 12 | 15 | 18:00 | | | 20 | 10 | 30 |
| 06:15 | | | 3 | 9 | 12 | 18:15 | | | 18 | 7 | 25 |
| 06:30 | | | 3 | 15 | 18 | 18:30 | | | 15 | 4 | 19 |
| 06:45 | | | 7 | 16 | 27 | 18:45 | | | 15 | 68 | 20 |
| | | | | | 63 | | | | 5 | 26 | 94 |
| 07:00 | | | 6 | 16 | 22 | 19:00 | | | 15 | 4 | 19 |
| 07:15 | | | 1 | 27 | 28 | 19:15 | | | 18 | 8 | 26 |
| 07:30 | | | 8 | 19 | 27 | 19:30 | | | 8 | 1 | 9 |
| 07:45 | | | 10 | 25 | 16 | 19:45 | | | 9 | 50 | 11 |
| | | | | | 78 | | | | 2 | 15 | 65 |
| 08:00 | | | 7 | 13 | 20 | 20:00 | | | 13 | 1 | 14 |
| 08:15 | | | 9 | 18 | 27 | 20:15 | | | 4 | 3 | 7 |
| 08:30 | | | 6 | 11 | 17 | 20:30 | | | 10 | 2 | 12 |
| 08:45 | | | 11 | 33 | 14 | 20:45 | | | 7 | 34 | 9 |
| | | | | | 56 | | | | 2 | 8 | 42 |
| 09:00 | | | 9 | 19 | 28 | 21:00 | | | 8 | 2 | 10 |
| 09:15 | | | 5 | 14 | 19 | 21:15 | | | 7 | 1 | 8 |
| 09:30 | | | 10 | 20 | 30 | 21:30 | | | 3 | 1 | 4 |
| 09:45 | | | 6 | 30 | 14 | 21:45 | | | 2 | 20 | 2 |
| | | | | | 67 | | | | 2 | 6 | 26 |
| 10:00 | | | 6 | 15 | 21 | 22:00 | | | 2 | 2 | 4 |
| 10:15 | | | 6 | 17 | 23 | 22:15 | | | 2 | 2 | 4 |
| 10:30 | | | 15 | 12 | 27 | 22:30 | | | 5 | 1 | 6 |
| 10:45 | | | 8 | 35 | 10 | 22:45 | | | 1 | 10 | 2 |
| | | | | | 54 | | | | 1 | 6 | 16 |
| 11:00 | | | 9 | 9 | 18 | 23:00 | | | 2 | 1 | 3 |
| 11:15 | | | 13 | 13 | 26 | 23:15 | | | 1 | 0 | 1 |
| 11:30 | | | 8 | 12 | 20 | 23:30 | | | 0 | 0 | 0 |
| 11:45 | | | 11 | 41 | 9 | 23:45 | | | 0 | 3 | 0 |
| | | | | | 43 | | | | 0 | 1 | 4 |
| TOTALS | | | 198 | 462 | 660 | TOTALS | | | 605 | 324 | 929 |
| SPLIT % | | | 30.0% | 70.0% | 41.5% | SPLIT % | | | 65.1% | 34.9% | 58.5% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|-------|
| | | | | | 0 | 0 | 803 | 786 | 1,589 | | |
| AM Peak Hour | | | 11:45 | 06:45 | 06:45 | PM Peak Hour | | | 17:00 | 12:15 | 16:15 |
| AM Pk Volume | | | 50 | 89 | 111 | PM Pk Volume | | | 104 | 57 | 144 |
| Pk Hr Factor | | | 0.893 | 0.824 | 0.816 | Pk Hr Factor | | | 0.765 | 0.713 | 0.837 |
| 7 - 9 Volume | 0 | 0 | 58 | 134 | 192 | 4 - 6 Volume | 0 | 0 | 201 | 78 | 279 |
| 7 - 9 Peak Hour | | | 07:30 | 07:00 | 07:00 | 4 - 6 Peak Hour | | | 17:00 | 16:30 | 16:15 |
| 7 - 9 Pk Volume | 0 | 0 | 34 | 78 | 103 | 4 - 6 Pk Volume | 0 | 0 | 104 | 47 | 144 |
| Pk Hr Factor | 0.000 | 0.000 | 0.850 | 0.722 | 0.920 | Pk Hr Factor | 0.000 | 0.000 | 0.765 | 0.734 | 0.837 |

VOLUME

E Avenue E W/O 90th St E

Day: Wednesday
Date: 1/28/2015

City: Lancaster
Project #: CA15_5025_017

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|----|----|-------|-------|--------------|----------------|-------|-------|-------|-------|--------------|
| | | | | | 0 | 0 | 1,276 | 1,209 | 2,485 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | | | 5 | 3 | 8 | 12:00 | | | 15 | 4 | 19 |
| 00:15 | | | 2 | 6 | 8 | 12:15 | | | 11 | 7 | 18 |
| 00:30 | | | 2 | 1 | 3 | 12:30 | | | 7 | 7 | 14 |
| 00:45 | | | 2 | 11 | 4 | 12:45 | | | 11 | 44 | 18 |
| 01:00 | | | 2 | 3 | 5 | 13:00 | | | 10 | 4 | 14 |
| 01:15 | | | 1 | 2 | 3 | 13:15 | | | 15 | 16 | 31 |
| 01:30 | | | 0 | 0 | 0 | 13:30 | | | 15 | 20 | 35 |
| 01:45 | | | 0 | 3 | 2 | 13:45 | | | 14 | 54 | 11 |
| 02:00 | | | 1 | 1 | 2 | 14:00 | | | 26 | 15 | 41 |
| 02:15 | | | 0 | 0 | 0 | 14:15 | | | 20 | 18 | 38 |
| 02:30 | | | 1 | 2 | 3 | 14:30 | | | 14 | 18 | 32 |
| 02:45 | | | 3 | 5 | 2 | 14:45 | | | 22 | 82 | 23 |
| 03:00 | | | 7 | 4 | 11 | 15:00 | | | 33 | 36 | 69 |
| 03:15 | | | 5 | 2 | 7 | 15:15 | | | 15 | 29 | 44 |
| 03:30 | | | 1 | 1 | 2 | 15:30 | | | 12 | 29 | 41 |
| 03:45 | | | 6 | 19 | 2 | 15:45 | | | 15 | 75 | 56 |
| 04:00 | | | 6 | 6 | 12 | 16:00 | | | 6 | 46 | 52 |
| 04:15 | | | 8 | 2 | 10 | 16:15 | | | 18 | 60 | 78 |
| 04:30 | | | 8 | 4 | 12 | 16:30 | | | 14 | 57 | 71 |
| 04:45 | | | 8 | 30 | 3 | 16:45 | | | 27 | 65 | 79 |
| 05:00 | | | 14 | 6 | 20 | 17:00 | | | 20 | 53 | 73 |
| 05:15 | | | 39 | 9 | 48 | 17:15 | | | 12 | 32 | 44 |
| 05:30 | | | 36 | 6 | 42 | 17:30 | | | 10 | 29 | 39 |
| 05:45 | | | 42 | 131 | 3 | 17:45 | | | 13 | 55 | 22 |
| 06:00 | | | 54 | 10 | 64 | 18:00 | | | 18 | 16 | 34 |
| 06:15 | | | 60 | 6 | 66 | 18:15 | | | 14 | 20 | 34 |
| 06:30 | | | 66 | 10 | 76 | 18:30 | | | 2 | 11 | 13 |
| 06:45 | | | 51 | 231 | 3 | 18:45 | | | 8 | 42 | 14 |
| 07:00 | | | 47 | 17 | 64 | 19:00 | | | 8 | 7 | 15 |
| 07:15 | | | 48 | 12 | 60 | 19:15 | | | 1 | 6 | 7 |
| 07:30 | | | 37 | 10 | 47 | 19:30 | | | 5 | 1 | 6 |
| 07:45 | | | 28 | 160 | 5 | 19:45 | | | 5 | 19 | 6 |
| 08:00 | | | 18 | 6 | 24 | 20:00 | | | 4 | 9 | 13 |
| 08:15 | | | 27 | 11 | 38 | 20:15 | | | 5 | 8 | 13 |
| 08:30 | | | 16 | 12 | 28 | 20:30 | | | 1 | 6 | 7 |
| 08:45 | | | 18 | 79 | 11 | 20:45 | | | 5 | 15 | 9 |
| 09:00 | | | 12 | 7 | 19 | 21:00 | | | 5 | 4 | 9 |
| 09:15 | | | 3 | 13 | 16 | 21:15 | | | 6 | 9 | 15 |
| 09:30 | | | 11 | 8 | 19 | 21:30 | | | 3 | 3 | 6 |
| 09:45 | | | 6 | 32 | 19 | 21:45 | | | 7 | 21 | 5 |
| 10:00 | | | 3 | 14 | 17 | 22:00 | | | 7 | 5 | 12 |
| 10:15 | | | 10 | 6 | 16 | 22:15 | | | 6 | 6 | 12 |
| 10:30 | | | 4 | 17 | 21 | 22:30 | | | 1 | 13 | 14 |
| 10:45 | | | 4 | 21 | 6 | 22:45 | | | 3 | 17 | 2 |
| 11:00 | | | 12 | 6 | 18 | 23:00 | | | 6 | 12 | 18 |
| 11:15 | | | 11 | 16 | 27 | 23:15 | | | 1 | 15 | 16 |
| 11:30 | | | 11 | 9 | 20 | 23:30 | | | 4 | 9 | 13 |
| 11:45 | | | 14 | 48 | 9 | 23:45 | | | 6 | 17 | 7 |
| TOTALS | | | 770 | 317 | 1087 | TOTALS | | | 506 | 892 | 1398 |
| SPLIT % | | | 70.8% | 29.2% | 43.7% | SPLIT % | | | 36.2% | 63.8% | 56.3% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|-------|
| | | | | | 0 | 0 | 1,276 | 1,209 | 2,485 | | |
| AM Peak Hour | | | 06:00 | 09:45 | 06:00 | PM Peak Hour | | | 14:15 | 16:15 | 16:15 |
| AM Pk Volume | | | 231 | 56 | 260 | PM Pk Volume | | | 89 | 249 | 328 |
| Pk Hr Factor | | | 0.875 | 0.737 | 0.855 | Pk Hr Factor | | | 0.674 | 0.788 | 0.774 |
| 7 - 9 Volume | 0 | 0 | 239 | 84 | 323 | 4 - 6 Volume | 0 | 0 | 120 | 378 | 498 |
| 7 - 9 Peak Hour | | | 07:00 | 07:00 | 07:00 | 4 - 6 Peak Hour | | | 16:15 | 16:15 | 16:15 |
| 7 - 9 Pk Volume | 0 | 0 | 160 | 44 | 204 | 4 - 6 Pk Volume | 0 | 0 | 79 | 249 | 328 |
| Pk Hr Factor | 0.000 | 0.000 | 0.833 | 0.647 | 0.797 | Pk Hr Factor | 0.000 | 0.000 | 0.731 | 0.788 | 0.774 |

VOLUME

E Avenue G W/O 90th St E

Day: Wednesday
Date: 1/28/2015

City: Lancaster
Project #: CA15_5025_018

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|----|----|-------|-------|-------|----------------|----|----|-------|-------|-------|
| | | | | | 0 | 0 | 72 | 53 | 125 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | | | 0 | 0 | 0 | 12:00 | | | 1 | 1 | 2 |
| 00:15 | | | 1 | 0 | 1 | 12:15 | | | 5 | 1 | 6 |
| 00:30 | | | 0 | 0 | 0 | 12:30 | | | 1 | 0 | 1 |
| 00:45 | | | 0 | 1 | 0 | 12:45 | | | 1 | 8 | 0 |
| 01:00 | | | 0 | 0 | 0 | 13:00 | | | 0 | 1 | 1 |
| 01:15 | | | 0 | 0 | 0 | 13:15 | | | 1 | 3 | 4 |
| 01:30 | | | 0 | 0 | 0 | 13:30 | | | 3 | 2 | 5 |
| 01:45 | | | 0 | 0 | 0 | 13:45 | | | 0 | 4 | 0 |
| 02:00 | | | 0 | 0 | 0 | 14:00 | | | 1 | 1 | 2 |
| 02:15 | | | 0 | 0 | 0 | 14:15 | | | 0 | 1 | 1 |
| 02:30 | | | 0 | 0 | 0 | 14:30 | | | 0 | 0 | 0 |
| 02:45 | | | 0 | 0 | 0 | 14:45 | | | 2 | 3 | 3 |
| 03:00 | | | 0 | 0 | 0 | 15:00 | | | 0 | 2 | 2 |
| 03:15 | | | 0 | 0 | 0 | 15:15 | | | 1 | 5 | 6 |
| 03:30 | | | 0 | 0 | 0 | 15:30 | | | 0 | 1 | 1 |
| 03:45 | | | 0 | 0 | 0 | 15:45 | | | 2 | 3 | 1 |
| 04:00 | | | 0 | 0 | 0 | 16:00 | | | 1 | 2 | 3 |
| 04:15 | | | 0 | 0 | 0 | 16:15 | | | 0 | 1 | 1 |
| 04:30 | | | 0 | 0 | 0 | 16:30 | | | 0 | 1 | 1 |
| 04:45 | | | 0 | 0 | 0 | 16:45 | | | 1 | 2 | 0 |
| 05:00 | | | 0 | 0 | 0 | 17:00 | | | 1 | 0 | 1 |
| 05:15 | | | 0 | 2 | 2 | 17:15 | | | 3 | 0 | 3 |
| 05:30 | | | 0 | 1 | 1 | 17:30 | | | 0 | 0 | 0 |
| 05:45 | | | 1 | 1 | 1 | 17:45 | | | 5 | 9 | 0 |
| 06:00 | | | 1 | 0 | 1 | 18:00 | | | 1 | 1 | 2 |
| 06:15 | | | 2 | 1 | 3 | 18:15 | | | 0 | 0 | 0 |
| 06:30 | | | 2 | 1 | 3 | 18:30 | | | 0 | 1 | 1 |
| 06:45 | | | 2 | 7 | 1 | 18:45 | | | 2 | 3 | 0 |
| 07:00 | | | 4 | 0 | 4 | 19:00 | | | 1 | 0 | 1 |
| 07:15 | | | 0 | 1 | 1 | 19:15 | | | 1 | 0 | 1 |
| 07:30 | | | 2 | 3 | 5 | 19:30 | | | 0 | 0 | 0 |
| 07:45 | | | 0 | 6 | 2 | 19:45 | | | 1 | 3 | 1 |
| 08:00 | | | 0 | 0 | 0 | 20:00 | | | 0 | 0 | 0 |
| 08:15 | | | 2 | 0 | 2 | 20:15 | | | 0 | 0 | 0 |
| 08:30 | | | 0 | 0 | 0 | 20:30 | | | 0 | 0 | 0 |
| 08:45 | | | 1 | 3 | 1 | 20:45 | | | 0 | 0 | 0 |
| 09:00 | | | 1 | 1 | 2 | 21:00 | | | 0 | 0 | 0 |
| 09:15 | | | 0 | 2 | 2 | 21:15 | | | 0 | 0 | 0 |
| 09:30 | | | 6 | 2 | 8 | 21:30 | | | 1 | 0 | 1 |
| 09:45 | | | 3 | 10 | 1 | 21:45 | | | 0 | 1 | 0 |
| 10:00 | | | 1 | 1 | 2 | 22:00 | | | 1 | 0 | 1 |
| 10:15 | | | 0 | 0 | 0 | 22:15 | | | 0 | 0 | 0 |
| 10:30 | | | 2 | 1 | 3 | 22:30 | | | 0 | 0 | 0 |
| 10:45 | | | 1 | 4 | 1 | 22:45 | | | 0 | 1 | 0 |
| 11:00 | | | 0 | 0 | 0 | 23:00 | | | 0 | 0 | 0 |
| 11:15 | | | 1 | 1 | 2 | 23:15 | | | 0 | 0 | 0 |
| 11:30 | | | 0 | 0 | 0 | 23:30 | | | 0 | 0 | 0 |
| 11:45 | | | 2 | 3 | 0 | 23:45 | | | 0 | 0 | 0 |
| TOTALS | | | 35 | 24 | 59 | TOTALS | | | 37 | 29 | 66 |
| SPLIT % | | | 59.3% | 40.7% | 47.2% | SPLIT % | | | 56.1% | 43.9% | 52.8% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|-------|
| | | | | | 0 | 0 | 72 | 53 | 125 | | |
| AM Peak Hour | | | 06:15 | 07:00 | 09:00 | PM Peak Hour | | | 17:00 | 14:45 | 14:45 |
| AM Pk Volume | | | 10 | 6 | 16 | PM Pk Volume | | | 9 | 11 | 14 |
| Pk Hr Factor | | | 0.625 | 0.500 | 0.500 | Pk Hr Factor | | | 0.450 | 0.550 | 0.583 |
| 7 - 9 Volume | 0 | 0 | 9 | 7 | 16 | 4 - 6 Volume | 0 | 0 | 11 | 4 | 15 |
| 7 - 9 Peak Hour | | | 07:00 | 07:00 | 07:00 | 4 - 6 Peak Hour | | | 17:00 | 16:00 | 17:00 |
| 7 - 9 Pk Volume | 0 | 0 | 6 | 6 | 12 | 4 - 6 Pk Volume | 0 | 0 | 9 | 4 | 9 |
| Pk Hr Factor | 0.000 | 0.000 | 0.375 | 0.500 | 0.600 | Pk Hr Factor | 0.000 | 0.000 | 0.450 | 0.500 | 0.450 |

VOLUME

E Avenue J W/O 90th St E

Day: Wednesday
Date: 1/28/2015

City: Lancaster
Project #: CA15_5025_019

| DAILY TOTALS | | | | | NB | SB | | | | | | Total |
|----------------|----|----|-------|-------|-------|----------------|-------|----|-------|-------|-------|-------|
| | | | | | 0 | 0 | | | | | | 2,492 |
| | | | | | | | 1,202 | | | 1,290 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL | |
| 00:00 | | | 2 | 2 | 4 | 12:00 | | | 11 | 14 | 25 | |
| 00:15 | | | 0 | 3 | 3 | 12:15 | | | 20 | 24 | 44 | |
| 00:30 | | | 3 | 4 | 7 | 12:30 | | | 22 | 21 | 43 | |
| 00:45 | | | 4 | 9 | 13 | 12:45 | | | 19 | 72 | 91 | |
| 01:00 | | | 2 | 4 | 6 | 13:00 | | | 13 | 14 | 27 | |
| 01:15 | | | 1 | 0 | 1 | 13:15 | | | 20 | 17 | 37 | |
| 01:30 | | | 0 | 1 | 1 | 13:30 | | | 17 | 11 | 28 | |
| 01:45 | | | 0 | 3 | 3 | 13:45 | | | 26 | 76 | 102 | |
| 02:00 | | | 3 | 0 | 3 | 14:00 | | | 22 | 22 | 44 | |
| 02:15 | | | 4 | 0 | 4 | 14:15 | | | 16 | 24 | 40 | |
| 02:30 | | | 0 | 1 | 1 | 14:30 | | | 11 | 24 | 35 | |
| 02:45 | | | 2 | 9 | 11 | 14:45 | | | 23 | 72 | 95 | |
| 03:00 | | | 0 | 3 | 3 | 15:00 | | | 30 | 22 | 52 | |
| 03:15 | | | 0 | 3 | 3 | 15:15 | | | 23 | 26 | 49 | |
| 03:30 | | | 2 | 7 | 9 | 15:30 | | | 28 | 23 | 51 | |
| 03:45 | | | 1 | 3 | 4 | 15:45 | | | 41 | 122 | 163 | |
| 04:00 | | | 4 | 3 | 7 | 16:00 | | | 26 | 26 | 52 | |
| 04:15 | | | 2 | 2 | 4 | 16:15 | | | 26 | 22 | 48 | |
| 04:30 | | | 6 | 5 | 11 | 16:30 | | | 35 | 27 | 62 | |
| 04:45 | | | 8 | 20 | 28 | 16:45 | | | 27 | 114 | 141 | |
| 05:00 | | | 12 | 8 | 20 | 17:00 | | | 24 | 30 | 54 | |
| 05:15 | | | 16 | 11 | 27 | 17:15 | | | 27 | 22 | 49 | |
| 05:30 | | | 13 | 13 | 26 | 17:30 | | | 14 | 20 | 34 | |
| 05:45 | | | 14 | 55 | 69 | 17:45 | | | 17 | 82 | 99 | |
| 06:00 | | | 19 | 10 | 29 | 18:00 | | | 30 | 22 | 52 | |
| 06:15 | | | 16 | 13 | 29 | 18:15 | | | 14 | 15 | 29 | |
| 06:30 | | | 25 | 10 | 35 | 18:30 | | | 15 | 18 | 33 | |
| 06:45 | | | 11 | 71 | 82 | 18:45 | | | 23 | 82 | 105 | |
| 07:00 | | | 13 | 25 | 38 | 19:00 | | | 13 | 7 | 20 | |
| 07:15 | | | 15 | 28 | 43 | 19:15 | | | 13 | 10 | 23 | |
| 07:30 | | | 11 | 25 | 36 | 19:30 | | | 3 | 13 | 16 | |
| 07:45 | | | 16 | 55 | 71 | 19:45 | | | 12 | 41 | 53 | |
| 08:00 | | | 15 | 22 | 37 | 20:00 | | | 19 | 2 | 21 | |
| 08:15 | | | 10 | 21 | 31 | 20:15 | | | 15 | 7 | 22 | |
| 08:30 | | | 14 | 28 | 42 | 20:30 | | | 12 | 4 | 16 | |
| 08:45 | | | 10 | 49 | 59 | 20:45 | | | 7 | 53 | 60 | |
| 09:00 | | | 12 | 21 | 33 | 21:00 | | | 11 | 6 | 17 | |
| 09:15 | | | 15 | 22 | 37 | 21:15 | | | 5 | 6 | 11 | |
| 09:30 | | | 13 | 26 | 39 | 21:30 | | | 3 | 3 | 6 | |
| 09:45 | | | 14 | 54 | 68 | 21:45 | | | 5 | 24 | 29 | |
| 10:00 | | | 15 | 24 | 39 | 22:00 | | | 8 | 10 | 18 | |
| 10:15 | | | 8 | 25 | 33 | 22:15 | | | 2 | 4 | 6 | |
| 10:30 | | | 9 | 19 | 28 | 22:30 | | | 6 | 7 | 13 | |
| 10:45 | | | 12 | 44 | 56 | 22:45 | | | 5 | 21 | 26 | |
| 11:00 | | | 22 | 24 | 46 | 23:00 | | | 3 | 3 | 6 | |
| 11:15 | | | 11 | 21 | 32 | 23:15 | | | 4 | 1 | 5 | |
| 11:30 | | | 19 | 15 | 34 | 23:30 | | | 1 | 2 | 3 | |
| 11:45 | | | 10 | 62 | 72 | 23:45 | | | 1 | 9 | 10 | |
| TOTALS | | | 434 | 583 | 1017 | TOTALS | | | 768 | 707 | 1475 | |
| SPLIT % | | | 42.7% | 57.3% | 40.8% | SPLIT % | | | 52.1% | 47.9% | 59.2% | |

| DAILY TOTALS | | | | | NB | SB | | | | | | Total |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|-------|-------|
| | | | | | 0 | 0 | | | | | | 2,492 |
| | | | | | | | 1,202 | | | 1,290 | | |
| AM Peak Hour | | | 05:45 | 07:00 | 07:00 | PM Peak Hour | | | 15:45 | 14:30 | 15:45 | |
| AM Pk Volume | | | 74 | 104 | 159 | PM Pk Volume | | | 128 | 107 | 235 | |
| Pk Hr Factor | | | 0.740 | 0.929 | 0.924 | Pk Hr Factor | | | 0.780 | 0.764 | 0.805 | |
| 7 - 9 Volume | 0 | 0 | 104 | 195 | 299 | 4 - 6 Volume | 0 | 0 | 196 | 184 | 380 | |
| 7 - 9 Peak Hour | | | 07:15 | 07:00 | 07:00 | 4 - 6 Peak Hour | | | 16:00 | 16:15 | 16:30 | |
| 7 - 9 Pk Volume | 0 | 0 | 57 | 104 | 159 | 4 - 6 Pk Volume | 0 | 0 | 114 | 101 | 214 | |
| Pk Hr Factor | 0.000 | 0.000 | 0.891 | 0.929 | 0.924 | Pk Hr Factor | 0.000 | 0.000 | 0.814 | 0.842 | 0.863 | |

VOLUME

E Palmdale Blvd W/O 90th St E

Day: Wednesday
Date: 1/28/2015

City: Lancaster
Project #: CA15_5025_020

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|----|----|-------|-------|-------|----------------|-----|-----|-------|-------|-------|
| | | | | | 0 | 0 | 454 | 461 | 915 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | | | 1 | 1 | 2 | 12:00 | | | 3 | 5 | 8 |
| 00:15 | | | 4 | 3 | 7 | 12:15 | | | 4 | 9 | 13 |
| 00:30 | | | 1 | 0 | 1 | 12:30 | | | 12 | 7 | 19 |
| 00:45 | | | 1 | 7 | 0 | 12:45 | | | 11 | 30 | 19 |
| 01:00 | | | 1 | 0 | 1 | 13:00 | | | 4 | 9 | 13 |
| 01:15 | | | 1 | 1 | 2 | 13:15 | | | 4 | 5 | 9 |
| 01:30 | | | 1 | 0 | 1 | 13:30 | | | 5 | 9 | 14 |
| 01:45 | | | 0 | 3 | 2 | 13:45 | | | 4 | 17 | 12 |
| 02:00 | | | 0 | 0 | 0 | 14:00 | | | 8 | 4 | 12 |
| 02:15 | | | 1 | 0 | 1 | 14:15 | | | 7 | 8 | 15 |
| 02:30 | | | 0 | 1 | 1 | 14:30 | | | 11 | 4 | 15 |
| 02:45 | | | 0 | 1 | 2 | 14:45 | | | 11 | 37 | 18 |
| 03:00 | | | 0 | 2 | 2 | 15:00 | | | 4 | 10 | 14 |
| 03:15 | | | 0 | 0 | 0 | 15:15 | | | 8 | 5 | 13 |
| 03:30 | | | 0 | 0 | 0 | 15:30 | | | 8 | 11 | 19 |
| 03:45 | | | 0 | 0 | 2 | 15:45 | | | 14 | 34 | 28 |
| 04:00 | | | 0 | 0 | 0 | 16:00 | | | 19 | 8 | 27 |
| 04:15 | | | 1 | 1 | 2 | 16:15 | | | 9 | 11 | 20 |
| 04:30 | | | 5 | 3 | 8 | 16:30 | | | 21 | 8 | 29 |
| 04:45 | | | 4 | 10 | 2 | 16:45 | | | 16 | 65 | 27 |
| 05:00 | | | 6 | 5 | 11 | 17:00 | | | 16 | 6 | 22 |
| 05:15 | | | 12 | 14 | 26 | 17:15 | | | 9 | 5 | 14 |
| 05:30 | | | 15 | 7 | 22 | 17:30 | | | 8 | 3 | 11 |
| 05:45 | | | 8 | 41 | 20 | 17:45 | | | 9 | 42 | 14 |
| 06:00 | | | 3 | 12 | 15 | 18:00 | | | 5 | 3 | 8 |
| 06:15 | | | 8 | 14 | 22 | 18:15 | | | 9 | 5 | 14 |
| 06:30 | | | 4 | 11 | 15 | 18:30 | | | 2 | 6 | 8 |
| 06:45 | | | 8 | 23 | 11 | 18:45 | | | 2 | 18 | 5 |
| 07:00 | | | 2 | 7 | 9 | 19:00 | | | 0 | 2 | 2 |
| 07:15 | | | 3 | 8 | 11 | 19:15 | | | 2 | 5 | 7 |
| 07:30 | | | 6 | 12 | 18 | 19:30 | | | 2 | 4 | 6 |
| 07:45 | | | 6 | 17 | 11 | 19:45 | | | 1 | 5 | 5 |
| 08:00 | | | 8 | 8 | 16 | 20:00 | | | 0 | 2 | 2 |
| 08:15 | | | 7 | 7 | 14 | 20:15 | | | 6 | 3 | 9 |
| 08:30 | | | 5 | 2 | 7 | 20:30 | | | 1 | 1 | 2 |
| 08:45 | | | 5 | 25 | 1 | 20:45 | | | 2 | 9 | 4 |
| 09:00 | | | 7 | 3 | 10 | 21:00 | | | 0 | 1 | 1 |
| 09:15 | | | 1 | 11 | 12 | 21:15 | | | 1 | 1 | 2 |
| 09:30 | | | 3 | 10 | 13 | 21:30 | | | 2 | 1 | 3 |
| 09:45 | | | 4 | 15 | 4 | 21:45 | | | 1 | 4 | 7 |
| 10:00 | | | 6 | 4 | 10 | 22:00 | | | 2 | 2 | 4 |
| 10:15 | | | 4 | 2 | 6 | 22:15 | | | 4 | 1 | 5 |
| 10:30 | | | 3 | 2 | 5 | 22:30 | | | 2 | 2 | 4 |
| 10:45 | | | 7 | 20 | 0 | 22:45 | | | 2 | 10 | 2 |
| 11:00 | | | 3 | 8 | 11 | 23:00 | | | 2 | 1 | 3 |
| 11:15 | | | 4 | 3 | 7 | 23:15 | | | 3 | 0 | 3 |
| 11:30 | | | 3 | 5 | 8 | 23:30 | | | 5 | 1 | 6 |
| 11:45 | | | 1 | 11 | 4 | 23:45 | | | 0 | 10 | 1 |
| TOTALS | | | 173 | 224 | 397 | TOTALS | | | 281 | 237 | 518 |
| SPLIT % | | | 43.6% | 56.4% | 43.4% | SPLIT % | | | 54.2% | 45.8% | 56.6% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|-------|
| | | | | | 0 | 0 | 454 | 461 | 915 | | |
| AM Peak Hour | | | 05:00 | 05:45 | 05:15 | PM Peak Hour | | | 16:00 | 15:30 | 15:45 |
| AM Pk Volume | | | 41 | 57 | 91 | PM Pk Volume | | | 65 | 44 | 104 |
| Pk Hr Factor | | | 0.683 | 0.713 | 0.813 | Pk Hr Factor | | | 0.774 | 0.786 | 0.897 |
| 7 - 9 Volume | 0 | 0 | 42 | 56 | 98 | 4 - 6 Volume | 0 | 0 | 107 | 57 | 164 |
| 7 - 9 Peak Hour | | | 07:30 | 07:15 | 07:30 | 4 - 6 Peak Hour | | | 16:00 | 16:00 | 16:00 |
| 7 - 9 Pk Volume | 0 | 0 | 27 | 39 | 65 | 4 - 6 Pk Volume | 0 | 0 | 65 | 38 | 103 |
| Pk Hr Factor | 0.000 | 0.000 | 0.844 | 0.813 | 0.903 | Pk Hr Factor | 0.000 | 0.000 | 0.774 | 0.864 | 0.888 |

VOLUME

E Avenue T W/O 87th St E

Day: Wednesday
Date: 1/28/2015

City: Lancaster
Project #: CA15_5025_021

| DAILY TOTALS | | | | | NB | SB | | | | | | Total | |
|----------------|----|----|-------|-------|-------|-----|----------------|----|----|-------|-------|-------|-----|
| | | | | | 0 | 0 | | | | | | 8,041 | |
| | | | | | | | 3,949 | | | 4,092 | | | |
| AM Period | NB | SB | EB | WB | TOTAL | | PM Period | NB | SB | EB | WB | TOTAL | |
| 00:00 | | | 13 | 3 | 16 | | 12:00 | | | 33 | 56 | 89 | |
| 00:15 | | | 17 | 3 | 20 | | 12:15 | | | 41 | 45 | 86 | |
| 00:30 | | | 11 | 2 | 13 | | 12:30 | | | 53 | 48 | 101 | |
| 00:45 | | | 8 | 49 | 2 | 10 | 12:45 | | | 47 | 174 | 34 | 183 |
| 01:00 | | | 7 | 2 | 9 | | 13:00 | | | 31 | 48 | 79 | |
| 01:15 | | | 6 | 7 | 13 | | 13:15 | | | 58 | 48 | 106 | |
| 01:30 | | | 9 | 2 | 11 | | 13:30 | | | 48 | 53 | 101 | |
| 01:45 | | | 5 | 27 | 6 | 17 | 13:45 | | | 49 | 186 | 42 | 191 |
| 02:00 | | | 7 | 2 | 9 | | 14:00 | | | 53 | 43 | 96 | |
| 02:15 | | | 4 | 4 | 8 | | 14:15 | | | 63 | 56 | 119 | |
| 02:30 | | | 4 | 7 | 11 | | 14:30 | | | 82 | 55 | 137 | |
| 02:45 | | | 3 | 18 | 7 | 20 | 14:45 | | | 57 | 255 | 55 | 209 |
| 03:00 | | | 4 | 14 | 18 | | 15:00 | | | 68 | 58 | 126 | |
| 03:15 | | | 7 | 19 | 26 | | 15:15 | | | 74 | 64 | 138 | |
| 03:30 | | | 4 | 25 | 29 | | 15:30 | | | 88 | 51 | 139 | |
| 03:45 | | | 3 | 18 | 38 | 96 | 15:45 | | | 84 | 314 | 52 | 225 |
| 04:00 | | | 6 | 57 | 63 | | 16:00 | | | 100 | 49 | 149 | |
| 04:15 | | | 6 | 79 | 85 | | 16:15 | | | 85 | 54 | 139 | |
| 04:30 | | | 6 | 119 | 125 | | 16:30 | | | 102 | 67 | 169 | |
| 04:45 | | | 11 | 29 | 96 | 351 | 16:45 | | | 105 | 392 | 56 | 226 |
| 05:00 | | | 9 | 72 | 81 | | 17:00 | | | 130 | 68 | 198 | |
| 05:15 | | | 12 | 75 | 87 | | 17:15 | | | 91 | 50 | 141 | |
| 05:30 | | | 12 | 72 | 84 | | 17:30 | | | 103 | 51 | 154 | |
| 05:45 | | | 7 | 40 | 77 | 296 | 17:45 | | | 117 | 441 | 47 | 216 |
| 06:00 | | | 12 | 81 | 93 | | 18:00 | | | 104 | 40 | 144 | |
| 06:15 | | | 11 | 77 | 88 | | 18:15 | | | 103 | 32 | 135 | |
| 06:30 | | | 12 | 72 | 84 | | 18:30 | | | 109 | 32 | 141 | |
| 06:45 | | | 29 | 64 | 78 | 308 | 18:45 | | | 80 | 396 | 28 | 132 |
| 07:00 | | | 33 | 103 | 136 | | 19:00 | | | 109 | 35 | 144 | |
| 07:15 | | | 31 | 76 | 107 | | 19:15 | | | 87 | 24 | 111 | |
| 07:30 | | | 29 | 82 | 111 | | 19:30 | | | 71 | 26 | 97 | |
| 07:45 | | | 35 | 128 | 78 | 339 | 19:45 | | | 72 | 339 | 28 | 113 |
| 08:00 | | | 43 | 85 | 128 | | 20:00 | | | 70 | 28 | 98 | |
| 08:15 | | | 31 | 68 | 99 | | 20:15 | | | 51 | 24 | 75 | |
| 08:30 | | | 41 | 61 | 102 | | 20:30 | | | 51 | 19 | 70 | |
| 08:45 | | | 33 | 148 | 66 | 280 | 20:45 | | | 57 | 229 | 23 | 94 |
| 09:00 | | | 38 | 55 | 93 | | 21:00 | | | 37 | 20 | 57 | |
| 09:15 | | | 25 | 66 | 91 | | 21:15 | | | 47 | 12 | 59 | |
| 09:30 | | | 34 | 47 | 81 | | 21:30 | | | 27 | 17 | 44 | |
| 09:45 | | | 23 | 120 | 57 | 225 | 21:45 | | | 36 | 147 | 16 | 65 |
| 10:00 | | | 33 | 53 | 86 | | 22:00 | | | 38 | 18 | 56 | |
| 10:15 | | | 31 | 51 | 82 | | 22:15 | | | 28 | 14 | 42 | |
| 10:30 | | | 25 | 58 | 83 | | 22:30 | | | 18 | 11 | 29 | |
| 10:45 | | | 24 | 113 | 43 | 205 | 22:45 | | | 17 | 101 | 9 | 52 |
| 11:00 | | | 34 | 53 | 87 | | 23:00 | | | 30 | 13 | 43 | |
| 11:15 | | | 36 | 49 | 85 | | 23:15 | | | 18 | 5 | 23 | |
| 11:30 | | | 46 | 55 | 101 | | 23:30 | | | 9 | 5 | 14 | |
| 11:45 | | | 36 | 152 | 55 | 212 | 23:45 | | | 12 | 69 | 4 | 27 |
| TOTALS | | | 906 | 2359 | 3265 | | TOTALS | | | 3043 | 1733 | 4776 | |
| SPLIT % | | | 27.7% | 72.3% | 40.6% | | SPLIT % | | | 63.7% | 36.3% | 59.4% | |

| DAILY TOTALS | | | | | NB | SB | | | | | | Total |
|-----------------|-------|-------|-------|-------|-------|----|-----------------|-------|-------|-------|-------|-------|
| | | | | | 0 | 0 | | | | | | 8,041 |
| | | | | | | | 3,949 | | | 4,092 | | |
| AM Peak Hour | | | 11:45 | 04:15 | 07:00 | | PM Peak Hour | | | 17:00 | 16:15 | 16:30 |
| AM Pk Volume | | | 163 | 366 | 467 | | PM Pk Volume | | | 441 | 245 | 669 |
| Pk Hr Factor | | | 0.769 | 0.769 | 0.858 | | Pk Hr Factor | | | 0.848 | 0.901 | 0.845 |
| 7 - 9 Volume | 0 | 0 | 276 | 619 | 895 | | 4 - 6 Volume | 0 | 0 | 833 | 442 | 1275 |
| 7 - 9 Peak Hour | | | 07:45 | 07:00 | 07:00 | | 4 - 6 Peak Hour | | | 17:00 | 16:15 | 16:30 |
| 7 - 9 Pk Volume | 0 | 0 | 150 | 339 | 467 | | 4 - 6 Pk Volume | 0 | 0 | 441 | 245 | 669 |
| Pk Hr Factor | 0.000 | 0.000 | 0.872 | 0.823 | 0.858 | | Pk Hr Factor | 0.000 | 0.000 | 0.848 | 0.901 | 0.845 |

VOLUME

SR-138 W/O 87th St E

Day: Thursday
Date: 1/29/2015

City: Littlerock
Project #: CA15_5025_022

| DAILY TOTALS | | | | | NB | SB | | | | | | Total |
|----------------|----|----|-------|-------|-------|----------------|-------|----|-------|-------|-------|--------|
| | | | | | 0 | 0 | | | | | | 17,219 |
| | | | | | | | 9,059 | | | | | 8,160 |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL | |
| 00:00 | | | 23 | 19 | 42 | 12:00 | | | 131 | 108 | 239 | |
| 00:15 | | | 14 | 22 | 36 | 12:15 | | | 133 | 102 | 235 | |
| 00:30 | | | 18 | 23 | 41 | 12:30 | | | 131 | 138 | 269 | |
| 00:45 | | | 22 | 77 | 99 | 12:45 | | | 142 | 537 | 679 | |
| 01:00 | | | 20 | 12 | 32 | 13:00 | | | 139 | 124 | 263 | |
| 01:15 | | | 19 | 20 | 39 | 13:15 | | | 120 | 107 | 227 | |
| 01:30 | | | 17 | 28 | 45 | 13:30 | | | 124 | 117 | 241 | |
| 01:45 | | | 10 | 66 | 76 | 13:45 | | | 151 | 534 | 685 | |
| 02:00 | | | 17 | 18 | 35 | 14:00 | | | 127 | 111 | 238 | |
| 02:15 | | | 14 | 21 | 35 | 14:15 | | | 160 | 94 | 254 | |
| 02:30 | | | 12 | 7 | 19 | 14:30 | | | 189 | 110 | 299 | |
| 02:45 | | | 13 | 56 | 69 | 14:45 | | | 168 | 644 | 812 | |
| 03:00 | | | 10 | 7 | 17 | 15:00 | | | 172 | 141 | 313 | |
| 03:15 | | | 19 | 22 | 41 | 15:15 | | | 217 | 139 | 356 | |
| 03:30 | | | 26 | 24 | 50 | 15:30 | | | 218 | 151 | 369 | |
| 03:45 | | | 22 | 77 | 99 | 15:45 | | | 220 | 827 | 1047 | |
| 04:00 | | | 26 | 51 | 77 | 16:00 | | | 220 | 131 | 351 | |
| 04:15 | | | 32 | 61 | 93 | 16:15 | | | 231 | 143 | 374 | |
| 04:30 | | | 44 | 77 | 121 | 16:30 | | | 228 | 124 | 352 | |
| 04:45 | | | 55 | 157 | 212 | 16:45 | | | 193 | 872 | 1065 | |
| 05:00 | | | 36 | 65 | 101 | 17:00 | | | 200 | 124 | 324 | |
| 05:15 | | | 53 | 83 | 136 | 17:15 | | | 185 | 110 | 295 | |
| 05:30 | | | 64 | 106 | 170 | 17:30 | | | 188 | 113 | 301 | |
| 05:45 | | | 70 | 223 | 293 | 17:45 | | | 160 | 733 | 893 | |
| 06:00 | | | 55 | 116 | 171 | 18:00 | | | 186 | 123 | 309 | |
| 06:15 | | | 68 | 134 | 202 | 18:15 | | | 165 | 96 | 261 | |
| 06:30 | | | 77 | 120 | 197 | 18:30 | | | 142 | 100 | 242 | |
| 06:45 | | | 90 | 290 | 380 | 18:45 | | | 135 | 628 | 763 | |
| 07:00 | | | 92 | 101 | 193 | 19:00 | | | 111 | 91 | 202 | |
| 07:15 | | | 81 | 105 | 186 | 19:15 | | | 103 | 79 | 182 | |
| 07:30 | | | 84 | 133 | 217 | 19:30 | | | 97 | 73 | 170 | |
| 07:45 | | | 96 | 353 | 449 | 19:45 | | | 89 | 400 | 489 | |
| 08:00 | | | 98 | 119 | 217 | 20:00 | | | 103 | 75 | 178 | |
| 08:15 | | | 105 | 122 | 227 | 20:15 | | | 72 | 77 | 149 | |
| 08:30 | | | 88 | 165 | 253 | 20:30 | | | 52 | 74 | 126 | |
| 08:45 | | | 131 | 422 | 553 | 20:45 | | | 62 | 289 | 351 | |
| 09:00 | | | 143 | 121 | 264 | 21:00 | | | 56 | 53 | 109 | |
| 09:15 | | | 94 | 111 | 205 | 21:15 | | | 47 | 51 | 98 | |
| 09:30 | | | 123 | 147 | 270 | 21:30 | | | 52 | 55 | 107 | |
| 09:45 | | | 105 | 465 | 570 | 21:45 | | | 51 | 206 | 257 | |
| 10:00 | | | 124 | 125 | 249 | 22:00 | | | 47 | 31 | 78 | |
| 10:15 | | | 92 | 118 | 210 | 22:15 | | | 37 | 47 | 84 | |
| 10:30 | | | 86 | 122 | 208 | 22:30 | | | 56 | 33 | 89 | |
| 10:45 | | | 105 | 407 | 512 | 22:45 | | | 38 | 178 | 216 | |
| 11:00 | | | 121 | 95 | 216 | 23:00 | | | 34 | 21 | 55 | |
| 11:15 | | | 113 | 97 | 210 | 23:15 | | | 25 | 43 | 68 | |
| 11:30 | | | 134 | 107 | 241 | 23:30 | | | 31 | 23 | 54 | |
| 11:45 | | | 127 | 495 | 622 | 23:45 | | | 33 | 123 | 156 | |
| TOTALS | | | 3088 | 3763 | 6851 | TOTALS | | | 5971 | 4397 | 10368 | |
| SPLIT % | | | 45.1% | 54.9% | 39.8% | SPLIT % | | | 57.6% | 42.4% | 60.2% | |

| DAILY TOTALS | | | | | NB | SB | | | | | | Total |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|-------|--------|
| | | | | | 0 | 0 | | | | | | 17,219 |
| | | | | | | | 9,059 | | | | | 8,160 |
| AM Peak Hour | | | 11:30 | 07:45 | 08:15 | PM Peak Hour | | | 15:45 | 15:00 | 15:30 | |
| AM Pk Volume | | | 525 | 551 | 1010 | PM Pk Volume | | | 899 | 562 | 1445 | |
| Pk Hr Factor | | | 0.979 | 0.835 | 0.949 | Pk Hr Factor | | | 0.973 | 0.930 | 0.966 | |
| 7 - 9 Volume | 0 | 0 | 775 | 1025 | 1800 | 4 - 6 Volume | 0 | 0 | 1605 | 975 | 2580 | |
| 7 - 9 Peak Hour | | | 08:00 | 07:45 | 08:00 | 4 - 6 Peak Hour | | | 16:00 | 16:00 | 16:00 | |
| 7 - 9 Pk Volume | 0 | 0 | 422 | 551 | 963 | 4 - 6 Pk Volume | 0 | 0 | 872 | 510 | 1382 | |
| Pk Hr Factor | 0.000 | 0.000 | 0.805 | 0.835 | 0.905 | Pk Hr Factor | 0.000 | 0.000 | 0.944 | 0.892 | 0.924 | |

VOLUME

E Avenue E W/O 30th St E

Day: Tuesday
Date: 2/3/2015

City: Palmdale
Project #: CA15_5025_023

| DAILY TOTALS | | | | | NB | SB | | | | | | Total |
|----------------|----|----|----|-------|-------|----------------|-------|-------|-------|-------|--------------|-------|
| | | | | | 0 | 0 | | | | | | 2,396 |
| | | | | | | | EB | WB | | | | |
| | | | | | | | 1,238 | 1,158 | | | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL | |
| 00:00 | | | 6 | 12 | 18 | 12:00 | | | 14 | 11 | 25 | |
| 00:15 | | | 2 | 9 | 11 | 12:15 | | | 14 | 11 | 25 | |
| 00:30 | | | 0 | 3 | 3 | 12:30 | | | 8 | 14 | 22 | |
| 00:45 | | | 1 | 9 | 0 | 12:45 | | | 12 | 48 | 19 | |
| | | | | 24 | 1 | | | | 7 | 43 | 91 | |
| | | | | | 33 | | | | | | | |
| 01:00 | | | 2 | 0 | 2 | 13:00 | | | 6 | 10 | 16 | |
| 01:15 | | | 2 | 1 | 3 | 13:15 | | | 23 | 9 | 32 | |
| 01:30 | | | 1 | 0 | 1 | 13:30 | | | 17 | 11 | 28 | |
| 01:45 | | | 2 | 7 | 5 | 13:45 | | | 23 | 69 | 43 | |
| | | | | 6 | 7 | | | | 20 | 50 | 119 | |
| | | | | | 13 | | | | | | | |
| 02:00 | | | 2 | 1 | 3 | 14:00 | | | 15 | 21 | 36 | |
| 02:15 | | | 3 | 2 | 5 | 14:15 | | | 24 | 20 | 44 | |
| 02:30 | | | 2 | 4 | 6 | 14:30 | | | 26 | 14 | 40 | |
| 02:45 | | | 2 | 9 | 1 | 14:45 | | | 21 | 86 | 45 | |
| | | | | 8 | 3 | | | | 24 | 79 | 165 | |
| | | | | | 17 | | | | | | | |
| 03:00 | | | 4 | 2 | 6 | 15:00 | | | 21 | 30 | 51 | |
| 03:15 | | | 1 | 3 | 4 | 15:15 | | | 13 | 23 | 36 | |
| 03:30 | | | 1 | 2 | 3 | 15:30 | | | 23 | 35 | 58 | |
| 03:45 | | | 0 | 6 | 2 | 15:45 | | | 19 | 76 | 57 | |
| | | | | 9 | 2 | | | | 38 | 126 | 202 | |
| | | | | | 15 | | | | | | | |
| 04:00 | | | 6 | 5 | 11 | 16:00 | | | 10 | 41 | 51 | |
| 04:15 | | | 2 | 8 | 10 | 16:15 | | | 15 | 36 | 51 | |
| 04:30 | | | 12 | 4 | 16 | 16:30 | | | 10 | 50 | 60 | |
| 04:45 | | | 10 | 30 | 9 | 16:45 | | | 22 | 57 | 70 | |
| | | | | 26 | 19 | | | | 48 | 175 | 232 | |
| | | | | | 56 | | | | | | | |
| 05:00 | | | 17 | 7 | 24 | 17:00 | | | 13 | 67 | 80 | |
| 05:15 | | | 26 | 5 | 31 | 17:15 | | | 18 | 37 | 55 | |
| 05:30 | | | 30 | 9 | 39 | 17:30 | | | 22 | 22 | 44 | |
| 05:45 | | | 46 | 119 | 15 | 17:45 | | | 14 | 67 | 31 | |
| | | | | 36 | 61 | | | | 17 | 143 | 210 | |
| | | | | | 155 | | | | | | | |
| 06:00 | | | 51 | 6 | 57 | 18:00 | | | 20 | 20 | 40 | |
| 06:15 | | | 52 | 9 | 61 | 18:15 | | | 10 | 14 | 24 | |
| 06:30 | | | 43 | 24 | 67 | 18:30 | | | 7 | 13 | 20 | |
| 06:45 | | | 37 | 183 | 11 | 18:45 | | | 6 | 43 | 18 | |
| | | | | 50 | 48 | | | | 12 | 59 | 102 | |
| | | | | | 233 | | | | | | | |
| 07:00 | | | 30 | 6 | 36 | 19:00 | | | 9 | 10 | 19 | |
| 07:15 | | | 34 | 13 | 47 | 19:15 | | | 16 | 13 | 29 | |
| 07:30 | | | 28 | 11 | 39 | 19:30 | | | 6 | 10 | 16 | |
| 07:45 | | | 25 | 117 | 11 | 19:45 | | | 5 | 36 | 8 | |
| | | | | 41 | 36 | | | | 3 | 36 | 72 | |
| | | | | | 158 | | | | | | | |
| 08:00 | | | 14 | 6 | 20 | 20:00 | | | 3 | 3 | 6 | |
| 08:15 | | | 18 | 18 | 36 | 20:15 | | | 5 | 10 | 15 | |
| 08:30 | | | 16 | 14 | 30 | 20:30 | | | 9 | 2 | 11 | |
| 08:45 | | | 11 | 59 | 8 | 20:45 | | | 13 | 30 | 20 | |
| | | | | 46 | 19 | | | | 7 | 22 | 52 | |
| | | | | | 105 | | | | | | | |
| 09:00 | | | 7 | 5 | 12 | 21:00 | | | 11 | 2 | 13 | |
| 09:15 | | | 5 | 13 | 18 | 21:15 | | | 6 | 4 | 10 | |
| 09:30 | | | 7 | 16 | 23 | 21:30 | | | 12 | 7 | 19 | |
| 09:45 | | | 10 | 29 | 10 | 21:45 | | | 11 | 40 | 17 | |
| | | | | 44 | 20 | | | | 6 | 19 | 59 | |
| | | | | | 73 | | | | | | | |
| 10:00 | | | 7 | 12 | 19 | 22:00 | | | 7 | 10 | 17 | |
| 10:15 | | | 9 | 11 | 20 | 22:15 | | | 15 | 4 | 19 | |
| 10:30 | | | 13 | 9 | 22 | 22:30 | | | 8 | 5 | 13 | |
| 10:45 | | | 11 | 40 | 11 | 22:45 | | | 1 | 31 | 3 | |
| | | | | 43 | 22 | | | | 2 | 21 | 52 | |
| | | | | | 83 | | | | | | | |
| 11:00 | | | 14 | 8 | 22 | 23:00 | | | 1 | 6 | 7 | |
| 11:15 | | | 7 | 10 | 17 | 23:15 | | | 1 | 1 | 2 | |
| 11:30 | | | 6 | 9 | 15 | 23:30 | | | 2 | 7 | 9 | |
| 11:45 | | | 14 | 41 | 6 | 23:45 | | | 2 | 6 | 7 | |
| | | | | 33 | 20 | | | | 5 | 19 | 25 | |
| | | | | | 74 | | | | | | | |
| TOTALS | | | | 649 | 366 | TOTALS | | | 589 | 792 | 1381 | |
| SPLIT % | | | | 63.9% | 36.1% | SPLIT % | | | 42.7% | 57.3% | 57.6% | |

| DAILY TOTALS | | | | | NB | SB | | | | | | Total |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|-------|-------|
| | | | | | 0 | 0 | | | | | | 2,396 |
| | | | | | | | EB | WB | | | | |
| | | | | | | | 1,238 | 1,158 | | | | |
| AM Peak Hour | | | 05:45 | 05:45 | 05:45 | PM Peak Hour | | | 14:15 | 16:30 | 16:30 | |
| AM Pk Volume | | | 192 | 54 | 246 | PM Pk Volume | | | 92 | 202 | 265 | |
| Pk Hr Factor | | | 0.923 | 0.563 | 0.918 | Pk Hr Factor | | | 0.885 | 0.754 | 0.828 | |
| 7 - 9 Volume | 0 | 0 | 176 | 87 | 263 | 4 - 6 Volume | 0 | 0 | 124 | 318 | 442 | |
| 7 - 9 Peak Hour | | | 07:00 | 07:45 | 07:00 | 4 - 6 Peak Hour | | | 16:45 | 16:30 | 16:30 | |
| 7 - 9 Pk Volume | 0 | 0 | 117 | 49 | 158 | 4 - 6 Pk Volume | 0 | 0 | 75 | 202 | 265 | |
| Pk Hr Factor | 0.000 | 0.000 | 0.860 | 0.681 | 0.840 | Pk Hr Factor | 0.000 | 0.000 | 0.852 | 0.754 | 0.828 | |

VOLUME

E Avenue G W/O 30th St E

Day: Wednesday
Date: 1/28/2015

City: Lancaster
Project #: CA15_5025_024

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|----|----|-------|-------|-------|----------------|-----|-----|-------|-------|-------|
| | | | | | 0 | 0 | 235 | 222 | 457 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | | | 2 | 0 | 2 | 12:00 | | | 3 | 2 | 5 |
| 00:15 | | | 0 | 0 | 0 | 12:15 | | | 4 | 2 | 6 |
| 00:30 | | | 0 | 0 | 0 | 12:30 | | | 2 | 5 | 7 |
| 00:45 | | | 0 | 2 | 1 | 12:45 | | | 1 | 10 | 11 |
| 01:00 | | | 0 | 0 | 0 | 13:00 | | | 2 | 4 | 6 |
| 01:15 | | | 0 | 0 | 0 | 13:15 | | | 1 | 7 | 8 |
| 01:30 | | | 0 | 0 | 0 | 13:30 | | | 4 | 2 | 6 |
| 01:45 | | | 1 | 1 | 0 | 13:45 | | | 0 | 7 | 6 |
| 02:00 | | | 0 | 0 | 0 | 14:00 | | | 6 | 3 | 9 |
| 02:15 | | | 0 | 1 | 1 | 14:15 | | | 4 | 5 | 9 |
| 02:30 | | | 0 | 0 | 0 | 14:30 | | | 3 | 5 | 8 |
| 02:45 | | | 0 | 0 | 1 | 14:45 | | | 3 | 16 | 3 |
| 03:00 | | | 0 | 0 | 0 | 15:00 | | | 3 | 6 | 9 |
| 03:15 | | | 1 | 0 | 1 | 15:15 | | | 1 | 8 | 9 |
| 03:30 | | | 0 | 0 | 0 | 15:30 | | | 4 | 10 | 14 |
| 03:45 | | | 0 | 1 | 1 | 15:45 | | | 5 | 13 | 5 |
| 04:00 | | | 0 | 0 | 0 | 16:00 | | | 2 | 9 | 11 |
| 04:15 | | | 2 | 0 | 2 | 16:15 | | | 5 | 5 | 10 |
| 04:30 | | | 0 | 2 | 2 | 16:30 | | | 3 | 4 | 7 |
| 04:45 | | | 0 | 2 | 0 | 16:45 | | | 2 | 12 | 3 |
| 05:00 | | | 0 | 0 | 0 | 17:00 | | | 10 | 6 | 16 |
| 05:15 | | | 2 | 3 | 5 | 17:15 | | | 4 | 4 | 8 |
| 05:30 | | | 0 | 1 | 1 | 17:30 | | | 8 | 4 | 12 |
| 05:45 | | | 0 | 2 | 2 | 17:45 | | | 3 | 25 | 2 |
| 06:00 | | | 5 | 2 | 7 | 18:00 | | | 5 | 1 | 6 |
| 06:15 | | | 4 | 1 | 5 | 18:15 | | | 6 | 2 | 8 |
| 06:30 | | | 5 | 6 | 11 | 18:30 | | | 3 | 2 | 5 |
| 06:45 | | | 9 | 23 | 5 | 18:45 | | | 4 | 18 | 2 |
| 07:00 | | | 6 | 7 | 13 | 19:00 | | | 2 | 0 | 2 |
| 07:15 | | | 9 | 9 | 18 | 19:15 | | | 4 | 2 | 6 |
| 07:30 | | | 7 | 5 | 12 | 19:30 | | | 3 | 1 | 4 |
| 07:45 | | | 5 | 27 | 5 | 19:45 | | | 1 | 10 | 1 |
| 08:00 | | | 7 | 3 | 10 | 20:00 | | | 1 | 3 | 4 |
| 08:15 | | | 6 | 3 | 9 | 20:15 | | | 2 | 1 | 3 |
| 08:30 | | | 3 | 3 | 6 | 20:30 | | | 1 | 0 | 1 |
| 08:45 | | | 5 | 21 | 2 | 20:45 | | | 1 | 5 | 1 |
| 09:00 | | | 4 | 2 | 6 | 21:00 | | | 0 | 2 | 2 |
| 09:15 | | | 1 | 2 | 3 | 21:15 | | | 1 | 2 | 3 |
| 09:30 | | | 6 | 2 | 8 | 21:30 | | | 1 | 0 | 1 |
| 09:45 | | | 4 | 15 | 4 | 21:45 | | | 1 | 3 | 0 |
| 10:00 | | | 2 | 3 | 5 | 22:00 | | | 1 | 2 | 3 |
| 10:15 | | | 1 | 1 | 2 | 22:15 | | | 0 | 1 | 1 |
| 10:30 | | | 1 | 2 | 3 | 22:30 | | | 1 | 0 | 1 |
| 10:45 | | | 2 | 6 | 2 | 22:45 | | | 0 | 2 | 2 |
| 11:00 | | | 3 | 0 | 3 | 23:00 | | | 1 | 0 | 1 |
| 11:15 | | | 2 | 0 | 2 | 23:15 | | | 2 | 2 | 4 |
| 11:30 | | | 2 | 1 | 3 | 23:30 | | | 0 | 0 | 0 |
| 11:45 | | | 3 | 10 | 2 | 23:45 | | | 1 | 4 | 0 |
| TOTALS | | | 110 | 83 | 193 | TOTALS | | | 125 | 139 | 264 |
| SPLIT % | | | 57.0% | 43.0% | 42.2% | SPLIT % | | | 47.3% | 52.7% | 57.8% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|-------|
| | | | | | 0 | 0 | 235 | 222 | 457 | | |
| AM Peak Hour | | | 06:45 | 06:30 | 06:45 | PM Peak Hour | | | 17:00 | 15:15 | 15:30 |
| AM Pk Volume | | | 31 | 27 | 57 | PM Pk Volume | | | 25 | 32 | 45 |
| Pk Hr Factor | | | 0.861 | 0.750 | 0.792 | Pk Hr Factor | | | 0.625 | 0.800 | 0.804 |
| 7 - 9 Volume | 0 | 0 | 48 | 37 | 85 | 4 - 6 Volume | 0 | 0 | 37 | 37 | 74 |
| 7 - 9 Peak Hour | | | 07:15 | 07:00 | 07:00 | 4 - 6 Peak Hour | | | 17:00 | 16:00 | 16:45 |
| 7 - 9 Pk Volume | 0 | 0 | 28 | 26 | 53 | 4 - 6 Pk Volume | 0 | 0 | 25 | 21 | 41 |
| Pk Hr Factor | 0.000 | 0.000 | 0.778 | 0.722 | 0.736 | Pk Hr Factor | 0.000 | 0.000 | 0.625 | 0.583 | 0.641 |

VOLUME

90th St E S/O E Avenue J

Day: Wednesday
Date: 1/28/2015

City: Lancaster
Project #: CA15_5025_050

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|--------------|--------------|----|----|--------------|----------------|--------------|--------------|-------|----|--------------|
| | | | | | 873 | 822 | 0 | 0 | 1,695 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | 2 | 1 | | | 3 | 12:00 | 7 | 15 | | | 22 |
| 00:15 | 0 | 4 | | | 4 | 12:15 | 10 | 15 | | | 25 |
| 00:30 | 0 | 3 | | | 3 | 12:30 | 16 | 8 | | | 24 |
| 00:45 | 0 | 2 | 0 | 8 | 0 | 12:45 | 11 | 44 | 13 | 51 | 24 |
| 01:00 | 4 | 0 | | | 4 | 13:00 | 14 | 11 | | | 25 |
| 01:15 | 0 | 0 | | | 0 | 13:15 | 11 | 13 | | | 24 |
| 01:30 | 3 | 2 | | | 5 | 13:30 | 8 | 10 | | | 18 |
| 01:45 | 0 | 7 | 0 | 2 | 0 | 13:45 | 13 | 46 | 8 | 42 | 21 |
| 02:00 | 0 | 1 | | | 1 | 14:00 | 17 | 21 | | | 38 |
| 02:15 | 3 | 1 | | | 4 | 14:15 | 15 | 14 | | | 29 |
| 02:30 | 0 | 1 | | | 1 | 14:30 | 17 | 11 | | | 28 |
| 02:45 | 0 | 3 | 1 | 4 | 1 | 14:45 | 21 | 70 | 17 | 63 | 38 |
| 03:00 | 1 | 2 | | | 3 | 15:00 | 16 | 14 | | | 30 |
| 03:15 | 0 | 0 | | | 0 | 15:15 | 20 | 23 | | | 43 |
| 03:30 | 2 | 0 | | | 2 | 15:30 | 24 | 26 | | | 50 |
| 03:45 | 1 | 4 | 2 | 4 | 3 | 15:45 | 15 | 75 | 29 | 92 | 44 |
| 04:00 | 3 | 2 | | | 5 | 16:00 | 16 | 23 | | | 39 |
| 04:15 | 2 | 2 | | | 4 | 16:15 | 21 | 22 | | | 43 |
| 04:30 | 2 | 4 | | | 6 | 16:30 | 10 | 20 | | | 30 |
| 04:45 | 0 | 7 | 3 | 11 | 3 | 16:45 | 10 | 57 | 23 | 88 | 33 |
| 05:00 | 6 | 1 | | | 7 | 17:00 | 14 | 26 | | | 40 |
| 05:15 | 18 | 4 | | | 22 | 17:15 | 15 | 23 | | | 38 |
| 05:30 | 14 | 6 | | | 20 | 17:30 | 9 | 15 | | | 24 |
| 05:45 | 20 | 58 | 8 | 19 | 28 | 17:45 | 15 | 53 | 14 | 78 | 29 |
| 06:00 | 8 | 8 | | | 16 | 18:00 | 11 | 15 | | | 26 |
| 06:15 | 22 | 16 | | | 38 | 18:15 | 8 | 9 | | | 17 |
| 06:30 | 19 | 10 | | | 29 | 18:30 | 9 | 9 | | | 18 |
| 06:45 | 18 | 67 | 10 | 44 | 28 | 18:45 | 4 | 32 | 9 | 42 | 13 |
| 07:00 | 19 | 6 | | | 25 | 19:00 | 11 | 10 | | | 21 |
| 07:15 | 12 | 20 | | | 32 | 19:15 | 4 | 5 | | | 9 |
| 07:30 | 30 | 7 | | | 37 | 19:30 | 4 | 5 | | | 9 |
| 07:45 | 19 | 80 | 11 | 44 | 30 | 19:45 | 3 | 22 | 3 | 23 | 6 |
| 08:00 | 16 | 6 | | | 22 | 20:00 | 5 | 4 | | | 9 |
| 08:15 | 12 | 9 | | | 21 | 20:15 | 3 | 7 | | | 10 |
| 08:30 | 15 | 17 | | | 32 | 20:30 | 5 | 4 | | | 9 |
| 08:45 | 11 | 54 | 5 | 37 | 16 | 20:45 | 3 | 16 | 6 | 21 | 9 |
| 09:00 | 14 | 10 | | | 24 | 21:00 | 3 | 2 | | | 5 |
| 09:15 | 10 | 11 | | | 21 | 21:15 | 5 | 3 | | | 8 |
| 09:30 | 15 | 8 | | | 23 | 21:30 | 4 | 6 | | | 10 |
| 09:45 | 14 | 53 | 13 | 42 | 27 | 21:45 | 4 | 16 | 1 | 12 | 5 |
| 10:00 | 12 | 9 | | | 21 | 22:00 | 2 | 3 | | | 5 |
| 10:15 | 17 | 7 | | | 24 | 22:15 | 2 | 1 | | | 3 |
| 10:30 | 16 | 12 | | | 28 | 22:30 | 4 | 3 | | | 7 |
| 10:45 | 4 | 49 | 6 | 34 | 10 | 22:45 | 0 | 8 | 1 | 8 | 1 |
| 11:00 | 17 | 7 | | | 24 | 23:00 | 0 | 0 | | | 0 |
| 11:15 | 13 | 8 | | | 21 | 23:15 | 2 | 0 | | | 2 |
| 11:30 | 11 | 21 | | | 32 | 23:30 | 1 | 2 | | | 3 |
| 11:45 | 6 | 47 | 14 | 50 | 20 | 23:45 | 0 | 3 | 1 | 3 | 1 |
| TOTALS | 431 | 299 | | | 730 | TOTALS | 442 | 523 | | | 965 |
| SPLIT % | 59.0% | 41.0% | | | 43.1% | SPLIT % | 45.8% | 54.2% | | | 56.9% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total |
|--------------|--|--|--|--|-----|-----|----|----|-------|
| | | | | | 873 | 822 | 0 | 0 | 1,695 |

| | | | | | | | | | | | |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|-------|
| AM Peak Hour | 07:00 | 11:30 | | | 07:00 | PM Peak Hour | 14:45 | 15:15 | | | 15:15 |
| AM Pk Volume | 80 | 65 | | | 124 | PM Pk Volume | 81 | 101 | | | 176 |
| Pk Hr Factor | 0.667 | 0.774 | | | 0.838 | Pk Hr Factor | 0.844 | 0.871 | | | 0.880 |
| 7 - 9 Volume | 134 | 81 | 0 | 0 | 215 | 4 - 6 Volume | 110 | 166 | 0 | 0 | 276 |
| 7 - 9 Peak Hour | 07:00 | 07:00 | | | 07:00 | 4 - 6 Peak Hour | 16:00 | 16:30 | | | 16:15 |
| 7 - 9 Pk Volume | 80 | 44 | 0 | 0 | 124 | 4 - 6 Pk Volume | 57 | 92 | 0 | 0 | 146 |
| Pk Hr Factor | 0.667 | 0.550 | 0.000 | 0.000 | 0.838 | Pk Hr Factor | 0.679 | 0.885 | 0.000 | 0.000 | 0.849 |

VOLUME

140th St E S/O E Avenue J

Day: Wednesday
Date: 1/28/2015

City: Lancaster
Project #: CA15_5025_051

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|--------------|--------------|----|----|--------------|----------------|--------------|--------------|-------|----|--------------|
| | | | | | 622 | 653 | 0 | 0 | 1,275 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | 1 | 3 | | | 4 | 12:00 | 4 | 9 | | | 13 |
| 00:15 | 0 | 2 | | | 2 | 12:15 | 1 | 8 | | | 9 |
| 00:30 | 3 | 2 | | | 5 | 12:30 | 11 | 6 | | | 17 |
| 00:45 | 0 | 4 | 3 | 10 | 3 | 12:45 | 7 | 23 | 1 | 24 | 8 |
| 01:00 | 3 | 1 | | | 4 | 13:00 | 13 | 11 | | | 24 |
| 01:15 | 0 | 2 | | | 2 | 13:15 | 9 | 6 | | | 15 |
| 01:30 | 0 | 0 | | | 0 | 13:30 | 5 | 6 | | | 11 |
| 01:45 | 0 | 3 | 0 | 3 | 0 | 13:45 | 7 | 34 | 9 | 32 | 16 |
| 02:00 | 1 | 0 | | | 1 | 14:00 | 6 | 7 | | | 13 |
| 02:15 | 0 | 1 | | | 1 | 14:15 | 6 | 18 | | | 24 |
| 02:30 | 0 | 0 | | | 0 | 14:30 | 5 | 9 | | | 14 |
| 02:45 | 5 | 6 | 0 | 1 | 5 | 14:45 | 7 | 24 | 12 | 46 | 19 |
| 03:00 | 3 | 3 | | | 6 | 15:00 | 13 | 18 | | | 31 |
| 03:15 | 0 | 4 | | | 4 | 15:15 | 3 | 32 | | | 35 |
| 03:30 | 1 | 2 | | | 3 | 15:30 | 7 | 14 | | | 21 |
| 03:45 | 1 | 5 | 4 | 13 | 5 | 15:45 | 5 | 28 | 23 | 87 | 28 |
| 04:00 | 3 | 6 | | | 9 | 16:00 | 6 | 22 | | | 28 |
| 04:15 | 4 | 5 | | | 9 | 16:15 | 23 | 18 | | | 41 |
| 04:30 | 4 | 2 | | | 6 | 16:30 | 12 | 32 | | | 44 |
| 04:45 | 6 | 17 | 4 | 17 | 10 | 16:45 | 8 | 49 | 24 | 96 | 32 |
| 05:00 | 10 | 4 | | | 14 | 17:00 | 7 | 39 | | | 46 |
| 05:15 | 12 | 3 | | | 15 | 17:15 | 5 | 24 | | | 29 |
| 05:30 | 12 | 4 | | | 16 | 17:30 | 1 | 13 | | | 14 |
| 05:45 | 15 | 49 | 6 | 17 | 21 | 17:45 | 7 | 20 | 5 | 81 | 12 |
| 06:00 | 24 | 6 | | | 30 | 18:00 | 6 | 15 | | | 21 |
| 06:15 | 16 | 4 | | | 20 | 18:15 | 1 | 11 | | | 12 |
| 06:30 | 32 | 2 | | | 34 | 18:30 | 9 | 9 | | | 18 |
| 06:45 | 24 | 96 | 5 | 17 | 29 | 18:45 | 5 | 21 | 0 | 35 | 5 |
| 07:00 | 16 | 5 | | | 21 | 19:00 | 5 | 12 | | | 17 |
| 07:15 | 11 | 9 | | | 20 | 19:15 | 0 | 7 | | | 7 |
| 07:30 | 17 | 4 | | | 21 | 19:30 | 2 | 2 | | | 4 |
| 07:45 | 9 | 53 | 4 | 22 | 13 | 19:45 | 10 | 17 | 0 | 21 | 10 |
| 08:00 | 7 | 7 | | | 14 | 20:00 | 3 | 4 | | | 7 |
| 08:15 | 14 | 9 | | | 23 | 20:15 | 1 | 3 | | | 4 |
| 08:30 | 7 | 11 | | | 18 | 20:30 | 4 | 2 | | | 6 |
| 08:45 | 2 | 30 | 12 | 39 | 14 | 20:45 | 8 | 16 | 1 | 10 | 9 |
| 09:00 | 6 | 2 | | | 8 | 21:00 | 2 | 0 | | | 2 |
| 09:15 | 4 | 6 | | | 10 | 21:15 | 9 | 4 | | | 13 |
| 09:30 | 14 | 2 | | | 16 | 21:30 | 0 | 4 | | | 4 |
| 09:45 | 8 | 32 | 3 | 13 | 11 | 21:45 | 3 | 14 | 5 | 13 | 8 |
| 10:00 | 7 | 4 | | | 11 | 22:00 | 5 | 5 | | | 10 |
| 10:15 | 10 | 4 | | | 14 | 22:15 | 9 | 3 | | | 12 |
| 10:30 | 4 | 5 | | | 9 | 22:30 | 2 | 2 | | | 4 |
| 10:45 | 1 | 22 | 2 | 15 | 3 | 22:45 | 5 | 21 | 1 | 11 | 6 |
| 11:00 | 11 | 4 | | | 15 | 23:00 | 3 | 2 | | | 5 |
| 11:15 | 6 | 3 | | | 9 | 23:15 | 6 | 6 | | | 12 |
| 11:30 | 3 | 5 | | | 8 | 23:30 | 1 | 1 | | | 2 |
| 11:45 | 5 | 25 | 5 | 17 | 10 | 23:45 | 3 | 13 | 4 | 13 | 7 |
| TOTALS | 342 | 184 | | | 526 | TOTALS | 280 | 469 | | | 749 |
| SPLIT % | 65.0% | 35.0% | | | 41.3% | SPLIT % | 37.4% | 62.6% | | | 58.7% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|
| | | | | | 622 | 653 | 0 | 0 | 1,275 |
| AM Peak Hour | 06:00 | 08:00 | | | 06:00 | PM Peak Hour | 16:15 | 16:30 | 16:15 |
| AM Pk Volume | 96 | 39 | | | 113 | PM Pk Volume | 50 | 119 | 163 |
| Pk Hr Factor | 0.750 | 0.813 | | | 0.831 | Pk Hr Factor | 0.543 | 0.763 | 0.886 |
| 7 - 9 Volume | 83 | 61 | 0 | 0 | 144 | 4 - 6 Volume | 69 | 177 | 0 |
| 7 - 9 Peak Hour | 07:00 | 08:00 | | | 07:00 | 4 - 6 Peak Hour | 16:15 | 16:30 | 16:15 |
| 7 - 9 Pk Volume | 53 | 39 | 0 | 0 | 75 | 4 - 6 Pk Volume | 50 | 119 | 0 |
| Pk Hr Factor | 0.779 | 0.813 | 0.000 | 0.000 | 0.893 | Pk Hr Factor | 0.543 | 0.763 | 0.000 |

VOLUME

90th St E S/O E Palmdale Blvd

Day: Wednesday
Date: 1/28/2015

City: Palmdale
Project #: CA15_5025_055

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|-------|-------|----|-----|-------|----------------|-------|-------|-------|-----|-------|
| | | | | | 3,731 | 3,819 | 0 | 0 | 7,550 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | 4 | 7 | | | 11 | 12:00 | 55 | 76 | | | 131 |
| 00:15 | 7 | 9 | | | 16 | 12:15 | 41 | 59 | | | 100 |
| 00:30 | 4 | 8 | | | 12 | 12:30 | 56 | 52 | | | 108 |
| 00:45 | 5 | 20 | 10 | 34 | 54 | 12:45 | 44 | 196 | 44 | 231 | 427 |
| 01:00 | 8 | 7 | | | 15 | 13:00 | 50 | 56 | | | 106 |
| 01:15 | 2 | 2 | | | 4 | 13:15 | 45 | 68 | | | 113 |
| 01:30 | 1 | 3 | | | 4 | 13:30 | 54 | 67 | | | 121 |
| 01:45 | 5 | 16 | 3 | 15 | 31 | 13:45 | 59 | 208 | 41 | 232 | 440 |
| 02:00 | 3 | 5 | | | 8 | 14:00 | 53 | 63 | | | 116 |
| 02:15 | 1 | 6 | | | 7 | 14:15 | 63 | 73 | | | 136 |
| 02:30 | 2 | 3 | | | 5 | 14:30 | 63 | 57 | | | 120 |
| 02:45 | 3 | 9 | 7 | 21 | 30 | 14:45 | 63 | 242 | 69 | 262 | 504 |
| 03:00 | 7 | 6 | | | 13 | 15:00 | 67 | 67 | | | 134 |
| 03:15 | 7 | 5 | | | 12 | 15:15 | 55 | 61 | | | 116 |
| 03:30 | 7 | 9 | | | 16 | 15:30 | 74 | 81 | | | 155 |
| 03:45 | 14 | 35 | 27 | 47 | 82 | 15:45 | 75 | 271 | 95 | 304 | 575 |
| 04:00 | 12 | 18 | | | 30 | 16:00 | 59 | 78 | | | 137 |
| 04:15 | 14 | 26 | | | 40 | 16:15 | 62 | 67 | | | 129 |
| 04:30 | 13 | 22 | | | 35 | 16:30 | 78 | 78 | | | 156 |
| 04:45 | 19 | 58 | 32 | 98 | 156 | 16:45 | 61 | 260 | 85 | 308 | 568 |
| 05:00 | 18 | 17 | | | 35 | 17:00 | 74 | 84 | | | 158 |
| 05:15 | 25 | 36 | | | 61 | 17:15 | 71 | 71 | | | 142 |
| 05:30 | 35 | 30 | | | 65 | 17:30 | 66 | 90 | | | 156 |
| 05:45 | 37 | 115 | 41 | 124 | 239 | 17:45 | 61 | 272 | 74 | 319 | 591 |
| 06:00 | 31 | 29 | | | 60 | 18:00 | 59 | 73 | | | 132 |
| 06:15 | 45 | 44 | | | 89 | 18:15 | 58 | 69 | | | 127 |
| 06:30 | 50 | 27 | | | 77 | 18:30 | 41 | 66 | | | 107 |
| 06:45 | 45 | 171 | 33 | 133 | 304 | 18:45 | 53 | 211 | 53 | 261 | 472 |
| 07:00 | 89 | 35 | | | 124 | 19:00 | 40 | 63 | | | 103 |
| 07:15 | 80 | 49 | | | 129 | 19:15 | 32 | 35 | | | 67 |
| 07:30 | 97 | 52 | | | 149 | 19:30 | 42 | 37 | | | 79 |
| 07:45 | 66 | 332 | 55 | 191 | 523 | 19:45 | 37 | 151 | 37 | 172 | 323 |
| 08:00 | 71 | 36 | | | 107 | 20:00 | 42 | 40 | | | 82 |
| 08:15 | 62 | 29 | | | 91 | 20:15 | 34 | 36 | | | 70 |
| 08:30 | 72 | 36 | | | 108 | 20:30 | 18 | 43 | | | 61 |
| 08:45 | 59 | 264 | 44 | 145 | 409 | 20:45 | 25 | 119 | 31 | 150 | 269 |
| 09:00 | 57 | 40 | | | 97 | 21:00 | 24 | 27 | | | 51 |
| 09:15 | 57 | 42 | | | 99 | 21:15 | 23 | 23 | | | 46 |
| 09:30 | 49 | 37 | | | 86 | 21:30 | 22 | 29 | | | 51 |
| 09:45 | 59 | 222 | 39 | 158 | 380 | 21:45 | 14 | 83 | 22 | 101 | 184 |
| 10:00 | 52 | 43 | | | 95 | 22:00 | 16 | 19 | | | 35 |
| 10:15 | 71 | 51 | | | 122 | 22:15 | 16 | 19 | | | 35 |
| 10:30 | 55 | 39 | | | 94 | 22:30 | 5 | 16 | | | 21 |
| 10:45 | 39 | 217 | 50 | 183 | 400 | 22:45 | 7 | 44 | 15 | 69 | 113 |
| 11:00 | 46 | 55 | | | 101 | 23:00 | 7 | 10 | | | 17 |
| 11:15 | 44 | 63 | | | 107 | 23:15 | 10 | 7 | | | 17 |
| 11:30 | 52 | 48 | | | 100 | 23:30 | 7 | 13 | | | 20 |
| 11:45 | 44 | 186 | 60 | 226 | 412 | 23:45 | 5 | 29 | 5 | 35 | 64 |
| TOTALS | 1645 | 1375 | | | 3020 | TOTALS | 2086 | 2444 | | | 4530 |
| SPLIT % | 54.5% | 45.5% | | | 40.0% | SPLIT % | 46.0% | 54.0% | | | 60.0% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|
| | | | | | 3,731 | 3,819 | 0 | 0 | 7,550 |
| AM Peak Hour | 07:00 | 11:15 | | | 07:00 | PM Peak Hour | 16:30 | 16:45 | 16:30 |
| AM Pk Volume | 332 | 247 | | | 523 | PM Pk Volume | 284 | 330 | 602 |
| Pk Hr Factor | 0.856 | 0.813 | | | 0.878 | Pk Hr Factor | 0.910 | 0.917 | 0.953 |
| 7 - 9 Volume | 596 | 336 | 0 | 0 | 932 | 4 - 6 Volume | 532 | 627 | 1159 |
| 7 - 9 Peak Hour | 07:00 | 07:15 | | | 07:00 | 4 - 6 Peak Hour | 16:30 | 16:45 | 16:30 |
| 7 - 9 Pk Volume | 332 | 192 | 0 | 0 | 523 | 4 - 6 Pk Volume | 284 | 330 | 602 |
| Pk Hr Factor | 0.856 | 0.873 | 0.000 | 0.000 | 0.878 | Pk Hr Factor | 0.910 | 0.917 | 0.953 |

VOLUME

170th St E S/O E Palmdale Blvd

Day: Tuesday
Date: 2/3/2015City: Palmdale
Project #: CA15_5025_057

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|--------------|--------------|----|----|--------------|----------------|--------------|--------------|-------|-----|--------------|
| | | | | | 1,112 | 1,317 | 0 | 0 | 2,429 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | 5 | 5 | | | 10 | 12:00 | 12 | 20 | | | 32 |
| 00:15 | 3 | 0 | | | 3 | 12:15 | 11 | 19 | | | 30 |
| 00:30 | 2 | 1 | | | 3 | 12:30 | 26 | 11 | | | 37 |
| 00:45 | 1 | 11 | 3 | 9 | 4 | 12:45 | 9 | 58 | 17 | 67 | 26 |
| 01:00 | 6 | 0 | | | 6 | 13:00 | 25 | 9 | | | 34 |
| 01:15 | 3 | 1 | | | 4 | 13:15 | 19 | 19 | | | 38 |
| 01:30 | 5 | 4 | | | 9 | 13:30 | 16 | 9 | | | 25 |
| 01:45 | 4 | 18 | 2 | 7 | 6 | 13:45 | 24 | 84 | 17 | 54 | 41 |
| 02:00 | 3 | 1 | | | 4 | 14:00 | 15 | 16 | | | 31 |
| 02:15 | 1 | 3 | | | 4 | 14:15 | 18 | 10 | | | 28 |
| 02:30 | 2 | 2 | | | 4 | 14:30 | 21 | 17 | | | 38 |
| 02:45 | 4 | 10 | 0 | 6 | 4 | 14:45 | 17 | 71 | 27 | 70 | 44 |
| 03:00 | 6 | 4 | | | 10 | 15:00 | 19 | 27 | | | 46 |
| 03:15 | 0 | 7 | | | 7 | 15:15 | 17 | 32 | | | 49 |
| 03:30 | 1 | 4 | | | 5 | 15:30 | 17 | 39 | | | 56 |
| 03:45 | 9 | 16 | 10 | 25 | 19 | 15:45 | 26 | 79 | 20 | 118 | 46 |
| 04:00 | 1 | 15 | | | 16 | 16:00 | 14 | 35 | | | 49 |
| 04:15 | 9 | 18 | | | 27 | 16:15 | 16 | 29 | | | 45 |
| 04:30 | 6 | 16 | | | 22 | 16:30 | 13 | 25 | | | 38 |
| 04:45 | 5 | 21 | 13 | 62 | 18 | 16:45 | 18 | 61 | 29 | 118 | 47 |
| 05:00 | 11 | 13 | | | 24 | 17:00 | 13 | 15 | | | 28 |
| 05:15 | 16 | 14 | | | 30 | 17:15 | 21 | 29 | | | 50 |
| 05:30 | 15 | 22 | | | 37 | 17:30 | 19 | 31 | | | 50 |
| 05:45 | 16 | 58 | 13 | 62 | 29 | 17:45 | 26 | 79 | 18 | 93 | 44 |
| 06:00 | 12 | 11 | | | 23 | 18:00 | 10 | 28 | | | 38 |
| 06:15 | 17 | 13 | | | 30 | 18:15 | 17 | 30 | | | 47 |
| 06:30 | 18 | 16 | | | 34 | 18:30 | 17 | 22 | | | 39 |
| 06:45 | 23 | 70 | 9 | 49 | 32 | 18:45 | 15 | 59 | 19 | 99 | 34 |
| 07:00 | 17 | 17 | | | 34 | 19:00 | 9 | 8 | | | 17 |
| 07:15 | 14 | 6 | | | 20 | 19:15 | 12 | 8 | | | 20 |
| 07:30 | 15 | 14 | | | 29 | 19:30 | 20 | 9 | | | 29 |
| 07:45 | 10 | 56 | 16 | 53 | 26 | 19:45 | 13 | 54 | 17 | 42 | 30 |
| 08:00 | 12 | 10 | | | 22 | 20:00 | 8 | 8 | | | 16 |
| 08:15 | 8 | 26 | | | 34 | 20:15 | 11 | 14 | | | 25 |
| 08:30 | 16 | 19 | | | 35 | 20:30 | 6 | 6 | | | 12 |
| 08:45 | 8 | 44 | 13 | 68 | 21 | 20:45 | 11 | 36 | 5 | 33 | 16 |
| 09:00 | 12 | 9 | | | 21 | 21:00 | 9 | 9 | | | 18 |
| 09:15 | 14 | 14 | | | 28 | 21:15 | 8 | 23 | | | 31 |
| 09:30 | 11 | 13 | | | 24 | 21:30 | 15 | 10 | | | 25 |
| 09:45 | 15 | 52 | 14 | 50 | 29 | 21:45 | 5 | 37 | 8 | 50 | 13 |
| 10:00 | 10 | 15 | | | 25 | 22:00 | 8 | 18 | | | 26 |
| 10:15 | 7 | 11 | | | 18 | 22:15 | 9 | 5 | | | 14 |
| 10:30 | 9 | 10 | | | 19 | 22:30 | 9 | 5 | | | 14 |
| 10:45 | 10 | 36 | 14 | 50 | 24 | 22:45 | 14 | 40 | 14 | 42 | 28 |
| 11:00 | 5 | 15 | | | 20 | 23:00 | 5 | 10 | | | 15 |
| 11:15 | 15 | 20 | | | 35 | 23:15 | 3 | 3 | | | 6 |
| 11:30 | 17 | 25 | | | 42 | 23:30 | 2 | 4 | | | 6 |
| 11:45 | 13 | 50 | 12 | 72 | 25 | 23:45 | 2 | 12 | 1 | 18 | 3 |
| TOTALS | 442 | 513 | | | 955 | TOTALS | 670 | 804 | | | 1474 |
| SPLIT % | 46.3% | 53.7% | | | 39.3% | SPLIT % | 45.5% | 54.5% | | | 60.7% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|
| | | | | | 1,112 | 1,317 | 0 | 0 | 2,429 |
| AM Peak Hour | 06:15 | 11:15 | | | 11:15 | PM Peak Hour | 13:00 | 15:15 | 15:15 |
| AM Pk Volume | 75 | 77 | | | 134 | PM Pk Volume | 84 | 126 | 200 |
| Pk Hr Factor | 0.815 | 0.770 | | | 0.798 | Pk Hr Factor | 0.840 | 0.808 | 0.893 |
| 7 - 9 Volume | 100 | 121 | 0 | 0 | 221 | 4 - 6 Volume | 140 | 211 | 0 |
| 7 - 9 Peak Hour | 07:00 | 07:45 | | | 07:45 | 4 - 6 Peak Hour | 17:00 | 16:00 | 16:00 |
| 7 - 9 Pk Volume | 56 | 71 | 0 | 0 | 117 | 4 - 6 Pk Volume | 79 | 118 | 0 |
| Pk Hr Factor | 0.824 | 0.683 | 0.000 | 0.000 | 0.836 | Pk Hr Factor | 0.760 | 0.843 | 0.000 |

VOLUME

87th St E S/O SR-138

Day: Thursday
Date: 1/29/2015

City: Littlerock
Project #: CA15_5025_059

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|-------|-------|----|----|-------|----------------|-------|-------|-------|----|-------|
| | | | | | 251 | 269 | 0 | 0 | 520 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | 1 | 0 | | | 1 | 12:00 | 2 | 2 | | | 4 |
| 00:15 | 0 | 0 | | | 0 | 12:15 | 4 | 3 | | | 7 |
| 00:30 | 0 | 0 | | | 0 | 12:30 | 0 | 4 | | | 4 |
| 00:45 | 0 | 1 | 1 | 1 | 1 | 12:45 | 4 | 10 | 4 | 13 | 8 |
| 01:00 | 0 | 0 | | | 0 | 13:00 | 3 | 4 | | | 7 |
| 01:15 | 0 | 0 | | | 0 | 13:15 | 4 | 2 | | | 6 |
| 01:30 | 0 | 2 | | | 2 | 13:30 | 2 | 1 | | | 3 |
| 01:45 | 0 | 0 | 2 | | 0 | 13:45 | 2 | 11 | 2 | 9 | 4 |
| 02:00 | 0 | 0 | | | 0 | 14:00 | 4 | 0 | | | 4 |
| 02:15 | 0 | 1 | | | 1 | 14:15 | 3 | 0 | | | 3 |
| 02:30 | 0 | 0 | | | 0 | 14:30 | 2 | 6 | | | 8 |
| 02:45 | 0 | 0 | 1 | | 0 | 14:45 | 2 | 11 | 4 | 10 | 6 |
| 03:00 | 0 | 0 | | | 0 | 15:00 | 3 | 6 | | | 9 |
| 03:15 | 0 | 0 | | | 0 | 15:15 | 7 | 2 | | | 9 |
| 03:30 | 0 | 2 | | | 2 | 15:30 | 9 | 6 | | | 15 |
| 03:45 | 0 | 0 | 2 | | 0 | 15:45 | 7 | 26 | 5 | 19 | 12 |
| 04:00 | 0 | 0 | | | 0 | 16:00 | 6 | 5 | | | 11 |
| 04:15 | 1 | 1 | | | 2 | 16:15 | 8 | 8 | | | 16 |
| 04:30 | 0 | 1 | | | 1 | 16:30 | 10 | 6 | | | 16 |
| 04:45 | 2 | 3 | 2 | 4 | 4 | 16:45 | 5 | 29 | 2 | 21 | 7 |
| 05:00 | 1 | 4 | | | 5 | 17:00 | 7 | 5 | | | 12 |
| 05:15 | 5 | 6 | | | 11 | 17:15 | 6 | 4 | | | 10 |
| 05:30 | 2 | 5 | | | 7 | 17:30 | 13 | 1 | | | 14 |
| 05:45 | 2 | 10 | 7 | 22 | 9 | 17:45 | 4 | 30 | 5 | 15 | 9 |
| 06:00 | 1 | 11 | | | 12 | 18:00 | 13 | 6 | | | 19 |
| 06:15 | 3 | 9 | | | 12 | 18:15 | 3 | 3 | | | 6 |
| 06:30 | 1 | 2 | | | 3 | 18:30 | 3 | 0 | | | 3 |
| 06:45 | 9 | 14 | 3 | 25 | 12 | 18:45 | 5 | 24 | 2 | 11 | 7 |
| 07:00 | 2 | 7 | | | 9 | 19:00 | 3 | 2 | | | 5 |
| 07:15 | 6 | 6 | | | 12 | 19:15 | 4 | 2 | | | 6 |
| 07:30 | 2 | 3 | | | 5 | 19:30 | 4 | 3 | | | 7 |
| 07:45 | 6 | 16 | 3 | 19 | 9 | 19:45 | 0 | 11 | 0 | 7 | 0 |
| 08:00 | 1 | 9 | | | 10 | 20:00 | 1 | 3 | | | 4 |
| 08:15 | 4 | 9 | | | 13 | 20:15 | 1 | 5 | | | 6 |
| 08:30 | 2 | 3 | | | 5 | 20:30 | 5 | 1 | | | 6 |
| 08:45 | 4 | 11 | 11 | 32 | 15 | 20:45 | 2 | 9 | 0 | 9 | 2 |
| 09:00 | 2 | 3 | | | 5 | 21:00 | 1 | 1 | | | 2 |
| 09:15 | 3 | 5 | | | 8 | 21:15 | 0 | 0 | | | 0 |
| 09:30 | 1 | 6 | | | 7 | 21:30 | 1 | 0 | | | 1 |
| 09:45 | 1 | 7 | 3 | 17 | 4 | 21:45 | 0 | 2 | 1 | 2 | 1 |
| 10:00 | 5 | 5 | | | 10 | 22:00 | 0 | 0 | | | 0 |
| 10:15 | 2 | 1 | | | 3 | 22:15 | 0 | 1 | | | 1 |
| 10:30 | 5 | 4 | | | 9 | 22:30 | 0 | 0 | | | 0 |
| 10:45 | 3 | 15 | 3 | 13 | 6 | 22:45 | 1 | 1 | 0 | 1 | 1 |
| 11:00 | 0 | 2 | | | 2 | 23:00 | 0 | 0 | | | 0 |
| 11:15 | 1 | 3 | | | 4 | 23:15 | 0 | 0 | | | 0 |
| 11:30 | 2 | 4 | | | 6 | 23:30 | 0 | 0 | | | 0 |
| 11:45 | 7 | 10 | 4 | 13 | 11 | 23:45 | 0 | 1 | 1 | | 1 |
| TOTALS | 87 | 151 | | | 238 | TOTALS | 164 | 118 | | | 282 |
| SPLIT % | 36.6% | 63.4% | | | 45.8% | SPLIT % | 58.2% | 41.8% | | | 54.2% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|
| | | | | | 251 | 269 | 0 | 0 | 520 |
| AM Peak Hour | 06:45 | 05:30 | | | 08:00 | PM Peak Hour | 17:15 | 15:30 | 15:45 |
| AM Pk Volume | 19 | 32 | | | 43 | PM Pk Volume | 36 | 24 | 55 |
| Pk Hr Factor | 0.528 | 0.727 | | | 0.717 | Pk Hr Factor | 0.692 | 0.750 | 0.859 |
| 7 - 9 Volume | 27 | 51 | 0 | 0 | 78 | 4 - 6 Volume | 59 | 36 | 95 |
| 7 - 9 Peak Hour | 07:00 | 08:00 | | | 08:00 | 4 - 6 Peak Hour | 16:45 | 16:00 | 16:15 |
| 7 - 9 Pk Volume | 16 | 32 | 0 | 0 | 43 | 4 - 6 Pk Volume | 31 | 21 | 51 |
| Pk Hr Factor | 0.667 | 0.727 | 0.000 | 0.000 | 0.717 | Pk Hr Factor | 0.596 | 0.656 | 0.797 |

VOLUME

106th St E S/O SR-138

Day: Wednesday
Date: 1/28/2015

City: Pearblossom
Project #: CA15_5025_060

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|-------|-------|----|----|-------|----------------|-------|-------|-------|----|-------|
| | | | | | 118 | 121 | 0 | 0 | 239 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | 0 | 0 | | | 0 | 12:00 | 2 | 0 | | | 2 |
| 00:15 | 0 | 0 | | | 0 | 12:15 | 1 | 0 | | | 1 |
| 00:30 | 0 | 0 | | | 0 | 12:30 | 1 | 0 | | | 1 |
| 00:45 | 0 | 0 | | | 0 | 12:45 | 1 | 5 | 3 | 3 | 4 |
| 01:00 | 0 | 0 | | | 0 | 13:00 | 1 | 3 | | | 4 |
| 01:15 | 0 | 0 | | | 0 | 13:15 | 2 | 4 | | | 6 |
| 01:30 | 0 | 0 | | | 0 | 13:30 | 0 | 3 | | | 3 |
| 01:45 | 0 | 0 | | | 0 | 13:45 | 5 | 8 | 1 | 11 | 6 |
| 02:00 | 0 | 0 | | | 0 | 14:00 | 1 | 0 | | | 1 |
| 02:15 | 0 | 0 | | | 0 | 14:15 | 3 | 1 | | | 4 |
| 02:30 | 0 | 0 | | | 0 | 14:30 | 2 | 1 | | | 3 |
| 02:45 | 0 | 0 | | | 0 | 14:45 | 2 | 8 | 5 | 7 | 7 |
| 03:00 | 0 | 0 | | | 0 | 15:00 | 0 | 5 | | | 5 |
| 03:15 | 0 | 0 | | | 0 | 15:15 | 1 | 1 | | | 2 |
| 03:30 | 1 | 0 | | | 1 | 15:30 | 1 | 2 | | | 3 |
| 03:45 | 1 | 2 | 1 | 1 | 2 | 15:45 | 3 | 5 | 4 | 12 | 7 |
| 04:00 | 1 | 0 | | | 1 | 16:00 | 0 | 1 | | | 1 |
| 04:15 | 1 | 0 | | | 1 | 16:15 | 4 | 4 | | | 8 |
| 04:30 | 0 | 0 | | | 0 | 16:30 | 4 | 4 | | | 8 |
| 04:45 | 1 | 3 | 0 | | 1 | 16:45 | 0 | 8 | 4 | 13 | 4 |
| 05:00 | 1 | 0 | | | 1 | 17:00 | 4 | 2 | | | 6 |
| 05:15 | 0 | 2 | | | 2 | 17:15 | 1 | 4 | | | 5 |
| 05:30 | 0 | 0 | | | 0 | 17:30 | 2 | 1 | | | 3 |
| 05:45 | 0 | 1 | 0 | 2 | 0 | 17:45 | 1 | 8 | 2 | 9 | 3 |
| 06:00 | 3 | 1 | | | 4 | 18:00 | 1 | 3 | | | 4 |
| 06:15 | 6 | 1 | | | 7 | 18:15 | 3 | 3 | | | 6 |
| 06:30 | 1 | 1 | | | 2 | 18:30 | 3 | 1 | | | 4 |
| 06:45 | 4 | 14 | 0 | 3 | 4 | 18:45 | 2 | 9 | 1 | 8 | 3 |
| 07:00 | 4 | 0 | | | 4 | 19:00 | 1 | 2 | | | 3 |
| 07:15 | 6 | 5 | | | 11 | 19:15 | 1 | 2 | | | 3 |
| 07:30 | 1 | 1 | | | 2 | 19:30 | 1 | 1 | | | 2 |
| 07:45 | 1 | 12 | 3 | 9 | 4 | 19:45 | 0 | 3 | 3 | 8 | 3 |
| 08:00 | 3 | 0 | | | 3 | 20:00 | 2 | 0 | | | 2 |
| 08:15 | 2 | 1 | | | 3 | 20:15 | 1 | 1 | | | 2 |
| 08:30 | 4 | 3 | | | 7 | 20:30 | 1 | 0 | | | 1 |
| 08:45 | 2 | 11 | 3 | 7 | 5 | 20:45 | 0 | 4 | 0 | 1 | 0 |
| 09:00 | 1 | 0 | | | 1 | 21:00 | 0 | 4 | | | 4 |
| 09:15 | 0 | 0 | | | 0 | 21:15 | 0 | 4 | | | 4 |
| 09:30 | 2 | 0 | | | 2 | 21:30 | 1 | 1 | | | 2 |
| 09:45 | 1 | 4 | 2 | 2 | 3 | 21:45 | 2 | 3 | 2 | 11 | 4 |
| 10:00 | 0 | 1 | | | 1 | 22:00 | 0 | 2 | | | 2 |
| 10:15 | 1 | 0 | | | 1 | 22:15 | 0 | 0 | | | 0 |
| 10:30 | 1 | 0 | | | 1 | 22:30 | 0 | 0 | | | 0 |
| 10:45 | 3 | 5 | 2 | 3 | 5 | 22:45 | 1 | 1 | 0 | 2 | 1 |
| 11:00 | 2 | 2 | | | 4 | 23:00 | 0 | 0 | | | 0 |
| 11:15 | 0 | 0 | | | 0 | 23:15 | 0 | 0 | | | 0 |
| 11:30 | 2 | 2 | | | 4 | 23:30 | 0 | 2 | | | 2 |
| 11:45 | 0 | 4 | 3 | 7 | 3 | 23:45 | 0 | 0 | 2 | | 0 |
| TOTALS | 56 | 34 | | | 90 | TOTALS | 62 | 87 | | | 149 |
| SPLIT % | 62.2% | 37.8% | | | 37.7% | SPLIT % | 41.6% | 58.4% | | | 62.3% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|
| | | | | | 118 | 121 | 0 | 0 | 239 |
| AM Peak Hour | 06:15 | 07:00 | | | 06:30 | PM Peak Hour | 16:15 | 16:15 | 16:15 |
| AM Pk Volume | 15 | 9 | | | 21 | PM Pk Volume | 12 | 14 | 26 |
| Pk Hr Factor | 0.625 | 0.450 | | | 0.477 | Pk Hr Factor | 0.750 | 0.875 | 0.813 |
| 7 - 9 Volume | 23 | 16 | 0 | 0 | 39 | 4 - 6 Volume | 16 | 22 | 0 |
| 7 - 9 Peak Hour | 07:00 | 07:00 | | | 07:00 | 4 - 6 Peak Hour | 16:15 | 16:15 | 16:15 |
| 7 - 9 Pk Volume | 12 | 9 | 0 | 0 | 21 | 4 - 6 Pk Volume | 12 | 14 | 0 |
| Pk Hr Factor | 0.500 | 0.450 | 0.000 | 0.000 | 0.477 | Pk Hr Factor | 0.750 | 0.875 | 0.000 |

VOLUME

Longview Rd S/O SR-138

Day: Wednesday
Date: 1/28/2015

City: Pearblossom
Project #: CA15_5025_061

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|-------|-------|----|----|-------|----------------|-------|-------|-------|----|-------|
| | | | | | 732 | 771 | 0 | 0 | 1,503 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | 0 | 0 | | | 0 | 12:00 | 13 | 11 | | | 24 |
| 00:15 | 0 | 2 | | | 2 | 12:15 | 6 | 8 | | | 14 |
| 00:30 | 0 | 0 | | | 0 | 12:30 | 11 | 11 | | | 22 |
| 00:45 | 2 | 2 | 3 | 5 | 5 | 12:45 | 10 | 40 | 20 | 50 | 30 |
| 01:00 | 3 | 2 | | | 5 | 13:00 | 7 | 9 | | | 16 |
| 01:15 | 0 | 2 | | | 2 | 13:15 | 14 | 14 | | | 28 |
| 01:30 | 0 | 0 | | | 0 | 13:30 | 14 | 15 | | | 29 |
| 01:45 | 0 | 3 | 0 | 4 | 0 | 13:45 | 11 | 46 | 20 | 58 | 31 |
| 02:00 | 1 | 0 | | | 1 | 14:00 | 14 | 11 | | | 25 |
| 02:15 | 0 | 0 | | | 0 | 14:15 | 13 | 21 | | | 34 |
| 02:30 | 1 | 1 | | | 2 | 14:30 | 15 | 15 | | | 30 |
| 02:45 | 1 | 3 | 3 | 4 | 4 | 14:45 | 7 | 49 | 20 | 67 | 27 |
| 03:00 | 1 | 2 | | | 3 | 15:00 | 27 | 13 | | | 40 |
| 03:15 | 0 | 0 | | | 0 | 15:15 | 12 | 16 | | | 28 |
| 03:30 | 2 | 1 | | | 3 | 15:30 | 14 | 20 | | | 34 |
| 03:45 | 3 | 6 | 0 | 3 | 3 | 15:45 | 9 | 62 | 16 | 65 | 25 |
| 04:00 | 6 | 0 | | | 6 | 16:00 | 7 | 17 | | | 24 |
| 04:15 | 8 | 1 | | | 9 | 16:15 | 11 | 22 | | | 33 |
| 04:30 | 6 | 2 | | | 8 | 16:30 | 8 | 17 | | | 25 |
| 04:45 | 7 | 27 | 0 | 3 | 7 | 16:45 | 13 | 39 | 22 | 78 | 35 |
| 05:00 | 0 | 1 | | | 1 | 17:00 | 18 | 20 | | | 38 |
| 05:15 | 7 | 3 | | | 10 | 17:15 | 14 | 17 | | | 31 |
| 05:30 | 5 | 2 | | | 7 | 17:30 | 14 | 20 | | | 34 |
| 05:45 | 5 | 17 | 3 | 9 | 8 | 17:45 | 11 | 57 | 11 | 68 | 22 |
| 06:00 | 14 | 1 | | | 15 | 18:00 | 9 | 12 | | | 21 |
| 06:15 | 8 | 0 | | | 8 | 18:15 | 7 | 10 | | | 17 |
| 06:30 | 8 | 1 | | | 9 | 18:30 | 8 | 11 | | | 19 |
| 06:45 | 10 | 40 | 6 | 8 | 16 | 18:45 | 5 | 29 | 18 | 51 | 23 |
| 07:00 | 16 | 9 | | | 25 | 19:00 | 9 | 8 | | | 17 |
| 07:15 | 10 | 7 | | | 17 | 19:15 | 2 | 12 | | | 14 |
| 07:30 | 18 | 5 | | | 23 | 19:30 | 7 | 11 | | | 18 |
| 07:45 | 11 | 55 | 9 | 30 | 20 | 19:45 | 5 | 23 | 4 | 35 | 9 |
| 08:00 | 11 | 12 | | | 23 | 20:00 | 6 | 6 | | | 12 |
| 08:15 | 22 | 13 | | | 35 | 20:15 | 6 | 9 | | | 15 |
| 08:30 | 16 | 20 | | | 36 | 20:30 | 3 | 11 | | | 14 |
| 08:45 | 16 | 65 | 9 | 54 | 25 | 20:45 | 4 | 19 | 9 | 35 | 13 |
| 09:00 | 11 | 3 | | | 14 | 21:00 | 4 | 7 | | | 11 |
| 09:15 | 6 | 10 | | | 16 | 21:15 | 5 | 11 | | | 16 |
| 09:30 | 11 | 6 | | | 17 | 21:30 | 1 | 6 | | | 7 |
| 09:45 | 13 | 41 | 7 | 26 | 20 | 21:45 | 2 | 12 | 3 | 27 | 5 |
| 10:00 | 13 | 7 | | | 20 | 22:00 | 2 | 4 | | | 6 |
| 10:15 | 12 | 10 | | | 22 | 22:15 | 2 | 3 | | | 5 |
| 10:30 | 8 | 8 | | | 16 | 22:30 | 1 | 4 | | | 5 |
| 10:45 | 13 | 46 | 11 | 36 | 24 | 22:45 | 1 | 6 | 2 | 13 | 3 |
| 11:00 | 12 | 8 | | | 20 | 23:00 | 2 | 1 | | | 3 |
| 11:15 | 7 | 6 | | | 13 | 23:15 | 0 | 4 | | | 4 |
| 11:30 | 12 | 9 | | | 21 | 23:30 | 0 | 2 | | | 2 |
| 11:45 | 10 | 41 | 11 | 34 | 21 | 23:45 | 2 | 4 | 1 | 8 | 3 |
| TOTALS | 346 | 216 | | | 562 | TOTALS | 386 | 555 | | | 941 |
| SPLIT % | 61.6% | 38.4% | | | 37.4% | SPLIT % | 41.0% | 59.0% | | | 62.6% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|
| | | | | | 732 | 771 | 0 | 0 | 1,503 | |
| AM Peak Hour | 08:00 | 07:45 | | | 08:00 | PM Peak Hour | 14:15 | 16:15 | | 16:45 |
| AM Pk Volume | 65 | 54 | | | 119 | PM Pk Volume | 62 | 81 | | 138 |
| Pk Hr Factor | 0.739 | 0.675 | | | 0.826 | Pk Hr Factor | 0.574 | 0.920 | | 0.908 |
| 7 - 9 Volume | 120 | 84 | 0 | 0 | 204 | 4 - 6 Volume | 96 | 146 | 0 | 242 |
| 7 - 9 Peak Hour | 08:00 | 07:45 | | | 08:00 | 4 - 6 Peak Hour | 16:45 | 16:15 | | 16:45 |
| 7 - 9 Pk Volume | 65 | 54 | 0 | 0 | 119 | 4 - 6 Pk Volume | 59 | 81 | 0 | 138 |
| Pk Hr Factor | 0.739 | 0.675 | 0.000 | 0.000 | 0.826 | Pk Hr Factor | 0.819 | 0.920 | 0.000 | 0.908 |

VOLUME

165th St E S/O SR-138

Day: Wednesday
Date: 1/28/2015City: Llano
Project #: CA15_5025_062

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|-------|-------|----|----|-------|----------------|-------|-------|-------|----|-------|
| | | | | | 344 | 466 | 0 | 0 | 810 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | 0 | 2 | | | 2 | 12:00 | 7 | 9 | | | 16 |
| 00:15 | 0 | 0 | | | 0 | 12:15 | 11 | 6 | | | 17 |
| 00:30 | 0 | 0 | | | 0 | 12:30 | 8 | 12 | | | 20 |
| 00:45 | 1 | 1 | 3 | | 4 | 12:45 | 7 | 33 | 11 | 38 | 71 |
| 01:00 | 0 | 2 | | | 2 | 13:00 | 5 | 11 | | | 16 |
| 01:15 | 0 | 0 | | | 0 | 13:15 | 9 | 8 | | | 17 |
| 01:30 | 0 | 0 | | | 0 | 13:30 | 7 | 3 | | | 10 |
| 01:45 | 0 | 0 | 2 | | 2 | 13:45 | 9 | 30 | 3 | 25 | 55 |
| 02:00 | 0 | 1 | | | 1 | 14:00 | 10 | 8 | | | 18 |
| 02:15 | 0 | 0 | | | 0 | 14:15 | 3 | 6 | | | 9 |
| 02:30 | 0 | 0 | | | 0 | 14:30 | 13 | 7 | | | 20 |
| 02:45 | 0 | 0 | 1 | | 1 | 14:45 | 9 | 35 | 11 | 32 | 67 |
| 03:00 | 0 | 1 | | | 1 | 15:00 | 17 | 12 | | | 29 |
| 03:15 | 0 | 0 | | | 0 | 15:15 | 4 | 9 | | | 13 |
| 03:30 | 1 | 0 | | | 1 | 15:30 | 12 | 13 | | | 25 |
| 03:45 | 4 | 5 | 0 | 1 | 6 | 15:45 | 12 | 45 | 11 | 45 | 90 |
| 04:00 | 0 | 0 | | | 0 | 16:00 | 7 | 12 | | | 19 |
| 04:15 | 4 | 1 | | | 5 | 16:15 | 6 | 8 | | | 14 |
| 04:30 | 0 | 0 | | | 0 | 16:30 | 6 | 13 | | | 19 |
| 04:45 | 5 | 9 | 0 | 1 | 10 | 16:45 | 1 | 20 | 11 | 44 | 64 |
| 05:00 | 4 | 0 | | | 4 | 17:00 | 5 | 8 | | | 13 |
| 05:15 | 2 | 1 | | | 3 | 17:15 | 13 | 17 | | | 30 |
| 05:30 | 5 | 3 | | | 8 | 17:30 | 5 | 8 | | | 13 |
| 05:45 | 1 | 12 | 3 | 7 | 19 | 17:45 | 6 | 29 | 18 | 51 | 80 |
| 06:00 | 1 | 2 | | | 3 | 18:00 | 3 | 8 | | | 11 |
| 06:15 | 7 | 3 | | | 10 | 18:15 | 2 | 10 | | | 12 |
| 06:30 | 10 | 3 | | | 13 | 18:30 | 8 | 4 | | | 12 |
| 06:45 | 2 | 20 | 5 | 13 | 33 | 18:45 | 1 | 14 | 7 | 29 | 43 |
| 07:00 | 2 | 5 | | | 7 | 19:00 | 1 | 5 | | | 6 |
| 07:15 | 6 | 8 | | | 14 | 19:15 | 0 | 2 | | | 2 |
| 07:30 | 3 | 10 | | | 13 | 19:30 | 2 | 5 | | | 7 |
| 07:45 | 3 | 14 | 3 | 26 | 40 | 19:45 | 0 | 3 | 7 | 19 | 22 |
| 08:00 | 3 | 3 | | | 6 | 20:00 | 2 | 4 | | | 6 |
| 08:15 | 1 | 5 | | | 6 | 20:15 | 1 | 5 | | | 6 |
| 08:30 | 1 | 4 | | | 5 | 20:30 | 1 | 1 | | | 2 |
| 08:45 | 2 | 7 | 4 | 16 | 23 | 20:45 | 3 | 7 | 5 | 15 | 22 |
| 09:00 | 4 | 4 | | | 8 | 21:00 | 0 | 7 | | | 7 |
| 09:15 | 5 | 7 | | | 12 | 21:15 | 1 | 0 | | | 1 |
| 09:30 | 1 | 4 | | | 5 | 21:30 | 0 | 2 | | | 2 |
| 09:45 | 5 | 15 | 8 | 23 | 38 | 21:45 | 0 | 1 | 5 | 14 | 15 |
| 10:00 | 2 | 6 | | | 8 | 22:00 | 0 | 1 | | | 1 |
| 10:15 | 3 | 5 | | | 8 | 22:15 | 1 | 2 | | | 3 |
| 10:30 | 7 | 8 | | | 15 | 22:30 | 2 | 0 | | | 2 |
| 10:45 | 0 | 12 | 6 | 25 | 37 | 22:45 | 0 | 3 | 2 | 5 | 8 |
| 11:00 | 2 | 7 | | | 9 | 23:00 | 0 | 0 | | | 0 |
| 11:15 | 8 | 7 | | | 15 | 23:15 | 0 | 1 | | | 1 |
| 11:30 | 9 | 10 | | | 19 | 23:30 | 0 | 0 | | | 0 |
| 11:45 | 10 | 29 | 5 | 29 | 58 | 23:45 | 0 | 1 | 2 | | 2 |
| TOTALS | 124 | 147 | | | 271 | TOTALS | 220 | 319 | | | 539 |
| SPLIT % | 45.8% | 54.2% | | | 33.5% | SPLIT % | 40.8% | 59.2% | | | 66.5% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|
| | | | | | 344 | 466 | 0 | 0 | 810 |
| AM Peak Hour | 11:30 | 11:45 | | | 11:45 | PM Peak Hour | 15:00 | 17:00 | 15:00 |
| AM Pk Volume | 37 | 32 | | | 68 | PM Pk Volume | 45 | 51 | 90 |
| Pk Hr Factor | 0.841 | 0.667 | | | 0.850 | Pk Hr Factor | 0.662 | 0.708 | 0.776 |
| 7 - 9 Volume | 21 | 42 | 0 | 0 | 63 | 4 - 6 Volume | 49 | 95 | 144 |
| 7 - 9 Peak Hour | 07:15 | 07:00 | | | 07:00 | 4 - 6 Peak Hour | 17:00 | 17:00 | 17:00 |
| 7 - 9 Pk Volume | 15 | 26 | 0 | 0 | 40 | 4 - 6 Pk Volume | 29 | 51 | 80 |
| Pk Hr Factor | 0.625 | 0.650 | 0.000 | 0.000 | 0.714 | Pk Hr Factor | 0.558 | 0.708 | 0.667 |

VOLUME

Sierra Hwy S/O Angeles Forest Hwy

Day: Wednesday
Date: 1/28/2015City: Palmdale
Project #: CA15_5025_063

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|--------------|--------------|-----|------|--------------|----------------|--------------|--------------|-------|-----|--------------|
| | | | | | 4,414 | 5,382 | 0 | 0 | 9,796 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | 8 | 3 | | | 11 | 12:00 | 40 | 32 | | | 72 |
| 00:15 | 7 | 0 | | | 7 | 12:15 | 31 | 29 | | | 60 |
| 00:30 | 7 | 2 | | | 9 | 12:30 | 40 | 38 | | | 78 |
| 00:45 | 2 | 24 | 3 | 8 | 5 | 12:45 | 34 | 145 | 34 | 133 | 68 |
| 01:00 | 2 | 1 | | | 3 | 13:00 | 45 | 30 | | | 75 |
| 01:15 | 5 | 1 | | | 6 | 13:15 | 46 | 26 | | | 72 |
| 01:30 | 4 | 1 | | | 5 | 13:30 | 50 | 50 | | | 100 |
| 01:45 | 2 | 13 | 2 | 5 | 4 | 13:45 | 42 | 183 | 31 | 137 | 73 |
| 02:00 | 0 | 4 | | | 4 | 14:00 | 51 | 32 | | | 83 |
| 02:15 | 2 | 0 | | | 2 | 14:15 | 67 | 43 | | | 110 |
| 02:30 | 2 | 0 | | | 2 | 14:30 | 48 | 39 | | | 87 |
| 02:45 | 2 | 6 | 1 | 5 | 3 | 14:45 | 72 | 238 | 36 | 150 | 108 |
| 03:00 | 1 | 3 | | | 4 | 15:00 | 84 | 32 | | | 116 |
| 03:15 | 1 | 4 | | | 5 | 15:15 | 108 | 38 | | | 146 |
| 03:30 | 7 | 5 | | | 12 | 15:30 | 122 | 30 | | | 152 |
| 03:45 | 6 | 15 | 17 | 29 | 23 | 15:45 | 107 | 421 | 42 | 142 | 149 |
| 04:00 | 10 | 50 | | | 60 | 16:00 | 115 | 35 | | | 150 |
| 04:15 | 14 | 42 | | | 56 | 16:15 | 137 | 42 | | | 179 |
| 04:30 | 2 | 104 | | | 106 | 16:30 | 166 | 42 | | | 208 |
| 04:45 | 6 | 32 | 352 | 548 | 358 | 16:45 | 185 | 603 | 38 | 157 | 223 |
| 05:00 | 6 | 458 | | | 464 | 17:00 | 172 | 42 | | | 214 |
| 05:15 | 10 | 375 | | | 385 | 17:15 | 257 | 37 | | | 294 |
| 05:30 | 17 | 305 | | | 322 | 17:30 | 211 | 21 | | | 232 |
| 05:45 | 6 | 39 | 285 | 1423 | 291 | 17:45 | 197 | 837 | 37 | 137 | 234 |
| 06:00 | 11 | 261 | | | 272 | 18:00 | 178 | 19 | | | 197 |
| 06:15 | 11 | 221 | | | 232 | 18:15 | 206 | 23 | | | 229 |
| 06:30 | 23 | 204 | | | 227 | 18:30 | 134 | 30 | | | 164 |
| 06:45 | 11 | 56 | 205 | 891 | 216 | 18:45 | 122 | 640 | 21 | 93 | 143 |
| 07:00 | 34 | 196 | | | 230 | 19:00 | 89 | 14 | | | 103 |
| 07:15 | 21 | 174 | | | 195 | 19:15 | 67 | 13 | | | 80 |
| 07:30 | 26 | 126 | | | 152 | 19:30 | 75 | 24 | | | 99 |
| 07:45 | 22 | 103 | 121 | 617 | 143 | 19:45 | 47 | 278 | 14 | 65 | 61 |
| 08:00 | 34 | 98 | | | 132 | 20:00 | 37 | 13 | | | 50 |
| 08:15 | 34 | 95 | | | 129 | 20:15 | 24 | 11 | | | 35 |
| 08:30 | 34 | 57 | | | 91 | 20:30 | 24 | 11 | | | 35 |
| 08:45 | 23 | 125 | 51 | 301 | 74 | 20:45 | 21 | 106 | 17 | 52 | 38 |
| 09:00 | 25 | 42 | | | 67 | 21:00 | 14 | 11 | | | 25 |
| 09:15 | 36 | 41 | | | 77 | 21:15 | 26 | 4 | | | 30 |
| 09:30 | 36 | 34 | | | 70 | 21:30 | 21 | 6 | | | 27 |
| 09:45 | 42 | 139 | 30 | 147 | 72 | 21:45 | 22 | 83 | 10 | 31 | 32 |
| 10:00 | 29 | 39 | | | 68 | 22:00 | 21 | 6 | | | 27 |
| 10:15 | 27 | 30 | | | 57 | 22:15 | 7 | 9 | | | 16 |
| 10:30 | 32 | 26 | | | 58 | 22:30 | 10 | 3 | | | 13 |
| 10:45 | 38 | 126 | 38 | 133 | 76 | 22:45 | 11 | 49 | 8 | 26 | 19 |
| 11:00 | 35 | 39 | | | 74 | 23:00 | 7 | 1 | | | 8 |
| 11:15 | 33 | 34 | | | 67 | 23:15 | 5 | 2 | | | 7 |
| 11:30 | 33 | 29 | | | 62 | 23:30 | 5 | 3 | | | 8 |
| 11:45 | 27 | 128 | 43 | 145 | 70 | 23:45 | 8 | 25 | 1 | 7 | 9 |
| TOTALS | 806 | 4252 | | | 5058 | TOTALS | 3608 | 1130 | | | 4738 |
| SPLIT % | 15.9% | 84.1% | | | 51.6% | SPLIT % | 76.2% | 23.8% | | | 48.4% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|
| | | | | | 4,414 | 5,382 | 0 | 0 | 9,796 |
| AM Peak Hour | 09:15 | 04:45 | | | 04:45 | PM Peak Hour | 17:15 | 16:15 | 17:00 |
| AM Pk Volume | 143 | 1490 | | | 1529 | PM Pk Volume | 843 | 164 | 974 |
| Pk Hr Factor | 0.851 | 0.813 | | | 0.824 | Pk Hr Factor | 0.820 | 0.976 | 0.828 |
| 7 - 9 Volume | 228 | 918 | 0 | 0 | 1146 | 4 - 6 Volume | 1440 | 294 | 0 |
| 7 - 9 Peak Hour | 08:00 | 07:00 | | | 07:00 | 4 - 6 Peak Hour | 17:00 | 16:15 | 17:00 |
| 7 - 9 Pk Volume | 125 | 617 | 0 | 0 | 720 | 4 - 6 Pk Volume | 837 | 164 | 0 |
| Pk Hr Factor | 0.919 | 0.787 | 0.000 | 0.000 | 0.783 | Pk Hr Factor | 0.814 | 0.976 | 0.000 |

VOLUME

Angeles Forest Highway S/O E Carson Mesa Rd

Day: Wednesday
Date: 1/28/2015

City: Palmdale
Project #: CA15_5025_064

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|-------|-------|-----|-----|-------|----------------|-------|-------|-------|----|-------|
| | | | | | 1,740 | 1,782 | 0 | 0 | 3,522 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | 1 | 0 | | | 1 | 12:00 | 13 | 10 | | | 23 |
| 00:15 | 2 | 0 | | | 2 | 12:15 | 17 | 11 | | | 28 |
| 00:30 | 1 | 0 | | | 1 | 12:30 | 16 | 15 | | | 31 |
| 00:45 | 0 | 4 | 1 | 1 | 1 | 12:45 | 8 | 54 | 22 | 58 | 30 |
| 01:00 | 0 | 0 | | | 0 | 13:00 | 14 | 9 | | | 23 |
| 01:15 | 0 | 0 | | | 0 | 13:15 | 22 | 12 | | | 34 |
| 01:30 | 0 | 0 | | | 0 | 13:30 | 14 | 18 | | | 32 |
| 01:45 | 1 | 1 | 1 | 1 | 2 | 13:45 | 16 | 66 | 10 | 49 | 26 |
| 02:00 | 0 | 0 | | | 0 | 14:00 | 18 | 10 | | | 28 |
| 02:15 | 1 | 0 | | | 1 | 14:15 | 25 | 21 | | | 46 |
| 02:30 | 1 | 1 | | | 2 | 14:30 | 19 | 18 | | | 37 |
| 02:45 | 1 | 3 | 0 | 1 | 1 | 14:45 | 20 | 82 | 12 | 61 | 32 |
| 03:00 | 1 | 1 | | | 2 | 15:00 | 28 | 11 | | | 39 |
| 03:15 | 1 | 0 | | | 1 | 15:15 | 37 | 12 | | | 49 |
| 03:30 | 2 | 1 | | | 3 | 15:30 | 68 | 12 | | | 80 |
| 03:45 | 3 | 7 | 2 | 4 | 5 | 15:45 | 34 | 167 | 13 | 48 | 47 |
| 04:00 | 2 | 7 | | | 9 | 16:00 | 44 | 14 | | | 58 |
| 04:15 | 4 | 4 | | | 8 | 16:15 | 41 | 16 | | | 57 |
| 04:30 | 7 | 9 | | | 16 | 16:30 | 67 | 20 | | | 87 |
| 04:45 | 8 | 21 | 24 | 44 | 32 | 16:45 | 69 | 221 | 17 | 67 | 86 |
| 05:00 | 4 | 42 | | | 46 | 17:00 | 66 | 15 | | | 81 |
| 05:15 | 4 | 75 | | | 79 | 17:15 | 139 | 17 | | | 156 |
| 05:30 | 6 | 75 | | | 81 | 17:30 | 88 | 11 | | | 99 |
| 05:45 | 1 | 15 | 114 | 306 | 115 | 17:45 | 88 | 381 | 14 | 57 | 102 |
| 06:00 | 5 | 119 | | | 124 | 18:00 | 71 | 4 | | | 75 |
| 06:15 | 8 | 117 | | | 125 | 18:15 | 82 | 4 | | | 86 |
| 06:30 | 12 | 106 | | | 118 | 18:30 | 46 | 12 | | | 58 |
| 06:45 | 8 | 33 | 95 | 437 | 103 | 18:45 | 40 | 239 | 9 | 29 | 49 |
| 07:00 | 17 | 88 | | | 105 | 19:00 | 36 | 5 | | | 41 |
| 07:15 | 11 | 67 | | | 78 | 19:15 | 24 | 11 | | | 35 |
| 07:30 | 13 | 59 | | | 72 | 19:30 | 28 | 8 | | | 36 |
| 07:45 | 12 | 53 | 60 | 274 | 72 | 19:45 | 13 | 101 | 3 | 27 | 16 |
| 08:00 | 9 | 30 | | | 39 | 20:00 | 10 | 4 | | | 14 |
| 08:15 | 9 | 36 | | | 45 | 20:15 | 6 | 3 | | | 9 |
| 08:30 | 10 | 27 | | | 37 | 20:30 | 5 | 2 | | | 7 |
| 08:45 | 7 | 35 | 21 | 114 | 28 | 20:45 | 6 | 27 | 4 | 13 | 10 |
| 09:00 | 11 | 16 | | | 27 | 21:00 | 3 | 8 | | | 11 |
| 09:15 | 17 | 11 | | | 28 | 21:15 | 7 | 1 | | | 8 |
| 09:30 | 14 | 17 | | | 31 | 21:30 | 4 | 3 | | | 7 |
| 09:45 | 17 | 59 | 8 | 52 | 25 | 21:45 | 5 | 19 | 2 | 14 | 7 |
| 10:00 | 14 | 25 | | | 39 | 22:00 | 4 | 3 | | | 7 |
| 10:15 | 15 | 12 | | | 27 | 22:15 | 1 | 2 | | | 3 |
| 10:30 | 25 | 12 | | | 37 | 22:30 | 2 | 1 | | | 3 |
| 10:45 | 19 | 73 | 8 | 57 | 27 | 22:45 | 3 | 10 | 2 | 8 | 5 |
| 11:00 | 15 | 16 | | | 31 | 23:00 | 1 | 0 | | | 1 |
| 11:15 | 17 | 17 | | | 34 | 23:15 | 2 | 2 | | | 4 |
| 11:30 | 14 | 10 | | | 24 | 23:30 | 3 | 2 | | | 5 |
| 11:45 | 16 | 62 | 13 | 56 | 29 | 23:45 | 1 | 7 | 0 | 4 | 1 |
| TOTALS | 366 | 1347 | | | 1713 | TOTALS | 1374 | 435 | | | 1809 |
| SPLIT % | 21.4% | 78.6% | | | 48.6% | SPLIT % | 76.0% | 24.0% | | | 51.4% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|
| | | | | | 1,740 | 1,782 | 0 | 0 | 3,522 |
| AM Peak Hour | 10:30 | 05:45 | | | 05:45 | PM Peak Hour | 17:15 | 16:30 | 17:00 |
| AM Pk Volume | 76 | 456 | | | 482 | PM Pk Volume | 386 | 69 | 438 |
| Pk Hr Factor | 0.760 | 0.958 | | | 0.964 | Pk Hr Factor | 0.694 | 0.863 | 0.702 |
| 7 - 9 Volume | 88 | 388 | 0 | 0 | 476 | 4 - 6 Volume | 602 | 124 | 0 |
| 7 - 9 Peak Hour | 07:00 | 07:00 | | | 07:00 | 4 - 6 Peak Hour | 17:00 | 16:30 | 17:00 |
| 7 - 9 Pk Volume | 53 | 274 | 0 | 0 | 327 | 4 - 6 Pk Volume | 381 | 69 | 0 |
| Pk Hr Factor | 0.779 | 0.778 | 0.000 | 0.000 | 0.779 | Pk Hr Factor | 0.685 | 0.863 | 0.000 |

VOLUME

Crown Valley Rd N/O Sierra Hwy

Day: Thursday
Date: 1/29/2015

City: Acton
Project #: CA15_5025_065

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|--------------|--------------|----|----|--------------|----------------|--------------|--------------|-------|----|--------------|
| | | | | | 814 | 805 | 0 | 0 | 1,619 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | 5 | 1 | | | 6 | 12:00 | 14 | 19 | | | 33 |
| 00:15 | 0 | 0 | | | 0 | 12:15 | 11 | 15 | | | 26 |
| 00:30 | 0 | 0 | | | 0 | 12:30 | 14 | 10 | | | 24 |
| 00:45 | 4 | 9 | 0 | 1 | 4 | 12:45 | 8 | 47 | 15 | 59 | 23 |
| 01:00 | 2 | 1 | | | 3 | 13:00 | 8 | 15 | | | 23 |
| 01:15 | 1 | 2 | | | 3 | 13:15 | 14 | 5 | | | 19 |
| 01:30 | 1 | 0 | | | 1 | 13:30 | 7 | 13 | | | 20 |
| 01:45 | 1 | 5 | 0 | 3 | 1 | 13:45 | 14 | 43 | 10 | 43 | 24 |
| 02:00 | 1 | 1 | | | 2 | 14:00 | 15 | 12 | | | 27 |
| 02:15 | 0 | 0 | | | 0 | 14:15 | 9 | 10 | | | 19 |
| 02:30 | 2 | 0 | | | 2 | 14:30 | 11 | 17 | | | 28 |
| 02:45 | 1 | 4 | 0 | 1 | 1 | 14:45 | 26 | 61 | 10 | 49 | 36 |
| 03:00 | 0 | 1 | | | 1 | 15:00 | 17 | 16 | | | 33 |
| 03:15 | 0 | 2 | | | 2 | 15:15 | 25 | 14 | | | 39 |
| 03:30 | 0 | 0 | | | 0 | 15:30 | 23 | 14 | | | 37 |
| 03:45 | 0 | 0 | 3 | | 0 | 15:45 | 26 | 91 | 11 | 55 | 37 |
| 04:00 | 1 | 1 | | | 2 | 16:00 | 19 | 12 | | | 31 |
| 04:15 | 3 | 3 | | | 6 | 16:15 | 16 | 13 | | | 29 |
| 04:30 | 1 | 8 | | | 9 | 16:30 | 22 | 13 | | | 35 |
| 04:45 | 2 | 7 | 8 | 20 | 10 | 16:45 | 23 | 80 | 13 | 51 | 36 |
| 05:00 | 2 | 11 | | | 13 | 17:00 | 27 | 18 | | | 45 |
| 05:15 | 2 | 15 | | | 17 | 17:15 | 21 | 9 | | | 30 |
| 05:30 | 1 | 8 | | | 9 | 17:30 | 20 | 14 | | | 34 |
| 05:45 | 2 | 7 | 9 | 43 | 11 | 17:45 | 14 | 82 | 9 | 50 | 23 |
| 06:00 | 1 | 7 | | | 8 | 18:00 | 21 | 7 | | | 28 |
| 06:15 | 1 | 11 | | | 12 | 18:15 | 11 | 9 | | | 20 |
| 06:30 | 4 | 9 | | | 13 | 18:30 | 11 | 11 | | | 22 |
| 06:45 | 5 | 11 | 20 | 47 | 25 | 18:45 | 18 | 61 | 8 | 35 | 26 |
| 07:00 | 5 | 16 | | | 21 | 19:00 | 13 | 10 | | | 23 |
| 07:15 | 6 | 16 | | | 22 | 19:15 | 15 | 11 | | | 26 |
| 07:30 | 7 | 21 | | | 28 | 19:30 | 11 | 4 | | | 15 |
| 07:45 | 10 | 28 | 24 | 77 | 34 | 19:45 | 17 | 56 | 2 | 27 | 19 |
| 08:00 | 9 | 20 | | | 29 | 20:00 | 2 | 5 | | | 7 |
| 08:15 | 15 | 19 | | | 34 | 20:15 | 6 | 2 | | | 8 |
| 08:30 | 16 | 24 | | | 40 | 20:30 | 10 | 4 | | | 14 |
| 08:45 | 10 | 50 | 16 | 79 | 26 | 20:45 | 4 | 22 | 2 | 13 | 6 |
| 09:00 | 7 | 14 | | | 21 | 21:00 | 16 | 2 | | | 18 |
| 09:15 | 5 | 9 | | | 14 | 21:15 | 13 | 2 | | | 15 |
| 09:30 | 9 | 12 | | | 21 | 21:30 | 5 | 1 | | | 6 |
| 09:45 | 3 | 24 | 8 | 43 | 11 | 21:45 | 5 | 39 | 2 | 7 | 7 |
| 10:00 | 5 | 9 | | | 14 | 22:00 | 3 | 1 | | | 4 |
| 10:15 | 7 | 14 | | | 21 | 22:15 | 3 | 1 | | | 4 |
| 10:30 | 6 | 12 | | | 18 | 22:30 | 5 | 1 | | | 6 |
| 10:45 | 10 | 28 | 11 | 46 | 21 | 22:45 | 4 | 15 | 1 | 4 | 5 |
| 11:00 | 5 | 12 | | | 17 | 23:00 | 3 | 0 | | | 3 |
| 11:15 | 8 | 11 | | | 19 | 23:15 | 0 | 1 | | | 1 |
| 11:30 | 13 | 10 | | | 23 | 23:30 | 1 | 1 | | | 2 |
| 11:45 | 10 | 36 | 14 | 47 | 24 | 23:45 | 4 | 8 | 0 | 2 | 4 |
| TOTALS | 209 | 410 | | | 619 | TOTALS | 605 | 395 | | | 1000 |
| SPLIT % | 33.8% | 66.2% | | | 38.2% | SPLIT % | 60.5% | 39.5% | | | 61.8% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|
| | | | | | 814 | 805 | 0 | 0 | 1,619 |
| AM Peak Hour | 07:45 | 07:45 | | | 07:45 | PM Peak Hour | 15:15 | 12:00 | 15:00 |
| AM Pk Volume | 50 | 87 | | | 137 | PM Pk Volume | 93 | 59 | 146 |
| Pk Hr Factor | 0.781 | 0.906 | | | 0.856 | Pk Hr Factor | 0.894 | 0.776 | 0.936 |
| 7 - 9 Volume | 78 | 156 | 0 | 0 | 234 | 4 - 6 Volume | 162 | 101 | 0 |
| 7 - 9 Peak Hour | 07:45 | 07:45 | | | 07:45 | 4 - 6 Peak Hour | 16:30 | 16:15 | 16:30 |
| 7 - 9 Pk Volume | 50 | 87 | 0 | 0 | 137 | 4 - 6 Pk Volume | 93 | 57 | 0 |
| Pk Hr Factor | 0.781 | 0.906 | 0.000 | 0.000 | 0.856 | Pk Hr Factor | 0.861 | 0.792 | 0.000 |

VOLUME

Sierra Hwy W/O Ward Rd

Day: Thursday
Date: 1/29/2015

City: Acton
Project #: CA15_5025_068

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|--------------|--------------|----|-----|--------------|----------------|--------------|--------------|-------|-----|--------------|
| | | | | | 3,458 | 3,535 | 0 | 0 | 6,993 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | 4 | 5 | | | 9 | 12:00 | 29 | 36 | | | 65 |
| 00:15 | 6 | 2 | | | 8 | 12:15 | 24 | 27 | | | 51 |
| 00:30 | 0 | 6 | | | 6 | 12:30 | 27 | 29 | | | 56 |
| 00:45 | 1 | 11 | 7 | 20 | 8 | 12:45 | 26 | 106 | 35 | 127 | 61 |
| 01:00 | 1 | 2 | | | 3 | 13:00 | 32 | 32 | | | 64 |
| 01:15 | 0 | 1 | | | 1 | 13:15 | 39 | 26 | | | 65 |
| 01:30 | 2 | 1 | | | 3 | 13:30 | 41 | 40 | | | 81 |
| 01:45 | 2 | 5 | 1 | 5 | 3 | 13:45 | 37 | 149 | 38 | 136 | 75 |
| 02:00 | 1 | 9 | | | 10 | 14:00 | 19 | 50 | | | 69 |
| 02:15 | 3 | 1 | | | 4 | 14:15 | 32 | 40 | | | 72 |
| 02:30 | 3 | 2 | | | 5 | 14:30 | 41 | 43 | | | 84 |
| 02:45 | 0 | 7 | 4 | 16 | 4 | 14:45 | 36 | 128 | 53 | 186 | 89 |
| 03:00 | 3 | 4 | | | 7 | 15:00 | 44 | 56 | | | 100 |
| 03:15 | 5 | 1 | | | 6 | 15:15 | 41 | 63 | | | 104 |
| 03:30 | 5 | 5 | | | 10 | 15:30 | 42 | 73 | | | 115 |
| 03:45 | 4 | 17 | 0 | 10 | 4 | 15:45 | 34 | 161 | 108 | 300 | 142 |
| 04:00 | 13 | 5 | | | 18 | 16:00 | 35 | 110 | | | 145 |
| 04:15 | 25 | 3 | | | 28 | 16:15 | 39 | 110 | | | 149 |
| 04:30 | 21 | 6 | | | 27 | 16:30 | 27 | 114 | | | 141 |
| 04:45 | 58 | 117 | 6 | 20 | 64 | 16:45 | 49 | 150 | 143 | 477 | 192 |
| 05:00 | 118 | 12 | | | 130 | 17:00 | 41 | 134 | | | 175 |
| 05:15 | 188 | 7 | | | 195 | 17:15 | 34 | 150 | | | 184 |
| 05:30 | 198 | 6 | | | 204 | 17:30 | 44 | 140 | | | 184 |
| 05:45 | 161 | 665 | 13 | 38 | 174 | 17:45 | 35 | 154 | 159 | 583 | 194 |
| 06:00 | 160 | 8 | | | 168 | 18:00 | 26 | 111 | | | 137 |
| 06:15 | 165 | 13 | | | 178 | 18:15 | 31 | 164 | | | 195 |
| 06:30 | 148 | 26 | | | 174 | 18:30 | 23 | 85 | | | 108 |
| 06:45 | 97 | 570 | 26 | 73 | 123 | 18:45 | 21 | 101 | 69 | 429 | 90 |
| 07:00 | 143 | 36 | | | 179 | 19:00 | 19 | 50 | | | 69 |
| 07:15 | 93 | 55 | | | 148 | 19:15 | 26 | 35 | | | 61 |
| 07:30 | 66 | 55 | | | 121 | 19:30 | 21 | 35 | | | 56 |
| 07:45 | 59 | 361 | 36 | 182 | 95 | 19:45 | 17 | 83 | 37 | 157 | 54 |
| 08:00 | 49 | 27 | | | 76 | 20:00 | 24 | 27 | | | 51 |
| 08:15 | 53 | 42 | | | 95 | 20:15 | 10 | 16 | | | 26 |
| 08:30 | 56 | 49 | | | 105 | 20:30 | 13 | 23 | | | 36 |
| 08:45 | 41 | 199 | 26 | 144 | 67 | 20:45 | 10 | 57 | 16 | 82 | 26 |
| 09:00 | 30 | 34 | | | 64 | 21:00 | 15 | 16 | | | 31 |
| 09:15 | 26 | 41 | | | 67 | 21:15 | 15 | 19 | | | 34 |
| 09:30 | 27 | 33 | | | 60 | 21:30 | 15 | 9 | | | 24 |
| 09:45 | 27 | 110 | 33 | 141 | 60 | 21:45 | 11 | 56 | 8 | 52 | 19 |
| 10:00 | 20 | 41 | | | 61 | 22:00 | 10 | 21 | | | 31 |
| 10:15 | 28 | 39 | | | 67 | 22:15 | 10 | 9 | | | 19 |
| 10:30 | 29 | 37 | | | 66 | 22:30 | 5 | 9 | | | 14 |
| 10:45 | 23 | 100 | 31 | 148 | 54 | 22:45 | 5 | 30 | 14 | 53 | 19 |
| 11:00 | 22 | 36 | | | 58 | 23:00 | 6 | 4 | | | 10 |
| 11:15 | 23 | 28 | | | 51 | 23:15 | 3 | 8 | | | 11 |
| 11:30 | 28 | 28 | | | 56 | 23:30 | 6 | 11 | | | 17 |
| 11:45 | 31 | 104 | 38 | 130 | 69 | 23:45 | 2 | 17 | 3 | 26 | 5 |
| TOTALS | 2266 | 927 | | | 3193 | TOTALS | 1192 | 2608 | | | 3800 |
| SPLIT % | 71.0% | 29.0% | | | 45.7% | SPLIT % | 31.4% | 68.6% | | | 54.3% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|
| | | | | | 3,458 | 3,535 | 0 | 0 | 6,993 |
| AM Peak Hour | 05:15 | 07:00 | | | 05:15 | PM Peak Hour | 16:45 | 17:00 | 17:00 |
| AM Pk Volume | 707 | 182 | | | 741 | PM Pk Volume | 168 | 583 | 737 |
| Pk Hr Factor | 0.893 | 0.827 | | | 0.908 | Pk Hr Factor | 0.857 | 0.917 | 0.950 |
| 7 - 9 Volume | 560 | 326 | 0 | 0 | 886 | 4 - 6 Volume | 304 | 1060 | 0 |
| 7 - 9 Peak Hour | 07:00 | 07:00 | | | 07:00 | 4 - 6 Peak Hour | 16:45 | 17:00 | 17:00 |
| 7 - 9 Pk Volume | 361 | 182 | 0 | 0 | 543 | 4 - 6 Pk Volume | 168 | 583 | 0 |
| Pk Hr Factor | 0.631 | 0.827 | 0.000 | 0.000 | 0.758 | Pk Hr Factor | 0.857 | 0.917 | 0.000 |

VOLUME

Aqua Dulce Canyon Rd N/O SR-14 WB Ramps

Day: Thursday
Date: 1/29/2015

City: Santa Clarita
Project #: CA15_5025_070

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|--------------|--------------|----|-----|--------------|----------------|--------------|--------------|-------|-----|--------------|
| | | | | | 1,519 | 1,411 | 0 | 0 | 2,930 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | 4 | 1 | | | 5 | 12:00 | 21 | 17 | | | 38 |
| 00:15 | 3 | 3 | | | 6 | 12:15 | 9 | 22 | | | 31 |
| 00:30 | 3 | 0 | | | 3 | 12:30 | 28 | 25 | | | 53 |
| 00:45 | 0 | 10 | 2 | 6 | 2 | 12:45 | 27 | 85 | 24 | 88 | 51 |
| 01:00 | 1 | 1 | | | 2 | 13:00 | 23 | 25 | | | 48 |
| 01:15 | 2 | 2 | | | 4 | 13:15 | 28 | 25 | | | 53 |
| 01:30 | 4 | 0 | | | 4 | 13:30 | 22 | 20 | | | 42 |
| 01:45 | 1 | 8 | 0 | 3 | 1 | 13:45 | 24 | 97 | 25 | 95 | 49 |
| 02:00 | 0 | 1 | | | 1 | 14:00 | 25 | 20 | | | 45 |
| 02:15 | 0 | 2 | | | 2 | 14:15 | 31 | 18 | | | 49 |
| 02:30 | 1 | 1 | | | 2 | 14:30 | 44 | 21 | | | 65 |
| 02:45 | 2 | 3 | 1 | 5 | 3 | 14:45 | 23 | 123 | 70 | 129 | 93 |
| 03:00 | 0 | 2 | | | 2 | 15:00 | 29 | 22 | | | 51 |
| 03:15 | 0 | 0 | | | 0 | 15:15 | 37 | 33 | | | 70 |
| 03:30 | 1 | 0 | | | 1 | 15:30 | 21 | 26 | | | 47 |
| 03:45 | 1 | 2 | 0 | 2 | 1 | 15:45 | 32 | 119 | 24 | 105 | 56 |
| 04:00 | 2 | 6 | | | 8 | 16:00 | 30 | 30 | | | 60 |
| 04:15 | 2 | 2 | | | 4 | 16:15 | 31 | 15 | | | 46 |
| 04:30 | 0 | 9 | | | 9 | 16:30 | 27 | 30 | | | 57 |
| 04:45 | 0 | 4 | 14 | 31 | 14 | 16:45 | 34 | 122 | 10 | 85 | 44 |
| 05:00 | 1 | 16 | | | 17 | 17:00 | 45 | 24 | | | 69 |
| 05:15 | 1 | 22 | | | 23 | 17:15 | 38 | 21 | | | 59 |
| 05:30 | 4 | 15 | | | 19 | 17:30 | 32 | 24 | | | 56 |
| 05:45 | 3 | 9 | 10 | 63 | 13 | 17:45 | 20 | 135 | 26 | 95 | 46 |
| 06:00 | 1 | 9 | | | 10 | 18:00 | 26 | 12 | | | 38 |
| 06:15 | 2 | 5 | | | 7 | 18:15 | 28 | 10 | | | 38 |
| 06:30 | 7 | 11 | | | 18 | 18:30 | 23 | 17 | | | 40 |
| 06:45 | 10 | 20 | 15 | 40 | 25 | 18:45 | 28 | 105 | 9 | 48 | 37 |
| 07:00 | 11 | 18 | | | 29 | 19:00 | 26 | 9 | | | 35 |
| 07:15 | 16 | 23 | | | 39 | 19:15 | 30 | 6 | | | 36 |
| 07:30 | 24 | 21 | | | 45 | 19:30 | 20 | 3 | | | 23 |
| 07:45 | 49 | 100 | 33 | 95 | 82 | 19:45 | 22 | 98 | 6 | 24 | 28 |
| 08:00 | 49 | 48 | | | 97 | 20:00 | 21 | 10 | | | 31 |
| 08:15 | 27 | 55 | | | 82 | 20:15 | 15 | 4 | | | 19 |
| 08:30 | 7 | 36 | | | 43 | 20:30 | 10 | 5 | | | 15 |
| 08:45 | 19 | 102 | 36 | 175 | 55 | 20:45 | 17 | 63 | 3 | 22 | 20 |
| 09:00 | 16 | 24 | | | 40 | 21:00 | 8 | 4 | | | 12 |
| 09:15 | 19 | 23 | | | 42 | 21:15 | 11 | 1 | | | 12 |
| 09:30 | 20 | 30 | | | 50 | 21:30 | 10 | 2 | | | 12 |
| 09:45 | 12 | 67 | 29 | 106 | 41 | 21:45 | 8 | 37 | 2 | 9 | 10 |
| 10:00 | 22 | 24 | | | 46 | 22:00 | 10 | 1 | | | 11 |
| 10:15 | 18 | 12 | | | 30 | 22:15 | 8 | 5 | | | 13 |
| 10:30 | 14 | 27 | | | 41 | 22:30 | 10 | 4 | | | 14 |
| 10:45 | 18 | 72 | 27 | 90 | 45 | 22:45 | 3 | 31 | 4 | 14 | 7 |
| 11:00 | 15 | 13 | | | 28 | 23:00 | 9 | 0 | | | 9 |
| 11:15 | 15 | 16 | | | 31 | 23:15 | 5 | 0 | | | 5 |
| 11:30 | 25 | 28 | | | 53 | 23:30 | 3 | 0 | | | 3 |
| 11:45 | 29 | 84 | 23 | 80 | 52 | 23:45 | 6 | 23 | 1 | 1 | 7 |
| TOTALS | 481 | 696 | | | 1177 | TOTALS | 1038 | 715 | | | 1753 |
| SPLIT % | 40.9% | 59.1% | | | 40.2% | SPLIT % | 59.2% | 40.8% | | | 59.8% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total |
|-----------------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|
| | | | | | 1,519 | 1,411 | 0 | 0 | 2,930 |
| AM Peak Hour | 07:30 | 08:00 | | 07:30 | PM Peak Hour | 16:45 | 14:45 | | 14:30 |
| AM Pk Volume | 149 | 175 | | 306 | PM Pk Volume | 149 | 151 | | 279 |
| Pk Hr Factor | 0.760 | 0.795 | | 0.789 | Pk Hr Factor | 0.828 | 0.539 | | 0.750 |
| 7 - 9 Volume | 202 | 270 | 0 | 472 | 4 - 6 Volume | 257 | 180 | 0 | 437 |
| 7 - 9 Peak Hour | 07:30 | 08:00 | | 07:30 | 4 - 6 Peak Hour | 16:45 | 17:00 | | 17:00 |
| 7 - 9 Pk Volume | 149 | 175 | 0 | 306 | 4 - 6 Pk Volume | 149 | 95 | 0 | 230 |
| Pk Hr Factor | 0.760 | 0.795 | 0.000 | 0.789 | Pk Hr Factor | 0.828 | 0.913 | 0.000 | 0.833 |

VOLUME

Sierra Hwy N/O Davenport Rd

Day: Thursday
Date: 1/29/2015

City: Santa Clarita
Project #: CA15_5025_071

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|-------|-------|-----|-----|--------------|----------------|-------|-------|-------|-----|--------------|
| | | | | | 3,528 | 3,520 | 0 | 0 | 7,048 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | 7 | 3 | | | 10 | 12:00 | 21 | 36 | | | 57 |
| 00:15 | 6 | 1 | | | 7 | 12:15 | 32 | 28 | | | 60 |
| 00:30 | 5 | 4 | | | 9 | 12:30 | 29 | 31 | | | 60 |
| 00:45 | 6 | 24 | 1 | 9 | 7 | 12:45 | 39 | 121 | 30 | 125 | 69 |
| 01:00 | 1 | 3 | | | 4 | 13:00 | 31 | 29 | | | 60 |
| 01:15 | 2 | 1 | | | 3 | 13:15 | 37 | 29 | | | 66 |
| 01:30 | 3 | 0 | | | 3 | 13:30 | 36 | 28 | | | 64 |
| 01:45 | 8 | 14 | 0 | 4 | 8 | 13:45 | 32 | 136 | 42 | 128 | 74 |
| 02:00 | 4 | 3 | | | 7 | 14:00 | 37 | 28 | | | 65 |
| 02:15 | 1 | 4 | | | 5 | 14:15 | 41 | 23 | | | 64 |
| 02:30 | 4 | 1 | | | 5 | 14:30 | 48 | 26 | | | 74 |
| 02:45 | 3 | 12 | 1 | 9 | 4 | 14:45 | 67 | 193 | 32 | 109 | 99 |
| 03:00 | 2 | 0 | | | 2 | 15:00 | 65 | 22 | | | 87 |
| 03:15 | 2 | 2 | | | 4 | 15:15 | 81 | 34 | | | 115 |
| 03:30 | 2 | 6 | | | 8 | 15:30 | 106 | 29 | | | 135 |
| 03:45 | 2 | 8 | 4 | 12 | 6 | 15:45 | 122 | 374 | 34 | 119 | 156 |
| 04:00 | 2 | 5 | | | 7 | 16:00 | 114 | 34 | | | 148 |
| 04:15 | 1 | 25 | | | 26 | 16:15 | 107 | 22 | | | 129 |
| 04:30 | 0 | 24 | | | 24 | 16:30 | 158 | 30 | | | 188 |
| 04:45 | 5 | 8 | 38 | 92 | 43 | 16:45 | 135 | 514 | 23 | 109 | 158 |
| 05:00 | 2 | 85 | | | 87 | 17:00 | 170 | 48 | | | 218 |
| 05:15 | 4 | 137 | | | 141 | 17:15 | 148 | 19 | | | 167 |
| 05:30 | 3 | 227 | | | 230 | 17:30 | 179 | 25 | | | 204 |
| 05:45 | 6 | 15 | 228 | 677 | 234 | 17:45 | 115 | 612 | 22 | 114 | 137 |
| 06:00 | 5 | 177 | | | 182 | 18:00 | 171 | 22 | | | 193 |
| 06:15 | 9 | 203 | | | 212 | 18:15 | 124 | 20 | | | 144 |
| 06:30 | 20 | 185 | | | 205 | 18:30 | 89 | 22 | | | 111 |
| 06:45 | 22 | 56 | 162 | 727 | 184 | 18:45 | 74 | 458 | 13 | 77 | 87 |
| 07:00 | 18 | 128 | | | 146 | 19:00 | 44 | 8 | | | 52 |
| 07:15 | 19 | 154 | | | 173 | 19:15 | 50 | 7 | | | 57 |
| 07:30 | 19 | 110 | | | 129 | 19:30 | 56 | 16 | | | 72 |
| 07:45 | 17 | 73 | 61 | 453 | 78 | 19:45 | 48 | 198 | 10 | 41 | 58 |
| 08:00 | 19 | 60 | | | 79 | 20:00 | 26 | 10 | | | 36 |
| 08:15 | 34 | 60 | | | 94 | 20:15 | 36 | 11 | | | 47 |
| 08:30 | 24 | 69 | | | 93 | 20:30 | 24 | 6 | | | 30 |
| 08:45 | 23 | 100 | 47 | 236 | 70 | 20:45 | 24 | 110 | 6 | 33 | 30 |
| 09:00 | 33 | 31 | | | 64 | 21:00 | 20 | 4 | | | 24 |
| 09:15 | 30 | 29 | | | 59 | 21:15 | 18 | 12 | | | 30 |
| 09:30 | 19 | 29 | | | 48 | 21:30 | 18 | 10 | | | 28 |
| 09:45 | 30 | 112 | 36 | 125 | 66 | 21:45 | 20 | 76 | 11 | 37 | 31 |
| 10:00 | 26 | 34 | | | 60 | 22:00 | 23 | 10 | | | 33 |
| 10:15 | 20 | 33 | | | 53 | 22:15 | 15 | 8 | | | 23 |
| 10:30 | 32 | 34 | | | 66 | 22:30 | 16 | 2 | | | 18 |
| 10:45 | 26 | 104 | 41 | 142 | 67 | 22:45 | 11 | 65 | 2 | 22 | 13 |
| 11:00 | 13 | 30 | | | 43 | 23:00 | 15 | 3 | | | 18 |
| 11:15 | 28 | 22 | | | 50 | 23:15 | 17 | 3 | | | 20 |
| 11:30 | 29 | 32 | | | 61 | 23:30 | 6 | 0 | | | 6 |
| 11:45 | 29 | 99 | 27 | 111 | 56 | 23:45 | 8 | 46 | 3 | 9 | 11 |
| TOTALS | 625 | 2597 | | | 3222 | TOTALS | 2903 | 923 | | | 3826 |
| SPLIT % | 19.4% | 80.6% | | | 45.7% | SPLIT % | 75.9% | 24.1% | | | 54.3% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total |
|-----------------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|
| | | | | | 3,528 | 3,520 | 0 | 0 | 7,048 |
| AM Peak Hour | 08:15 | 05:30 | | 05:30 | PM Peak Hour | 16:45 | 15:15 | | 16:45 |
| AM Pk Volume | 114 | 835 | | 858 | PM Pk Volume | 632 | 131 | | 747 |
| Pk Hr Factor | 0.838 | 0.916 | | 0.917 | Pk Hr Factor | 0.883 | 0.963 | | 0.857 |
| 7 - 9 Volume | 173 | 689 | 0 | 862 | 4 - 6 Volume | 1126 | 223 | 0 | 1349 |
| 7 - 9 Peak Hour | 08:00 | 07:00 | | 07:00 | 4 - 6 Peak Hour | 16:45 | 16:15 | | 16:45 |
| 7 - 9 Pk Volume | 100 | 453 | 0 | 526 | 4 - 6 Pk Volume | 632 | 123 | 0 | 747 |
| Pk Hr Factor | 0.735 | 0.735 | 0.000 | 0.760 | Pk Hr Factor | 0.883 | 0.641 | 0.000 | 0.857 |

VOLUME

Davenport Rd E/O Sierra Hwy

Day: Thursday
Date: 1/29/2015

City: Santa Clarita
Project #: CA15_5025_072

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|----|----|-------|-------|-------|----------------|-----|-----|-------|-------|-------|
| | | | | | 0 | 0 | 960 | 838 | 1,798 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | | | 0 | 0 | 0 | 12:00 | | | 14 | 16 | 30 |
| 00:15 | | | 2 | 2 | 4 | 12:15 | | | 23 | 9 | 32 |
| 00:30 | | | 2 | 0 | 2 | 12:30 | | | 17 | 18 | 35 |
| 00:45 | | | 1 | 5 | 2 | 12:45 | | | 10 | 64 | 27 |
| 01:00 | | | 2 | 0 | 2 | 13:00 | | | 17 | 8 | 25 |
| 01:15 | | | 0 | 1 | 1 | 13:15 | | | 14 | 9 | 23 |
| 01:30 | | | 1 | 0 | 1 | 13:30 | | | 13 | 12 | 25 |
| 01:45 | | | 1 | 4 | 3 | 13:45 | | | 13 | 57 | 21 |
| 02:00 | | | 0 | 0 | 0 | 14:00 | | | 17 | 10 | 27 |
| 02:15 | | | 0 | 0 | 0 | 14:15 | | | 24 | 7 | 31 |
| 02:30 | | | 1 | 0 | 1 | 14:30 | | | 20 | 17 | 37 |
| 02:45 | | | 1 | 2 | 1 | 14:45 | | | 20 | 81 | 36 |
| 03:00 | | | 0 | 1 | 1 | 15:00 | | | 16 | 15 | 31 |
| 03:15 | | | 0 | 0 | 0 | 15:15 | | | 19 | 13 | 32 |
| 03:30 | | | 0 | 2 | 2 | 15:30 | | | 19 | 14 | 33 |
| 03:45 | | | 0 | 1 | 1 | 15:45 | | | 23 | 77 | 34 |
| 04:00 | | | 1 | 2 | 3 | 16:00 | | | 20 | 14 | 34 |
| 04:15 | | | 0 | 1 | 1 | 16:15 | | | 20 | 8 | 28 |
| 04:30 | | | 1 | 5 | 6 | 16:30 | | | 28 | 9 | 37 |
| 04:45 | | | 0 | 2 | 4 | 16:45 | | | 24 | 92 | 38 |
| 05:00 | | | 2 | 3 | 5 | 17:00 | | | 24 | 12 | 36 |
| 05:15 | | | 1 | 11 | 12 | 17:15 | | | 25 | 8 | 33 |
| 05:30 | | | 3 | 23 | 26 | 17:30 | | | 22 | 11 | 33 |
| 05:45 | | | 1 | 7 | 16 | 17:45 | | | 23 | 94 | 31 |
| 06:00 | | | 2 | 17 | 19 | 18:00 | | | 21 | 8 | 29 |
| 06:15 | | | 3 | 24 | 27 | 18:15 | | | 22 | 6 | 28 |
| 06:30 | | | 5 | 18 | 23 | 18:30 | | | 23 | 7 | 30 |
| 06:45 | | | 6 | 16 | 21 | 18:45 | | | 13 | 79 | 19 |
| 07:00 | | | 7 | 22 | 29 | 19:00 | | | 11 | 9 | 20 |
| 07:15 | | | 10 | 28 | 38 | 19:15 | | | 16 | 2 | 18 |
| 07:30 | | | 7 | 25 | 32 | 19:30 | | | 7 | 3 | 10 |
| 07:45 | | | 21 | 45 | 19 | 19:45 | | | 25 | 59 | 29 |
| 08:00 | | | 19 | 33 | 52 | 20:00 | | | 12 | 1 | 13 |
| 08:15 | | | 11 | 26 | 37 | 20:15 | | | 11 | 1 | 12 |
| 08:30 | | | 8 | 16 | 24 | 20:30 | | | 11 | 1 | 12 |
| 08:45 | | | 12 | 50 | 15 | 20:45 | | | 13 | 47 | 14 |
| 09:00 | | | 4 | 16 | 20 | 21:00 | | | 3 | 1 | 4 |
| 09:15 | | | 11 | 14 | 25 | 21:15 | | | 5 | 1 | 6 |
| 09:30 | | | 5 | 10 | 15 | 21:30 | | | 5 | 1 | 6 |
| 09:45 | | | 9 | 29 | 12 | 21:45 | | | 8 | 21 | 8 |
| 10:00 | | | 11 | 16 | 27 | 22:00 | | | 5 | 0 | 5 |
| 10:15 | | | 6 | 15 | 21 | 22:15 | | | 12 | 1 | 13 |
| 10:30 | | | 13 | 12 | 25 | 22:30 | | | 6 | 0 | 6 |
| 10:45 | | | 9 | 39 | 14 | 22:45 | | | 7 | 30 | 7 |
| 11:00 | | | 9 | 15 | 24 | 23:00 | | | 1 | 0 | 1 |
| 11:15 | | | 14 | 13 | 27 | 23:15 | | | 1 | 0 | 1 |
| 11:30 | | | 15 | 3 | 18 | 23:30 | | | 3 | 1 | 4 |
| 11:45 | | | 16 | 54 | 21 | 23:45 | | | 1 | 6 | 2 |
| TOTALS | | | 253 | 499 | 752 | TOTALS | | | 707 | 339 | 1046 |
| SPLIT % | | | 33.6% | 66.4% | 41.8% | SPLIT % | | | 67.6% | 32.4% | 58.2% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|-------|
| | | | | | 0 | 0 | 960 | 838 | 1,798 | | |
| AM Peak Hour | | | 11:45 | 07:15 | 07:15 | PM Peak Hour | | | 16:30 | 14:30 | 16:30 |
| AM Pk Volume | | | 70 | 105 | 162 | PM Pk Volume | | | 101 | 61 | 144 |
| Pk Hr Factor | | | 0.761 | 0.795 | 0.779 | Pk Hr Factor | | | 0.902 | 0.897 | 0.947 |
| 7 - 9 Volume | 0 | 0 | 95 | 184 | 279 | 4 - 6 Volume | 0 | 0 | 186 | 84 | 270 |
| 7 - 9 Peak Hour | | | 07:45 | 07:15 | 07:15 | 4 - 6 Peak Hour | | | 16:30 | 16:00 | 16:30 |
| 7 - 9 Pk Volume | 0 | 0 | 59 | 105 | 162 | 4 - 6 Pk Volume | 0 | 0 | 101 | 45 | 144 |
| Pk Hr Factor | 0.000 | 0.000 | 0.702 | 0.795 | 0.779 | Pk Hr Factor | 0.000 | 0.000 | 0.902 | 0.804 | 0.947 |

VOLUME

Shadow Pines Blvd N/O Soledad Canyon Rd

Day: Thursday
Date: 1/29/2015

City: Canyon Country
Project #: CA15_5025_073

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|--------------|--------------|----|-----|--------------|----------------|--------------|--------------|-------|-----|--------------|
| | | | | | 3,808 | 3,773 | 0 | 0 | 7,581 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | 14 | 7 | | | 21 | 12:00 | 38 | 33 | | | 71 |
| 00:15 | 12 | 4 | | | 16 | 12:15 | 43 | 57 | | | 100 |
| 00:30 | 12 | 9 | | | 21 | 12:30 | 45 | 46 | | | 91 |
| 00:45 | 14 | 52 | 1 | 21 | 15 | 12:45 | 45 | 171 | 41 | 177 | 86 |
| | | | | | 73 | | | | | | 348 |
| 01:00 | 10 | 2 | | | 12 | 13:00 | 47 | 41 | | | 88 |
| 01:15 | 5 | 0 | | | 5 | 13:15 | 43 | 36 | | | 79 |
| 01:30 | 8 | 1 | | | 9 | 13:30 | 53 | 48 | | | 101 |
| 01:45 | 6 | 29 | 2 | 5 | 8 | 13:45 | 56 | 199 | 53 | 178 | 109 |
| | | | | | 34 | | | | | | 377 |
| 02:00 | 2 | 5 | | | 7 | 14:00 | 53 | 61 | | | 114 |
| 02:15 | 6 | 2 | | | 8 | 14:15 | 66 | 58 | | | 124 |
| 02:30 | 6 | 0 | | | 6 | 14:30 | 63 | 54 | | | 117 |
| 02:45 | 4 | 18 | 4 | 11 | 8 | 14:45 | 61 | 243 | 50 | 223 | 111 |
| | | | | | 29 | | | | | | 466 |
| 03:00 | 3 | 2 | | | 5 | 15:00 | 68 | 41 | | | 109 |
| 03:15 | 1 | 6 | | | 7 | 15:15 | 82 | 38 | | | 120 |
| 03:30 | 0 | 1 | | | 1 | 15:30 | 93 | 54 | | | 147 |
| 03:45 | 5 | 9 | 9 | 18 | 14 | 15:45 | 84 | 327 | 48 | 181 | 132 |
| | | | | | 27 | | | | | | 508 |
| 04:00 | 3 | 12 | | | 15 | 16:00 | 100 | 48 | | | 148 |
| 04:15 | 2 | 15 | | | 17 | 16:15 | 99 | 44 | | | 143 |
| 04:30 | 1 | 20 | | | 21 | 16:30 | 95 | 46 | | | 141 |
| 04:45 | 3 | 9 | 28 | 75 | 31 | 16:45 | 103 | 397 | 47 | 185 | 150 |
| | | | | | 84 | | | | | | 582 |
| 05:00 | 3 | 42 | | | 45 | 17:00 | 98 | 36 | | | 134 |
| 05:15 | 5 | 61 | | | 66 | 17:15 | 105 | 54 | | | 159 |
| 05:30 | 6 | 61 | | | 67 | 17:30 | 109 | 58 | | | 167 |
| 05:45 | 5 | 19 | 64 | 228 | 69 | 17:45 | 114 | 426 | 64 | 212 | 178 |
| | | | | | 247 | | | | | | 638 |
| 06:00 | 4 | 84 | | | 88 | 18:00 | 105 | 62 | | | 167 |
| 06:15 | 13 | 106 | | | 119 | 18:15 | 85 | 58 | | | 143 |
| 06:30 | 8 | 117 | | | 125 | 18:30 | 91 | 42 | | | 133 |
| 06:45 | 8 | 33 | 92 | 399 | 100 | 18:45 | 110 | 391 | 34 | 196 | 144 |
| | | | | | 432 | | | | | | 587 |
| 07:00 | 17 | 140 | | | 157 | 19:00 | 83 | 43 | | | 126 |
| 07:15 | 26 | 107 | | | 133 | 19:15 | 62 | 36 | | | 98 |
| 07:30 | 26 | 95 | | | 121 | 19:30 | 78 | 29 | | | 107 |
| 07:45 | 32 | 101 | 83 | 425 | 115 | 19:45 | 66 | 289 | 30 | 138 | 96 |
| | | | | | 526 | | | | | | 427 |
| 08:00 | 26 | 73 | | | 99 | 20:00 | 65 | 15 | | | 80 |
| 08:15 | 21 | 63 | | | 84 | 20:15 | 61 | 25 | | | 86 |
| 08:30 | 30 | 67 | | | 97 | 20:30 | 44 | 21 | | | 65 |
| 08:45 | 33 | 110 | 64 | 267 | 97 | 20:45 | 56 | 226 | 25 | 86 | 81 |
| | | | | | 377 | | | | | | 312 |
| 09:00 | 23 | 38 | | | 61 | 21:00 | 51 | 15 | | | 66 |
| 09:15 | 23 | 63 | | | 86 | 21:15 | 45 | 22 | | | 67 |
| 09:30 | 32 | 62 | | | 94 | 21:30 | 48 | 16 | | | 64 |
| 09:45 | 34 | 112 | 66 | 229 | 100 | 21:45 | 38 | 182 | 19 | 72 | 57 |
| | | | | | 341 | | | | | | 254 |
| 10:00 | 20 | 41 | | | 61 | 22:00 | 39 | 12 | | | 51 |
| 10:15 | 30 | 60 | | | 90 | 22:15 | 36 | 16 | | | 52 |
| 10:30 | 41 | 55 | | | 96 | 22:30 | 24 | 14 | | | 38 |
| 10:45 | 31 | 122 | 53 | 209 | 84 | 22:45 | 25 | 124 | 9 | 51 | 34 |
| | | | | | 331 | | | | | | 175 |
| 11:00 | 30 | 47 | | | 77 | 23:00 | 15 | 7 | | | 22 |
| 11:15 | 45 | 37 | | | 82 | 23:15 | 26 | 1 | | | 27 |
| 11:30 | 35 | 47 | | | 82 | 23:30 | 19 | 8 | | | 27 |
| 11:45 | 37 | 147 | 31 | 162 | 68 | 23:45 | 12 | 72 | 9 | 25 | 21 |
| | | | | | 309 | | | | | | 97 |
| TOTALS | 761 | 2049 | | | 2810 | TOTALS | 3047 | 1724 | | | 4771 |
| SPLIT % | 27.1% | 72.9% | | | 37.1% | SPLIT % | 63.9% | 36.1% | | | 62.9% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|
| | | | | | 3,808 | 3,773 | 0 | 0 | 7,581 |
| AM Peak Hour | 11:45 | 06:30 | | | 07:00 | PM Peak Hour | 17:15 | 17:30 | 17:15 |
| AM Pk Volume | 163 | 456 | | | 526 | PM Pk Volume | 433 | 242 | 671 |
| Pk Hr Factor | 0.906 | 0.814 | | | 0.838 | Pk Hr Factor | 0.950 | 0.945 | 0.942 |
| 7 - 9 Volume | 211 | 692 | 0 | 0 | 903 | 4 - 6 Volume | 823 | 397 | 0 |
| 7 - 9 Peak Hour | 07:15 | 07:00 | | | 07:00 | 4 - 6 Peak Hour | 17:00 | 17:00 | 17:00 |
| 7 - 9 Pk Volume | 110 | 425 | 0 | 0 | 526 | 4 - 6 Pk Volume | 426 | 212 | 0 |
| Pk Hr Factor | 0.859 | 0.759 | 0.000 | 0.000 | 0.838 | Pk Hr Factor | 0.934 | 0.828 | 0.000 |

VOLUME

Sierra Hwy N/O Vasquez Canyon Rd

Day: Thursday
Date: 1/29/2015City: Santa Clarita
Project #: CA15_5025_075

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|-------|-------|-----|-----|--------------|----------------|-------|-------|-------|-----|--------------|
| | | | | | 4,673 | 4,602 | 0 | 0 | 9,275 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | 8 | 4 | | | 12 | 12:00 | 39 | 65 | | | 104 |
| 00:15 | 9 | 2 | | | 11 | 12:15 | 59 | 55 | | | 114 |
| 00:30 | 6 | 3 | | | 9 | 12:30 | 43 | 47 | | | 90 |
| 00:45 | 6 | 29 | 2 | 11 | 8 | 12:45 | 55 | 196 | 44 | 211 | 407 |
| 01:00 | 2 | 1 | | | 3 | 13:00 | 56 | 47 | | | 103 |
| 01:15 | 4 | 3 | | | 7 | 13:15 | 43 | 45 | | | 88 |
| 01:30 | 3 | 0 | | | 3 | 13:30 | 53 | 41 | | | 94 |
| 01:45 | 9 | 18 | 2 | 6 | 11 | 13:45 | 45 | 197 | 63 | 196 | 393 |
| 02:00 | 3 | 2 | | | 5 | 14:00 | 69 | 48 | | | 117 |
| 02:15 | 3 | 5 | | | 8 | 14:15 | 70 | 34 | | | 104 |
| 02:30 | 4 | 1 | | | 5 | 14:30 | 77 | 45 | | | 122 |
| 02:45 | 5 | 15 | 1 | 9 | 6 | 14:45 | 87 | 303 | 52 | 179 | 482 |
| 03:00 | 0 | 0 | | | 0 | 15:00 | 86 | 44 | | | 130 |
| 03:15 | 3 | 3 | | | 6 | 15:15 | 96 | 45 | | | 141 |
| 03:30 | 4 | 4 | | | 8 | 15:30 | 134 | 63 | | | 197 |
| 03:45 | 4 | 11 | 7 | 14 | 11 | 15:45 | 141 | 457 | 50 | 202 | 659 |
| 04:00 | 2 | 6 | | | 8 | 16:00 | 144 | 48 | | | 192 |
| 04:15 | 5 | 18 | | | 23 | 16:15 | 141 | 45 | | | 186 |
| 04:30 | 5 | 23 | | | 28 | 16:30 | 173 | 35 | | | 208 |
| 04:45 | 7 | 19 | 39 | 86 | 46 | 16:45 | 174 | 632 | 48 | 176 | 808 |
| 05:00 | 7 | 74 | | | 81 | 17:00 | 184 | 53 | | | 237 |
| 05:15 | 6 | 140 | | | 146 | 17:15 | 185 | 43 | | | 228 |
| 05:30 | 15 | 244 | | | 259 | 17:30 | 186 | 46 | | | 232 |
| 05:45 | 16 | 44 | 233 | 691 | 249 | 17:45 | 138 | 693 | 40 | 182 | 875 |
| 06:00 | 15 | 195 | | | 210 | 18:00 | 195 | 29 | | | 224 |
| 06:15 | 24 | 226 | | | 250 | 18:15 | 138 | 39 | | | 177 |
| 06:30 | 26 | 221 | | | 247 | 18:30 | 101 | 29 | | | 130 |
| 06:45 | 35 | 100 | 184 | 826 | 219 | 18:45 | 86 | 520 | 28 | 125 | 645 |
| 07:00 | 43 | 154 | | | 197 | 19:00 | 61 | 17 | | | 78 |
| 07:15 | 27 | 187 | | | 214 | 19:15 | 70 | 14 | | | 84 |
| 07:30 | 36 | 144 | | | 180 | 19:30 | 60 | 17 | | | 77 |
| 07:45 | 48 | 154 | 96 | 581 | 144 | 19:45 | 63 | 254 | 19 | 67 | 321 |
| 08:00 | 41 | 93 | | | 134 | 20:00 | 35 | 9 | | | 44 |
| 08:15 | 49 | 99 | | | 148 | 20:15 | 46 | 13 | | | 59 |
| 08:30 | 35 | 90 | | | 125 | 20:30 | 35 | 5 | | | 40 |
| 08:45 | 42 | 167 | 55 | 337 | 97 | 20:45 | 31 | 147 | 7 | 34 | 181 |
| 09:00 | 45 | 73 | | | 118 | 21:00 | 28 | 6 | | | 34 |
| 09:15 | 37 | 46 | | | 83 | 21:15 | 18 | 16 | | | 34 |
| 09:30 | 32 | 46 | | | 78 | 21:30 | 30 | 8 | | | 38 |
| 09:45 | 45 | 159 | 46 | 211 | 91 | 21:45 | 30 | 106 | 10 | 40 | 146 |
| 10:00 | 36 | 48 | | | 84 | 22:00 | 28 | 6 | | | 34 |
| 10:15 | 28 | 53 | | | 81 | 22:15 | 26 | 9 | | | 35 |
| 10:30 | 43 | 56 | | | 99 | 22:30 | 20 | 4 | | | 24 |
| 10:45 | 38 | 145 | 51 | 208 | 89 | 22:45 | 13 | 87 | 3 | 22 | 109 |
| 11:00 | 34 | 48 | | | 82 | 23:00 | 17 | 0 | | | 17 |
| 11:15 | 37 | 41 | | | 78 | 23:15 | 15 | 5 | | | 20 |
| 11:30 | 40 | 39 | | | 79 | 23:30 | 10 | 2 | | | 12 |
| 11:45 | 55 | 166 | 51 | 179 | 106 | 23:45 | 12 | 54 | 2 | 9 | 63 |
| TOTALS | 1027 | 3159 | | | 4186 | TOTALS | 3646 | 1443 | | | 5089 |
| SPLIT % | 24.5% | 75.5% | | | 45.1% | SPLIT % | 71.6% | 28.4% | | | 54.9% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|
| | | | | | 4,673 | 4,602 | 0 | 0 | 9,275 |
| AM Peak Hour | 11:45 | 05:30 | | | 05:30 | PM Peak Hour | 16:45 | 12:00 | 16:45 |
| AM Pk Volume | 196 | 898 | | | 968 | PM Pk Volume | 729 | 211 | 919 |
| Pk Hr Factor | 0.831 | 0.920 | | | 0.934 | Pk Hr Factor | 0.980 | 0.812 | 0.969 |
| 7 - 9 Volume | 321 | 918 | 0 | 0 | 1239 | 4 - 6 Volume | 1325 | 358 | 1683 |
| 7 - 9 Peak Hour | 07:30 | 07:00 | | | 07:00 | 4 - 6 Peak Hour | 16:45 | 16:45 | 16:45 |
| 7 - 9 Pk Volume | 174 | 581 | 0 | 0 | 735 | 4 - 6 Pk Volume | 729 | 190 | 919 |
| Pk Hr Factor | 0.888 | 0.777 | 0.000 | 0.000 | 0.859 | Pk Hr Factor | 0.980 | 0.896 | 0.969 |

VOLUME

Copper Hill Dr E/O Copperstone Dr

Day: Thursday
Date: 1/29/2015

City: Valencia
Project #: CA15_5025_076

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|--------------|--------------|-----|------|--------------|----------------|--------------|--------------|--------|-----|--------------|
| | | | | | 15,270 | 16,021 | 0 | 0 | 31,291 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | 39 | 9 | | | 48 | 12:00 | 156 | 173 | | | 329 |
| 00:15 | 39 | 5 | | | 44 | 12:15 | 193 | 162 | | | 355 |
| 00:30 | 32 | 7 | | | 39 | 12:30 | 197 | 189 | | | 386 |
| 00:45 | 23 | 133 | 6 | 27 | 29 | 12:45 | 165 | 711 | 188 | 712 | 353 |
| 01:00 | 25 | 7 | | | 32 | 13:00 | 206 | 183 | | | 389 |
| 01:15 | 12 | 10 | | | 22 | 13:15 | 189 | 167 | | | 356 |
| 01:30 | 23 | 7 | | | 30 | 13:30 | 183 | 176 | | | 359 |
| 01:45 | 9 | 69 | 2 | 26 | 11 | 13:45 | 256 | 834 | 170 | 696 | 426 |
| 02:00 | 16 | 5 | | | 21 | 14:00 | 304 | 310 | | | 614 |
| 02:15 | 8 | 4 | | | 12 | 14:15 | 243 | 291 | | | 534 |
| 02:30 | 11 | 8 | | | 19 | 14:30 | 246 | 194 | | | 440 |
| 02:45 | 9 | 44 | 6 | 23 | 15 | 14:45 | 276 | 1069 | 189 | 984 | 465 |
| 03:00 | 9 | 6 | | | 15 | 15:00 | 360 | 266 | | | 626 |
| 03:15 | 8 | 13 | | | 21 | 15:15 | 361 | 280 | | | 641 |
| 03:30 | 9 | 13 | | | 22 | 15:30 | 395 | 211 | | | 606 |
| 03:45 | 4 | 30 | 21 | 53 | 25 | 15:45 | 334 | 1450 | 197 | 954 | 531 |
| 04:00 | 5 | 31 | | | 36 | 16:00 | 402 | 192 | | | 594 |
| 04:15 | 5 | 54 | | | 59 | 16:15 | 375 | 183 | | | 558 |
| 04:30 | 10 | 84 | | | 94 | 16:30 | 385 | 200 | | | 585 |
| 04:45 | 16 | 36 | 139 | 308 | 155 | 16:45 | 423 | 1585 | 204 | 779 | 627 |
| 05:00 | 9 | 169 | | | 178 | 17:00 | 371 | 164 | | | 535 |
| 05:15 | 26 | 220 | | | 246 | 17:15 | 433 | 202 | | | 635 |
| 05:30 | 14 | 356 | | | 370 | 17:30 | 475 | 171 | | | 646 |
| 05:45 | 24 | 73 | 397 | 1142 | 421 | 17:45 | 430 | 1709 | 214 | 751 | 644 |
| 06:00 | 42 | 339 | | | 381 | 18:00 | 389 | 211 | | | 600 |
| 06:15 | 53 | 346 | | | 399 | 18:15 | 410 | 211 | | | 621 |
| 06:30 | 57 | 431 | | | 488 | 18:30 | 324 | 124 | | | 448 |
| 06:45 | 131 | 283 | 508 | 1624 | 639 | 18:45 | 321 | 1444 | 115 | 661 | 436 |
| 07:00 | 164 | 416 | | | 580 | 19:00 | 289 | 136 | | | 425 |
| 07:15 | 243 | 460 | | | 703 | 19:15 | 256 | 125 | | | 381 |
| 07:30 | 281 | 670 | | | 951 | 19:30 | 298 | 110 | | | 408 |
| 07:45 | 249 | 937 | 609 | 2155 | 858 | 19:45 | 234 | 1077 | 99 | 470 | 333 |
| 08:00 | 171 | 434 | | | 605 | 20:00 | 224 | 89 | | | 313 |
| 08:15 | 96 | 478 | | | 574 | 20:15 | 207 | 76 | | | 283 |
| 08:30 | 127 | 323 | | | 450 | 20:30 | 201 | 68 | | | 269 |
| 08:45 | 117 | 511 | 331 | 1566 | 448 | 20:45 | 125 | 757 | 74 | 307 | 199 |
| 09:00 | 129 | 258 | | | 387 | 21:00 | 173 | 77 | | | 250 |
| 09:15 | 84 | 254 | | | 338 | 21:15 | 146 | 66 | | | 212 |
| 09:30 | 98 | 235 | | | 333 | 21:30 | 116 | 50 | | | 166 |
| 09:45 | 99 | 410 | 226 | 973 | 325 | 21:45 | 97 | 532 | 44 | 237 | 141 |
| 10:00 | 127 | 182 | | | 309 | 22:00 | 93 | 32 | | | 125 |
| 10:15 | 94 | 185 | | | 279 | 22:15 | 96 | 37 | | | 133 |
| 10:30 | 99 | 167 | | | 266 | 22:30 | 76 | 33 | | | 109 |
| 10:45 | 115 | 435 | 162 | 696 | 277 | 22:45 | 67 | 332 | 22 | 124 | 89 |
| 11:00 | 120 | 165 | | | 285 | 23:00 | 77 | 19 | | | 96 |
| 11:15 | 131 | 179 | | | 310 | 23:15 | 70 | 21 | | | 91 |
| 11:30 | 162 | 163 | | | 325 | 23:30 | 44 | 17 | | | 61 |
| 11:45 | 167 | 580 | 180 | 687 | 347 | 23:45 | 38 | 229 | 9 | 66 | 47 |
| TOTALS | 3541 | 9280 | | | 12821 | TOTALS | 11729 | 6741 | | | 18470 |
| SPLIT % | 27.6% | 72.4% | | | 41.0% | SPLIT % | 63.5% | 36.5% | | | 59.0% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total |
|-----------------|-------|-------|-------|-------|--------|-----------------|-------|-------|--------|
| | | | | | 15,270 | 16,021 | 0 | 0 | 31,291 |
| AM Peak Hour | 07:15 | 07:30 | | | 07:15 | PM Peak Hour | 17:15 | 14:00 | 17:15 |
| AM Pk Volume | 944 | 2191 | | | 3117 | PM Pk Volume | 1727 | 984 | 2525 |
| Pk Hr Factor | 0.840 | 0.818 | | | 0.819 | Pk Hr Factor | 0.909 | 0.794 | 0.977 |
| 7 - 9 Volume | 1448 | 3721 | 0 | 0 | 5169 | 4 - 6 Volume | 3294 | 1530 | 0 |
| 7 - 9 Peak Hour | 07:15 | 07:30 | | | 07:15 | 4 - 6 Peak Hour | 17:00 | 16:00 | 17:00 |
| 7 - 9 Pk Volume | 944 | 2191 | 0 | 0 | 3117 | 4 - 6 Pk Volume | 1709 | 779 | 0 |
| Pk Hr Factor | 0.840 | 0.818 | 0.000 | 0.000 | 0.819 | Pk Hr Factor | 0.899 | 0.955 | 0.000 |

VOLUME

The Old Rd N/O I-5 SB Ramps

Day: Thursday
Date: 1/29/2015City: Valencia
Project #: CA15_5025_077

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|-------|-------|-----|-----|-------|----------------|-------|-------|--------|-----|-------|
| | | | | | 7,134 | 7,064 | 0 | 0 | 14,198 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | 20 | 4 | | | 24 | 12:00 | 93 | 70 | | | 163 |
| 00:15 | 13 | 3 | | | 16 | 12:15 | 87 | 80 | | | 167 |
| 00:30 | 11 | 3 | | | 14 | 12:30 | 90 | 94 | | | 184 |
| 00:45 | 9 | 53 | 6 | 16 | 15 | 12:45 | 107 | 377 | 90 | 334 | 197 |
| 01:00 | 19 | 3 | | | 22 | 13:00 | 98 | 77 | | | 175 |
| 01:15 | 6 | 7 | | | 13 | 13:15 | 97 | 87 | | | 184 |
| 01:30 | 7 | 3 | | | 10 | 13:30 | 93 | 73 | | | 166 |
| 01:45 | 5 | 37 | 3 | 16 | 8 | 13:45 | 107 | 395 | 81 | 318 | 188 |
| 02:00 | 9 | 5 | | | 14 | 14:00 | 129 | 82 | | | 211 |
| 02:15 | 5 | 4 | | | 9 | 14:15 | 145 | 96 | | | 241 |
| 02:30 | 5 | 1 | | | 6 | 14:30 | 105 | 150 | | | 255 |
| 02:45 | 7 | 26 | 2 | 12 | 9 | 14:45 | 135 | 514 | 112 | 440 | 247 |
| 03:00 | 3 | 1 | | | 4 | 15:00 | 210 | 104 | | | 314 |
| 03:15 | 5 | 6 | | | 11 | 15:15 | 220 | 149 | | | 369 |
| 03:30 | 2 | 9 | | | 11 | 15:30 | 159 | 216 | | | 375 |
| 03:45 | 7 | 17 | 9 | 25 | 16 | 15:45 | 151 | 740 | 136 | 605 | 287 |
| 04:00 | 2 | 15 | | | 17 | 16:00 | 151 | 98 | | | 249 |
| 04:15 | 6 | 23 | | | 29 | 16:15 | 172 | 97 | | | 269 |
| 04:30 | 4 | 18 | | | 22 | 16:30 | 163 | 108 | | | 271 |
| 04:45 | 4 | 16 | 48 | 104 | 52 | 16:45 | 150 | 636 | 101 | 404 | 251 |
| 05:00 | 11 | 50 | | | 61 | 17:00 | 163 | 99 | | | 262 |
| 05:15 | 4 | 64 | | | 68 | 17:15 | 165 | 108 | | | 273 |
| 05:30 | 12 | 91 | | | 103 | 17:30 | 161 | 110 | | | 271 |
| 05:45 | 19 | 46 | 98 | 303 | 117 | 17:45 | 174 | 663 | 118 | 435 | 292 |
| 06:00 | 15 | 79 | | | 94 | 18:00 | 203 | 94 | | | 297 |
| 06:15 | 22 | 107 | | | 129 | 18:15 | 153 | 95 | | | 248 |
| 06:30 | 30 | 158 | | | 188 | 18:30 | 160 | 84 | | | 244 |
| 06:45 | 33 | 100 | 167 | 511 | 200 | 18:45 | 127 | 643 | 68 | 341 | 195 |
| 07:00 | 60 | 156 | | | 216 | 19:00 | 130 | 70 | | | 200 |
| 07:15 | 63 | 169 | | | 232 | 19:15 | 131 | 69 | | | 200 |
| 07:30 | 113 | 232 | | | 345 | 19:30 | 114 | 50 | | | 164 |
| 07:45 | 151 | 387 | 242 | 799 | 393 | 19:45 | 92 | 467 | 54 | 243 | 146 |
| 08:00 | 151 | 208 | | | 359 | 20:00 | 104 | 48 | | | 152 |
| 08:15 | 97 | 204 | | | 301 | 20:15 | 91 | 48 | | | 139 |
| 08:30 | 60 | 162 | | | 222 | 20:30 | 82 | 32 | | | 114 |
| 08:45 | 74 | 382 | 138 | 712 | 212 | 20:45 | 88 | 365 | 47 | 175 | 135 |
| 09:00 | 60 | 83 | | | 143 | 21:00 | 78 | 34 | | | 112 |
| 09:15 | 46 | 100 | | | 146 | 21:15 | 80 | 20 | | | 100 |
| 09:30 | 40 | 99 | | | 139 | 21:30 | 67 | 22 | | | 89 |
| 09:45 | 56 | 202 | 70 | 352 | 126 | 21:45 | 52 | 277 | 27 | 103 | 79 |
| 10:00 | 61 | 96 | | | 157 | 22:00 | 40 | 22 | | | 62 |
| 10:15 | 45 | 85 | | | 130 | 22:15 | 38 | 16 | | | 54 |
| 10:30 | 59 | 84 | | | 143 | 22:30 | 35 | 19 | | | 54 |
| 10:45 | 59 | 224 | 87 | 352 | 146 | 22:45 | 23 | 136 | 15 | 72 | 38 |
| 11:00 | 62 | 67 | | | 129 | 23:00 | 34 | 7 | | | 41 |
| 11:15 | 82 | 88 | | | 170 | 23:15 | 25 | 20 | | | 45 |
| 11:30 | 97 | 102 | | | 199 | 23:30 | 24 | 10 | | | 34 |
| 11:45 | 83 | 324 | 88 | 345 | 171 | 23:45 | 24 | 107 | 10 | 47 | 34 |
| TOTALS | 1814 | 3547 | | | 5361 | TOTALS | 5320 | 3517 | | | 8837 |
| SPLIT % | 33.8% | 66.2% | | | 37.8% | SPLIT % | 60.2% | 39.8% | | | 62.2% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total |
|-----------------|-------|-------|-------|-------|-----------------|-------|-------|-------|--------|
| | | | | | 7,134 | 7,064 | 0 | 0 | 14,198 |
| AM Peak Hour | 07:30 | 07:30 | | 07:30 | PM Peak Hour | 15:00 | 15:00 | | 15:00 |
| AM Pk Volume | 512 | 886 | | 1398 | PM Pk Volume | 740 | 605 | | 1345 |
| Pk Hr Factor | 0.848 | 0.915 | | 0.889 | Pk Hr Factor | 0.841 | 0.700 | | 0.897 |
| 7 - 9 Volume | 769 | 1511 | 0 | 2280 | 4 - 6 Volume | 1299 | 839 | 0 | 2138 |
| 7 - 9 Peak Hour | 07:30 | 07:30 | | 07:30 | 4 - 6 Peak Hour | 17:00 | 17:00 | | 17:00 |
| 7 - 9 Pk Volume | 512 | 886 | 0 | 1398 | 4 - 6 Pk Volume | 663 | 435 | 0 | 1098 |
| Pk Hr Factor | 0.848 | 0.915 | 0.000 | 0.889 | Pk Hr Factor | 0.953 | 0.922 | 0.000 | 0.940 |

VOLUME

Hasley Canyon Rd W/O Commerce Center Dr

Day: Tuesday
Date: 2/3/2015

City: Valencia
Project #: CA15_5025_078

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | | | | |
|----------------|----|----|-------|-------|-------|----------------|-------|-------|-------|-------|-------|-----|-----|-----|
| | | | | | 0 | 0 | 3,761 | 3,573 | 7,334 | | | | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL | | | |
| 00:00 | | | 7 | 7 | 14 | 12:00 | | | 68 | 48 | 116 | | | |
| 00:15 | | | 1 | 13 | 14 | 12:15 | | | 63 | 48 | 111 | | | |
| 00:30 | | | 2 | 7 | 9 | 12:30 | | | 63 | 56 | 119 | | | |
| 00:45 | | | 4 | 14 | 6 | 12:45 | | | 45 | 239 | 51 | 203 | 96 | 442 |
| 01:00 | | | 1 | 5 | 6 | 13:00 | | | 57 | 46 | 103 | | | |
| 01:15 | | | 2 | 2 | 4 | 13:15 | | | 53 | 52 | 105 | | | |
| 01:30 | | | 3 | 0 | 3 | 13:30 | | | 53 | 46 | 99 | | | |
| 01:45 | | | 0 | 6 | 1 | 13:45 | | | 58 | 221 | 46 | 190 | 104 | 411 |
| 02:00 | | | 1 | 3 | 4 | 14:00 | | | 51 | 33 | 84 | | | |
| 02:15 | | | 2 | 5 | 7 | 14:15 | | | 61 | 52 | 113 | | | |
| 02:30 | | | 1 | 2 | 3 | 14:30 | | | 65 | 73 | 138 | | | |
| 02:45 | | | 4 | 8 | 1 | 14:45 | | | 55 | 232 | 80 | 238 | 135 | 470 |
| 03:00 | | | 3 | 0 | 3 | 15:00 | | | 75 | 71 | 146 | | | |
| 03:15 | | | 3 | 2 | 5 | 15:15 | | | 56 | 88 | 144 | | | |
| 03:30 | | | 2 | 0 | 2 | 15:30 | | | 52 | 90 | 142 | | | |
| 03:45 | | | 7 | 15 | 3 | 15:45 | | | 70 | 253 | 96 | 345 | 166 | 598 |
| 04:00 | | | 9 | 7 | 16 | 16:00 | | | 56 | 84 | 140 | | | |
| 04:15 | | | 11 | 5 | 16 | 16:15 | | | 56 | 70 | 126 | | | |
| 04:30 | | | 22 | 3 | 25 | 16:30 | | | 79 | 93 | 172 | | | |
| 04:45 | | | 25 | 67 | 0 | 16:45 | | | 63 | 254 | 81 | 328 | 144 | 582 |
| 05:00 | | | 15 | 5 | 20 | 17:00 | | | 76 | 76 | 152 | | | |
| 05:15 | | | 33 | 8 | 41 | 17:15 | | | 57 | 89 | 146 | | | |
| 05:30 | | | 53 | 9 | 62 | 17:30 | | | 68 | 111 | 179 | | | |
| 05:45 | | | 51 | 152 | 12 | 17:45 | | | 54 | 255 | 78 | 354 | 132 | 609 |
| 06:00 | | | 56 | 6 | 62 | 18:00 | | | 49 | 87 | 136 | | | |
| 06:15 | | | 61 | 13 | 74 | 18:15 | | | 35 | 91 | 126 | | | |
| 06:30 | | | 74 | 9 | 83 | 18:30 | | | 52 | 74 | 126 | | | |
| 06:45 | | | 82 | 273 | 21 | 18:45 | | | 33 | 169 | 83 | 335 | 116 | 504 |
| 07:00 | | | 71 | 30 | 101 | 19:00 | | | 26 | 53 | 79 | | | |
| 07:15 | | | 120 | 32 | 152 | 19:15 | | | 21 | 65 | 86 | | | |
| 07:30 | | | 138 | 39 | 177 | 19:30 | | | 29 | 76 | 105 | | | |
| 07:45 | | | 125 | 454 | 52 | 19:45 | | | 24 | 100 | 54 | 248 | 78 | 348 |
| 08:00 | | | 74 | 48 | 122 | 20:00 | | | 28 | 58 | 86 | | | |
| 08:15 | | | 75 | 52 | 127 | 20:15 | | | 21 | 43 | 64 | | | |
| 08:30 | | | 67 | 28 | 95 | 20:30 | | | 13 | 37 | 50 | | | |
| 08:45 | | | 62 | 278 | 29 | 20:45 | | | 14 | 76 | 45 | 183 | 59 | 259 |
| 09:00 | | | 53 | 32 | 85 | 21:00 | | | 16 | 34 | 50 | | | |
| 09:15 | | | 49 | 29 | 78 | 21:15 | | | 12 | 36 | 48 | | | |
| 09:30 | | | 46 | 27 | 73 | 21:30 | | | 12 | 30 | 42 | | | |
| 09:45 | | | 58 | 206 | 37 | 21:45 | | | 7 | 47 | 20 | 120 | 27 | 167 |
| 10:00 | | | 56 | 28 | 84 | 22:00 | | | 10 | 21 | 31 | | | |
| 10:15 | | | 49 | 26 | 75 | 22:15 | | | 3 | 31 | 34 | | | |
| 10:30 | | | 47 | 37 | 84 | 22:30 | | | 6 | 20 | 26 | | | |
| 10:45 | | | 39 | 191 | 37 | 22:45 | | | 3 | 22 | 19 | 91 | 22 | 113 |
| 11:00 | | | 43 | 35 | 78 | 23:00 | | | 2 | 12 | 14 | | | |
| 11:15 | | | 39 | 36 | 75 | 23:15 | | | 2 | 17 | 19 | | | |
| 11:30 | | | 55 | 39 | 94 | 23:30 | | | 5 | 17 | 22 | | | |
| 11:45 | | | 79 | 216 | 55 | 23:45 | | | 4 | 13 | 9 | 55 | 13 | 68 |
| TOTALS | | | 1880 | 883 | 2763 | TOTALS | | | 1881 | 2690 | 4571 | | | |
| SPLIT % | | | 68.0% | 32.0% | 37.7% | SPLIT % | | | 41.2% | 58.8% | 62.3% | | | |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|-------|
| | | | | | 0 | 0 | 3,761 | 3,573 | 7,334 | | |
| AM Peak Hour | | | 07:15 | 11:45 | 07:15 | PM Peak Hour | | | 16:30 | 17:30 | 16:45 |
| AM Pk Volume | | | 457 | 207 | 628 | PM Pk Volume | | | 275 | 367 | 621 |
| Pk Hr Factor | | | 0.828 | 0.924 | 0.887 | Pk Hr Factor | | | 0.870 | 0.827 | 0.867 |
| 7 - 9 Volume | 0 | 0 | 732 | 310 | 1042 | 4 - 6 Volume | 0 | 0 | 509 | 682 | 1191 |
| 7 - 9 Peak Hour | | | 07:15 | 07:30 | 07:15 | 4 - 6 Peak Hour | | | 16:30 | 16:45 | 16:45 |
| 7 - 9 Pk Volume | 0 | 0 | 457 | 191 | 628 | 4 - 6 Pk Volume | 0 | 0 | 275 | 357 | 621 |
| Pk Hr Factor | 0.000 | 0.000 | 0.828 | 0.918 | 0.887 | Pk Hr Factor | 0.000 | 0.000 | 0.870 | 0.804 | 0.867 |

VOLUME

Sierra Hwy S/O W Avenue D

Day: Wednesday
Date: 1/28/2015

City: Lancaster
Project #: CA15_5025_082

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|-------|-------|----|-----|-------|----------------|-------|-------|-------|-----|-------|
| | | | | | 1,961 | 1,931 | 0 | 0 | 3,892 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | 2 | 4 | | | 6 | 12:00 | 23 | 29 | | | 52 |
| 00:15 | 2 | 6 | | | 8 | 12:15 | 20 | 35 | | | 55 |
| 00:30 | 3 | 3 | | | 6 | 12:30 | 21 | 29 | | | 50 |
| 00:45 | 6 | 13 | 2 | 15 | 8 | 12:45 | 38 | 102 | 20 | 113 | 58 |
| 01:00 | 3 | 1 | | | 4 | 13:00 | 20 | 18 | | | 38 |
| 01:15 | 1 | 1 | | | 2 | 13:15 | 23 | 21 | | | 44 |
| 01:30 | 2 | 3 | | | 5 | 13:30 | 34 | 24 | | | 58 |
| 01:45 | 3 | 9 | 3 | 8 | 6 | 13:45 | 35 | 112 | 32 | 95 | 67 |
| 02:00 | 0 | 1 | | | 1 | 14:00 | 32 | 54 | | | 86 |
| 02:15 | 0 | 1 | | | 1 | 14:15 | 24 | 31 | | | 55 |
| 02:30 | 6 | 2 | | | 8 | 14:30 | 30 | 39 | | | 69 |
| 02:45 | 0 | 6 | 4 | 8 | 4 | 14:45 | 46 | 132 | 53 | 177 | 99 |
| 03:00 | 0 | 0 | | | 0 | 15:00 | 30 | 44 | | | 74 |
| 03:15 | 4 | 5 | | | 9 | 15:15 | 51 | 44 | | | 95 |
| 03:30 | 1 | 7 | | | 8 | 15:30 | 37 | 41 | | | 78 |
| 03:45 | 2 | 7 | 6 | 18 | 8 | 15:45 | 43 | 161 | 42 | 171 | 85 |
| 04:00 | 6 | 5 | | | 11 | 16:00 | 48 | 47 | | | 95 |
| 04:15 | 3 | 6 | | | 9 | 16:15 | 35 | 38 | | | 73 |
| 04:30 | 8 | 9 | | | 17 | 16:30 | 53 | 45 | | | 98 |
| 04:45 | 13 | 30 | 9 | 29 | 22 | 16:45 | 52 | 188 | 46 | 176 | 98 |
| 05:00 | 11 | 16 | | | 27 | 17:00 | 47 | 33 | | | 80 |
| 05:15 | 13 | 17 | | | 30 | 17:15 | 49 | 35 | | | 84 |
| 05:30 | 19 | 13 | | | 32 | 17:30 | 32 | 50 | | | 82 |
| 05:45 | 15 | 58 | 19 | 65 | 34 | 17:45 | 27 | 155 | 36 | 154 | 63 |
| 06:00 | 20 | 17 | | | 37 | 18:00 | 36 | 40 | | | 76 |
| 06:15 | 28 | 13 | | | 41 | 18:15 | 34 | 15 | | | 49 |
| 06:30 | 18 | 24 | | | 42 | 18:30 | 21 | 20 | | | 41 |
| 06:45 | 18 | 84 | 18 | 72 | 36 | 18:45 | 25 | 116 | 28 | 103 | 53 |
| 07:00 | 19 | 19 | | | 38 | 19:00 | 21 | 13 | | | 34 |
| 07:15 | 24 | 23 | | | 47 | 19:15 | 15 | 15 | | | 30 |
| 07:30 | 32 | 34 | | | 66 | 19:30 | 18 | 12 | | | 30 |
| 07:45 | 22 | 97 | 32 | 108 | 54 | 19:45 | 14 | 68 | 12 | 52 | 26 |
| 08:00 | 20 | 34 | | | 54 | 20:00 | 18 | 8 | | | 26 |
| 08:15 | 18 | 25 | | | 43 | 20:15 | 19 | 14 | | | 33 |
| 08:30 | 19 | 40 | | | 59 | 20:30 | 17 | 10 | | | 27 |
| 08:45 | 27 | 84 | 23 | 122 | 50 | 20:45 | 15 | 69 | 9 | 41 | 24 |
| 09:00 | 20 | 27 | | | 47 | 21:00 | 24 | 11 | | | 35 |
| 09:15 | 26 | 23 | | | 49 | 21:15 | 11 | 11 | | | 22 |
| 09:30 | 26 | 28 | | | 54 | 21:30 | 27 | 11 | | | 38 |
| 09:45 | 27 | 99 | 13 | 91 | 40 | 21:45 | 13 | 75 | 20 | 53 | 33 |
| 10:00 | 22 | 21 | | | 43 | 22:00 | 14 | 11 | | | 25 |
| 10:15 | 21 | 22 | | | 43 | 22:15 | 14 | 6 | | | 20 |
| 10:30 | 31 | 20 | | | 51 | 22:30 | 9 | 5 | | | 14 |
| 10:45 | 27 | 101 | 28 | 91 | 55 | 22:45 | 18 | 55 | 9 | 31 | 27 |
| 11:00 | 21 | 26 | | | 47 | 23:00 | 10 | 6 | | | 16 |
| 11:15 | 34 | 26 | | | 60 | 23:15 | 8 | 5 | | | 13 |
| 11:30 | 26 | 36 | | | 62 | 23:30 | 16 | 0 | | | 16 |
| 11:45 | 21 | 102 | 29 | 117 | 50 | 23:45 | 4 | 38 | 10 | 21 | 14 |
| TOTALS | 690 | 744 | | | 1434 | TOTALS | 1271 | 1187 | | | 2458 |
| SPLIT % | 48.1% | 51.9% | | | 36.8% | SPLIT % | 51.7% | 48.3% | | | 63.2% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|
| | | | | | 1,961 | 1,931 | 0 | 0 | 3,892 |
| AM Peak Hour | 10:30 | 07:45 | | | 10:45 | PM Peak Hour | 16:30 | 14:45 | 16:00 |
| AM Pk Volume | 113 | 131 | | | 224 | PM Pk Volume | 201 | 182 | 364 |
| Pk Hr Factor | 0.831 | 0.819 | | | 0.903 | Pk Hr Factor | 0.948 | 0.858 | 0.929 |
| 7 - 9 Volume | 181 | 230 | 0 | 0 | 411 | 4 - 6 Volume | 343 | 330 | 0 |
| 7 - 9 Peak Hour | 07:15 | 07:45 | | | 07:15 | 4 - 6 Peak Hour | 16:30 | 16:00 | 16:00 |
| 7 - 9 Pk Volume | 98 | 131 | 0 | 0 | 221 | 4 - 6 Pk Volume | 201 | 176 | 0 |
| Pk Hr Factor | 0.766 | 0.819 | 0.000 | 0.000 | 0.837 | Pk Hr Factor | 0.948 | 0.936 | 0.000 |

VOLUME

Sierra Hwy S/O W Avenue G

Day: Wednesday
Date: 1/28/2015

City: Lancaster
Project #: CA15_5025_083

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|-------|-------|----|-----|-------|----------------|-------|-------|-------|-----|-------|
| | | | | | 1,424 | 1,527 | 0 | 0 | 2,951 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | 2 | 4 | | | 6 | 12:00 | 13 | 20 | | | 33 |
| 00:15 | 2 | 2 | | | 4 | 12:15 | 20 | 30 | | | 50 |
| 00:30 | 2 | 3 | | | 5 | 12:30 | 22 | 31 | | | 53 |
| 00:45 | 4 | 10 | 1 | 10 | 25 | 12:45 | 13 | 68 | 21 | 102 | 204 |
| 01:00 | 1 | 2 | | | 3 | 13:00 | 28 | 24 | | | 52 |
| 01:15 | 2 | 1 | | | 3 | 13:15 | 20 | 17 | | | 37 |
| 01:30 | 1 | 0 | | | 1 | 13:30 | 20 | 19 | | | 39 |
| 01:45 | 1 | 5 | 1 | 4 | 11 | 13:45 | 28 | 96 | 30 | 90 | 244 |
| 02:00 | 0 | 3 | | | 3 | 14:00 | 29 | 31 | | | 60 |
| 02:15 | 4 | 1 | | | 5 | 14:15 | 20 | 29 | | | 49 |
| 02:30 | 0 | 1 | | | 1 | 14:30 | 34 | 38 | | | 72 |
| 02:45 | 2 | 6 | 0 | 5 | 13 | 14:45 | 22 | 105 | 27 | 125 | 279 |
| 03:00 | 0 | 1 | | | 1 | 15:00 | 26 | 26 | | | 52 |
| 03:15 | 3 | 0 | | | 3 | 15:15 | 32 | 38 | | | 70 |
| 03:30 | 4 | 1 | | | 5 | 15:30 | 32 | 33 | | | 65 |
| 03:45 | 0 | 7 | 5 | 7 | 19 | 15:45 | 27 | 117 | 40 | 137 | 221 |
| 04:00 | 3 | 1 | | | 4 | 16:00 | 30 | 32 | | | 62 |
| 04:15 | 6 | 4 | | | 10 | 16:15 | 26 | 36 | | | 62 |
| 04:30 | 4 | 7 | | | 11 | 16:30 | 31 | 29 | | | 60 |
| 04:45 | 6 | 19 | 4 | 16 | 45 | 16:45 | 32 | 119 | 30 | 127 | 208 |
| 05:00 | 11 | 6 | | | 17 | 17:00 | 41 | 40 | | | 81 |
| 05:15 | 8 | 4 | | | 12 | 17:15 | 29 | 32 | | | 61 |
| 05:30 | 12 | 13 | | | 25 | 17:30 | 27 | 42 | | | 69 |
| 05:45 | 18 | 49 | 6 | 29 | 106 | 17:45 | 22 | 119 | 19 | 133 | 283 |
| 06:00 | 13 | 13 | | | 26 | 18:00 | 35 | 26 | | | 61 |
| 06:15 | 17 | 14 | | | 31 | 18:15 | 21 | 16 | | | 37 |
| 06:30 | 12 | 18 | | | 30 | 18:30 | 15 | 10 | | | 25 |
| 06:45 | 17 | 59 | 17 | 62 | 155 | 18:45 | 19 | 90 | 14 | 66 | 189 |
| 07:00 | 16 | 12 | | | 28 | 19:00 | 11 | 13 | | | 24 |
| 07:15 | 16 | 21 | | | 37 | 19:15 | 15 | 8 | | | 23 |
| 07:30 | 25 | 30 | | | 55 | 19:30 | 16 | 10 | | | 26 |
| 07:45 | 12 | 69 | 37 | 100 | 218 | 19:45 | 11 | 53 | 10 | 41 | 115 |
| 08:00 | 18 | 25 | | | 43 | 20:00 | 17 | 5 | | | 22 |
| 08:15 | 12 | 24 | | | 36 | 20:15 | 7 | 8 | | | 15 |
| 08:30 | 15 | 35 | | | 50 | 20:30 | 11 | 9 | | | 20 |
| 08:45 | 15 | 60 | 29 | 113 | 217 | 20:45 | 8 | 43 | 2 | 24 | 77 |
| 09:00 | 24 | 22 | | | 46 | 21:00 | 14 | 10 | | | 24 |
| 09:15 | 22 | 20 | | | 42 | 21:15 | 13 | 6 | | | 19 |
| 09:30 | 17 | 22 | | | 39 | 21:30 | 12 | 2 | | | 14 |
| 09:45 | 13 | 76 | 18 | 82 | 189 | 21:45 | 9 | 48 | 11 | 29 | 90 |
| 10:00 | 16 | 20 | | | 36 | 22:00 | 9 | 5 | | | 14 |
| 10:15 | 18 | 24 | | | 42 | 22:15 | 9 | 4 | | | 13 |
| 10:30 | 20 | 25 | | | 45 | 22:30 | 4 | 5 | | | 9 |
| 10:45 | 20 | 74 | 23 | 92 | 219 | 22:45 | 6 | 28 | 2 | 16 | 52 |
| 11:00 | 27 | 23 | | | 50 | 23:00 | 4 | 6 | | | 10 |
| 11:15 | 22 | 26 | | | 48 | 23:15 | 5 | 6 | | | 11 |
| 11:30 | 16 | 30 | | | 46 | 23:30 | 9 | 1 | | | 10 |
| 11:45 | 21 | 86 | 24 | 103 | 234 | 23:45 | 0 | 18 | 1 | 14 | 32 |
| TOTALS | 520 | 623 | | | 1143 | TOTALS | 904 | 904 | | | 1808 |
| SPLIT % | 45.5% | 54.5% | | | 38.7% | SPLIT % | 50.0% | 50.0% | | | 61.3% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | |
|-----------------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|
| | | | | | 1,424 | 1,527 | 0 | 0 | 2,951 | |
| AM Peak Hour | 10:30 | 07:45 | | | 11:00 | PM Peak Hour | 16:30 | 16:45 | 16:45 | |
| AM Pk Volume | 89 | 121 | | | 189 | PM Pk Volume | 133 | 144 | 273 | |
| Pk Hr Factor | 0.824 | 0.818 | | | 0.945 | Pk Hr Factor | 0.811 | 0.857 | 0.843 | |
| 7 - 9 Volume | 129 | 213 | 0 | 0 | 342 | 4 - 6 Volume | 238 | 260 | 0 | 498 |
| 7 - 9 Peak Hour | 07:15 | 07:45 | | | 07:15 | 4 - 6 Peak Hour | 16:30 | 16:45 | | 16:45 |
| 7 - 9 Pk Volume | 71 | 121 | 0 | 0 | 184 | 4 - 6 Pk Volume | 133 | 144 | 0 | 273 |
| Pk Hr Factor | 0.710 | 0.818 | 0.000 | 0.000 | 0.836 | Pk Hr Factor | 0.811 | 0.857 | 0.000 | 0.843 |

VOLUME

106th St E S/O Fort Tejon Rd

Day: Wednesday
Date: 1/28/2015

City: Pearblossom
Project #: CA15_5025_084

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total | | |
|----------------|--------------|--------------|----|----|--------------|----------------|--------------|--------------|-------|----|--------------|
| | | | | | 359 | 344 | 0 | 0 | 703 | | |
| AM Period | NB | SB | EB | WB | TOTAL | PM Period | NB | SB | EB | WB | TOTAL |
| 00:00 | 1 | 1 | | | 2 | 12:00 | 7 | 6 | | | 13 |
| 00:15 | 0 | 1 | | | 1 | 12:15 | 7 | 8 | | | 15 |
| 00:30 | 1 | 0 | | | 1 | 12:30 | 3 | 8 | | | 11 |
| 00:45 | 0 | 2 | 1 | 3 | 1 | 12:45 | 6 | 23 | 5 | 27 | 11 |
| 01:00 | 3 | 1 | | | 4 | 13:00 | 4 | 2 | | | 6 |
| 01:15 | 0 | 2 | | | 2 | 13:15 | 4 | 4 | | | 8 |
| 01:30 | 0 | 0 | | | 0 | 13:30 | 7 | 7 | | | 14 |
| 01:45 | 1 | 4 | 0 | 3 | 1 | 13:45 | 6 | 21 | 5 | 18 | 11 |
| 02:00 | 0 | 0 | | | 0 | 14:00 | 4 | 6 | | | 10 |
| 02:15 | 0 | 0 | | | 0 | 14:15 | 8 | 6 | | | 14 |
| 02:30 | 0 | 0 | | | 0 | 14:30 | 6 | 4 | | | 10 |
| 02:45 | 1 | 1 | 0 | | 1 | 14:45 | 5 | 23 | 12 | 28 | 17 |
| 03:00 | 0 | 0 | | | 0 | 15:00 | 2 | 14 | | | 16 |
| 03:15 | 1 | 1 | | | 2 | 15:15 | 4 | 4 | | | 8 |
| 03:30 | 0 | 0 | | | 0 | 15:30 | 7 | 8 | | | 15 |
| 03:45 | 0 | 1 | 1 | 2 | 1 | 15:45 | 1 | 14 | 9 | 35 | 10 |
| 04:00 | 4 | 0 | | | 4 | 16:00 | 3 | 6 | | | 9 |
| 04:15 | 1 | 0 | | | 1 | 16:15 | 6 | 10 | | | 16 |
| 04:30 | 3 | 0 | | | 3 | 16:30 | 2 | 12 | | | 14 |
| 04:45 | 5 | 13 | 0 | | 5 | 16:45 | 6 | 17 | 10 | 38 | 16 |
| 05:00 | 2 | 0 | | | 2 | 17:00 | 4 | 10 | | | 14 |
| 05:15 | 6 | 0 | | | 6 | 17:15 | 2 | 9 | | | 11 |
| 05:30 | 3 | 1 | | | 4 | 17:30 | 5 | 10 | | | 15 |
| 05:45 | 7 | 18 | 1 | 2 | 8 | 17:45 | 5 | 16 | 12 | 41 | 17 |
| 06:00 | 5 | 1 | | | 6 | 18:00 | 5 | 4 | | | 9 |
| 06:15 | 4 | 0 | | | 4 | 18:15 | 4 | 8 | | | 12 |
| 06:30 | 2 | 1 | | | 3 | 18:30 | 4 | 7 | | | 11 |
| 06:45 | 17 | 28 | 0 | 2 | 17 | 18:45 | 5 | 18 | 9 | 28 | 14 |
| 07:00 | 6 | 0 | | | 6 | 19:00 | 3 | 4 | | | 7 |
| 07:15 | 11 | 2 | | | 13 | 19:15 | 6 | 7 | | | 13 |
| 07:30 | 8 | 3 | | | 11 | 19:30 | 1 | 5 | | | 6 |
| 07:45 | 8 | 33 | 3 | 8 | 11 | 19:45 | 1 | 11 | 4 | 20 | 5 |
| 08:00 | 4 | 2 | | | 6 | 20:00 | 1 | 6 | | | 7 |
| 08:15 | 9 | 1 | | | 10 | 20:15 | 2 | 1 | | | 3 |
| 08:30 | 8 | 3 | | | 11 | 20:30 | 0 | 4 | | | 4 |
| 08:45 | 9 | 30 | 2 | 8 | 11 | 20:45 | 0 | 3 | 5 | 16 | 5 |
| 09:00 | 7 | 3 | | | 10 | 21:00 | 0 | 8 | | | 8 |
| 09:15 | 3 | 5 | | | 8 | 21:15 | 0 | 2 | | | 2 |
| 09:30 | 10 | 1 | | | 11 | 21:30 | 1 | 2 | | | 3 |
| 09:45 | 8 | 28 | 3 | 12 | 11 | 21:45 | 0 | 1 | 2 | 14 | 2 |
| 10:00 | 10 | 4 | | | 14 | 22:00 | 0 | 2 | | | 2 |
| 10:15 | 7 | 6 | | | 13 | 22:15 | 0 | 1 | | | 1 |
| 10:30 | 5 | 4 | | | 9 | 22:30 | 0 | 2 | | | 2 |
| 10:45 | 7 | 29 | 3 | 17 | 10 | 22:45 | 0 | 0 | 5 | | 0 |
| 11:00 | 4 | 2 | | | 6 | 23:00 | 0 | 0 | | | 0 |
| 11:15 | 11 | 3 | | | 14 | 23:15 | 0 | 1 | | | 1 |
| 11:30 | 5 | 3 | | | 8 | 23:30 | 0 | 3 | | | 3 |
| 11:45 | 5 | 25 | 5 | 13 | 10 | 23:45 | 0 | 0 | 4 | | 0 |
| TOTALS | 212 | 70 | | | 282 | TOTALS | 147 | 274 | | | 421 |
| SPLIT % | 75.2% | 24.8% | | | 40.1% | SPLIT % | 34.9% | 65.1% | | | 59.9% |

| DAILY TOTALS | | | | | NB | SB | EB | WB | Total |
|-----------------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|
| | | | | | 359 | 344 | 0 | 0 | 703 |
| AM Peak Hour | 06:45 | 11:45 | | 09:30 | PM Peak Hour | 13:30 | 16:15 | | 16:15 |
| AM Pk Volume | 42 | 27 | | 49 | PM Pk Volume | 25 | 42 | | 60 |
| Pk Hr Factor | 0.618 | 0.844 | | 0.875 | Pk Hr Factor | 0.781 | 0.875 | | 0.938 |
| 7 - 9 Volume | 63 | 16 | 0 | 79 | 4 - 6 Volume | 33 | 79 | 0 | 112 |
| 7 - 9 Peak Hour | 07:00 | 07:15 | | 07:00 | 4 - 6 Peak Hour | 16:15 | 16:15 | | 16:15 |
| 7 - 9 Pk Volume | 33 | 10 | 0 | 41 | 4 - 6 Pk Volume | 18 | 42 | 0 | 60 |
| Pk Hr Factor | 0.750 | 0.833 | 0.000 | 0.788 | Pk Hr Factor | 0.750 | 0.875 | 0.000 | 0.938 |

QUALITY COUNTS REPORT

```

Type:                Volume Data
Location:            W Avenue A e/o 60th St W
Specific Location:   0 ft from
City/State:         LA County
QCJobNo:           13184901
Direction:         EB
Comments:          Site 25
    
```

| Start Time | 28-Jan-15 | Start Time | 28-Jan-15 | ADT | 914 |
|------------|-----------|------------|-----------|---------|---------|
| 12:00 AM | 2 | 12:00 PM | 18 | AM Peak | 7:30 AM |
| 12:15 AM | 0 | 12:15 PM | 20 | Volume | 28 |
| 12:30 AM | 0 | 12:30 PM | 11 | | |
| 12:45 AM | 0 | 12:45 PM | 6 | PM Peak | 3:45 PM |
| 1:00 AM | 2 | 1:00 PM | 14 | Volume | 23 |
| 1:15 AM | 2 | 1:15 PM | 18 | | |
| 1:30 AM | 1 | 1:30 PM | 12 | | |
| 1:45 AM | 0 | 1:45 PM | 10 | | |
| 2:00 AM | 3 | 2:00 PM | 12 | | |
| 2:15 AM | 3 | 2:15 PM | 10 | | |
| 2:30 AM | 1 | 2:30 PM | 10 | | |
| 2:45 AM | 1 | 2:45 PM | 12 | | |
| 3:00 AM | 1 | 3:00 PM | 10 | | |
| 3:15 AM | 2 | 3:15 PM | 16 | | |
| 3:30 AM | 5 | 3:30 PM | 18 | | |
| 3:45 AM | 4 | 3:45 PM | 23 | | |
| 4:00 AM | 5 | 4:00 PM | 16 | | |
| 4:15 AM | 2 | 4:15 PM | 17 | | |
| 4:30 AM | 7 | 4:30 PM | 18 | | |
| 4:45 AM | 5 | 4:45 PM | 9 | | |
| 5:00 AM | 8 | 5:00 PM | 10 | | |
| 5:15 AM | 7 | 5:15 PM | 21 | | |
| 5:30 AM | 17 | 5:30 PM | 22 | | |
| 5:45 AM | 18 | 5:45 PM | 12 | | |
| 6:00 AM | 20 | 6:00 PM | 4 | | |
| 6:15 AM | 20 | 6:15 PM | 11 | | |
| 6:30 AM | 23 | 6:30 PM | 8 | | |
| 6:45 AM | 22 | 6:45 PM | 10 | | |
| 7:00 AM | 21 | 7:00 PM | 5 | | |
| 7:15 AM | 16 | 7:15 PM | 6 | | |
| 7:30 AM | 28 | 7:30 PM | 6 | | |
| 7:45 AM | 23 | 7:45 PM | 4 | | |
| 8:00 AM | 11 | 8:00 PM | 3 | | |
| 8:15 AM | 15 | 8:15 PM | 2 | | |
| 8:30 AM | 19 | 8:30 PM | 6 | | |
| 8:45 AM | 16 | 8:45 PM | 5 | | |
| 9:00 AM | 16 | 9:00 PM | 6 | | |
| 9:15 AM | 25 | 9:15 PM | 5 | | |
| 9:30 AM | 14 | 9:30 PM | 1 | | |
| 9:45 AM | 9 | 9:45 PM | 1 | | |
| 10:00 AM | 6 | 10:00 PM | 3 | | |
| 10:15 AM | 7 | 10:15 PM | 3 | | |
| 10:30 AM | 14 | 10:30 PM | 3 | | |
| 10:45 AM | 10 | 10:45 PM | 3 | | |
| 11:00 AM | 10 | 11:00 PM | 0 | | |
| 11:15 AM | 10 | 11:15 PM | 3 | | |
| 11:30 AM | 9 | 11:30 PM | 0 | | |
| 11:45 AM | 7 | 11:45 PM | 4 | | |

QUALITY COUNTS REPORT

=====
 Type: Volume Data
 Location: W Avenue A e/o 60th St W
 Specific Location: 0 ft from
 City/State: LA County
 QCJobNo: 13184901
 Direction: WB
 Comments: Site 25
 =====

| Start Time | 28-Jan-15 | Start Time | 28-Jan-15 | ADT | 881 |
|------------|-----------|------------|-----------|---------|---------|
| 12:00 AM | 2 | 12:00 PM | 13 | AM Peak | 6:15 AM |
| 12:15 AM | 1 | 12:15 PM | 12 | Volume | 29 |
| 12:30 AM | 2 | 12:30 PM | 15 | | |
| 12:45 AM | 0 | 12:45 PM | 14 | PM Peak | 5:30 PM |
| 1:00 AM | 1 | 1:00 PM | 10 | Volume | 29 |
| 1:15 AM | 0 | 1:15 PM | 16 | | |
| 1:30 AM | 0 | 1:30 PM | 14 | | |
| 1:45 AM | 1 | 1:45 PM | 12 | | |
| 2:00 AM | 2 | 2:00 PM | 9 | | |
| 2:15 AM | 0 | 2:15 PM | 8 | | |
| 2:30 AM | 2 | 2:30 PM | 17 | | |
| 2:45 AM | 0 | 2:45 PM | 17 | | |
| 3:00 AM | 0 | 3:00 PM | 14 | | |
| 3:15 AM | 1 | 3:15 PM | 16 | | |
| 3:30 AM | 1 | 3:30 PM | 11 | | |
| 3:45 AM | 1 | 3:45 PM | 16 | | |
| 4:00 AM | 1 | 4:00 PM | 18 | | |
| 4:15 AM | 1 | 4:15 PM | 19 | | |
| 4:30 AM | 0 | 4:30 PM | 25 | | |
| 4:45 AM | 1 | 4:45 PM | 23 | | |
| 5:00 AM | 5 | 5:00 PM | 26 | | |
| 5:15 AM | 3 | 5:15 PM | 27 | | |
| 5:30 AM | 7 | 5:30 PM | 29 | | |
| 5:45 AM | 10 | 5:45 PM | 22 | | |
| 6:00 AM | 15 | 6:00 PM | 26 | | |
| 6:15 AM | 29 | 6:15 PM | 20 | | |
| 6:30 AM | 11 | 6:30 PM | 13 | | |
| 6:45 AM | 12 | 6:45 PM | 8 | | |
| 7:00 AM | 6 | 7:00 PM | 18 | | |
| 7:15 AM | 7 | 7:15 PM | 4 | | |
| 7:30 AM | 10 | 7:30 PM | 14 | | |
| 7:45 AM | 14 | 7:45 PM | 8 | | |
| 8:00 AM | 10 | 8:00 PM | 10 | | |
| 8:15 AM | 8 | 8:15 PM | 8 | | |
| 8:30 AM | 7 | 8:30 PM | 8 | | |
| 8:45 AM | 7 | 8:45 PM | 8 | | |
| 9:00 AM | 7 | 9:00 PM | 11 | | |
| 9:15 AM | 2 | 9:15 PM | 6 | | |
| 9:30 AM | 10 | 9:30 PM | 6 | | |
| 9:45 AM | 8 | 9:45 PM | 11 | | |
| 10:00 AM | 8 | 10:00 PM | 2 | | |
| 10:15 AM | 8 | 10:15 PM | 6 | | |
| 10:30 AM | 10 | 10:30 PM | 3 | | |
| 10:45 AM | 5 | 10:45 PM | 10 | | |
| 11:00 AM | 7 | 11:00 PM | 2 | | |
| 11:15 AM | 9 | 11:15 PM | 2 | | |
| 11:30 AM | 10 | 11:30 PM | 1 | | |
| 11:45 AM | 8 | 11:45 PM | 3 | | |

QUALITY COUNTS REPORT

=====
 Type: Volume Data
 Location: SR-138 e/o 60th St W
 Specific Location: 0 ft from
 City/State: LA County
 QCJobNo: 13184902
 Direction: EB
 Comments: Site 26
 =====

| Start Time | 28-Jan-15 | Start Time | 28-Jan-15 | ADT | 2054 |
|------------|-----------|------------|-----------|---------|---------|
| 12:00 AM | 6 | 12:00 PM | 18 | AM Peak | 8:30 AM |
| 12:15 AM | 1 | 12:15 PM | 18 | Volume | 38 |
| 12:30 AM | 2 | 12:30 PM | 24 | | |
| 12:45 AM | 2 | 12:45 PM | 30 | PM Peak | 3:15 PM |
| 1:00 AM | 4 | 1:00 PM | 18 | Volume | 66 |
| 1:15 AM | 1 | 1:15 PM | 20 | | |
| 1:30 AM | 5 | 1:30 PM | 22 | | |
| 1:45 AM | 0 | 1:45 PM | 38 | | |
| 2:00 AM | 2 | 2:00 PM | 43 | | |
| 2:15 AM | 3 | 2:15 PM | 36 | | |
| 2:30 AM | 4 | 2:30 PM | 43 | | |
| 2:45 AM | 2 | 2:45 PM | 41 | | |
| 3:00 AM | 1 | 3:00 PM | 40 | | |
| 3:15 AM | 6 | 3:15 PM | 66 | | |
| 3:30 AM | 5 | 3:30 PM | 55 | | |
| 3:45 AM | 8 | 3:45 PM | 66 | | |
| 4:00 AM | 8 | 4:00 PM | 46 | | |
| 4:15 AM | 12 | 4:15 PM | 57 | | |
| 4:30 AM | 15 | 4:30 PM | 50 | | |
| 4:45 AM | 11 | 4:45 PM | 57 | | |
| 5:00 AM | 14 | 5:00 PM | 36 | | |
| 5:15 AM | 18 | 5:15 PM | 41 | | |
| 5:30 AM | 20 | 5:30 PM | 35 | | |
| 5:45 AM | 12 | 5:45 PM | 35 | | |
| 6:00 AM | 22 | 6:00 PM | 26 | | |
| 6:15 AM | 20 | 6:15 PM | 35 | | |
| 6:30 AM | 32 | 6:30 PM | 26 | | |
| 6:45 AM | 29 | 6:45 PM | 30 | | |
| 7:00 AM | 30 | 7:00 PM | 18 | | |
| 7:15 AM | 32 | 7:15 PM | 23 | | |
| 7:30 AM | 28 | 7:30 PM | 11 | | |
| 7:45 AM | 19 | 7:45 PM | 11 | | |
| 8:00 AM | 27 | 8:00 PM | 20 | | |
| 8:15 AM | 34 | 8:15 PM | 12 | | |
| 8:30 AM | 38 | 8:30 PM | 12 | | |
| 8:45 AM | 22 | 8:45 PM | 12 | | |
| 9:00 AM | 23 | 9:00 PM | 12 | | |
| 9:15 AM | 28 | 9:15 PM | 12 | | |
| 9:30 AM | 28 | 9:30 PM | 6 | | |
| 9:45 AM | 26 | 9:45 PM | 12 | | |
| 10:00 AM | 26 | 10:00 PM | 11 | | |
| 10:15 AM | 18 | 10:15 PM | 9 | | |
| 10:30 AM | 34 | 10:30 PM | 5 | | |
| 10:45 AM | 20 | 10:45 PM | 6 | | |
| 11:00 AM | 20 | 11:00 PM | 12 | | |
| 11:15 AM | 19 | 11:15 PM | 5 | | |
| 11:30 AM | 24 | 11:30 PM | 2 | | |
| 11:45 AM | 26 | 11:45 PM | 4 | | |

QUALITY COUNTS REPORT

=====
 Type: Volume Data
 Location: SR-138 e/o 60th St W
 Specific Location: 0 ft from
 City/State: LA County
 QCJobNo: 13184902
 Direction: WB
 Comments: Site 26
 =====

| Start Time | 28-Jan-15 | Start Time | 28-Jan-15 | ADT | 2266 |
|------------|-----------|------------|-----------|---------|---------|
| 12:00 AM | 2 | 12:00 PM | 30 | AM Peak | 6:15 AM |
| 12:15 AM | 0 | 12:15 PM | 23 | Volume | 62 |
| 12:30 AM | 2 | 12:30 PM | 28 | | |
| 12:45 AM | 10 | 12:45 PM | 30 | PM Peak | 3:45 PM |
| 1:00 AM | 2 | 1:00 PM | 32 | Volume | 60 |
| 1:15 AM | 4 | 1:15 PM | 38 | | |
| 1:30 AM | 6 | 1:30 PM | 33 | | |
| 1:45 AM | 10 | 1:45 PM | 24 | | |
| 2:00 AM | 1 | 2:00 PM | 42 | | |
| 2:15 AM | 12 | 2:15 PM | 30 | | |
| 2:30 AM | 2 | 2:30 PM | 40 | | |
| 2:45 AM | 7 | 2:45 PM | 34 | | |
| 3:00 AM | 3 | 3:00 PM | 49 | | |
| 3:15 AM | 5 | 3:15 PM | 34 | | |
| 3:30 AM | 9 | 3:30 PM | 26 | | |
| 3:45 AM | 4 | 3:45 PM | 60 | | |
| 4:00 AM | 23 | 4:00 PM | 32 | | |
| 4:15 AM | 6 | 4:15 PM | 36 | | |
| 4:30 AM | 9 | 4:30 PM | 45 | | |
| 4:45 AM | 18 | 4:45 PM | 39 | | |
| 5:00 AM | 14 | 5:00 PM | 42 | | |
| 5:15 AM | 24 | 5:15 PM | 30 | | |
| 5:30 AM | 34 | 5:30 PM | 29 | | |
| 5:45 AM | 34 | 5:45 PM | 55 | | |
| 6:00 AM | 33 | 6:00 PM | 36 | | |
| 6:15 AM | 62 | 6:15 PM | 28 | | |
| 6:30 AM | 28 | 6:30 PM | 24 | | |
| 6:45 AM | 32 | 6:45 PM | 28 | | |
| 7:00 AM | 36 | 7:00 PM | 26 | | |
| 7:15 AM | 20 | 7:15 PM | 18 | | |
| 7:30 AM | 38 | 7:30 PM | 22 | | |
| 7:45 AM | 30 | 7:45 PM | 9 | | |
| 8:00 AM | 26 | 8:00 PM | 26 | | |
| 8:15 AM | 34 | 8:15 PM | 14 | | |
| 8:30 AM | 24 | 8:30 PM | 14 | | |
| 8:45 AM | 40 | 8:45 PM | 24 | | |
| 9:00 AM | 42 | 9:00 PM | 19 | | |
| 9:15 AM | 20 | 9:15 PM | 18 | | |
| 9:30 AM | 25 | 9:30 PM | 12 | | |
| 9:45 AM | 40 | 9:45 PM | 12 | | |
| 10:00 AM | 34 | 10:00 PM | 17 | | |
| 10:15 AM | 26 | 10:15 PM | 17 | | |
| 10:30 AM | 28 | 10:30 PM | 4 | | |
| 10:45 AM | 23 | 10:45 PM | 12 | | |
| 11:00 AM | 32 | 11:00 PM | 7 | | |
| 11:15 AM | 28 | 11:15 PM | 4 | | |
| 11:30 AM | 40 | 11:30 PM | 10 | | |
| 11:45 AM | 20 | 11:45 PM | 2 | | |

QUALITY COUNTS REPORT

=====
 Type: Volume Data
 Location: W Avenue G e/o 110th St W
 Specific Location: 0 ft from
 City/State: LA County
 QCJobNo: 13184905
 Direction: EB
 Comments: Site 29
 =====

| Start Time | 28-Jan-15 | Start Time | 28-Jan-15 | ADT | 84 |
|------------|-----------|------------|-----------|---------|---------|
| 12:00 AM | 0 | 12:00 PM | 0 | AM Peak | 8:30 AM |
| 12:15 AM | 0 | 12:15 PM | 2 | Volume | 3 |
| 12:30 AM | 0 | 12:30 PM | 0 | | |
| 12:45 AM | 0 | 12:45 PM | 0 | PM Peak | 5:15 PM |
| 1:00 AM | 0 | 1:00 PM | 3 | Volume | 6 |
| 1:15 AM | 0 | 1:15 PM | 0 | | |
| 1:30 AM | 0 | 1:30 PM | 5 | | |
| 1:45 AM | 0 | 1:45 PM | 2 | | |
| 2:00 AM | 1 | 2:00 PM | 0 | | |
| 2:15 AM | 0 | 2:15 PM | 4 | | |
| 2:30 AM | 0 | 2:30 PM | 3 | | |
| 2:45 AM | 0 | 2:45 PM | 2 | | |
| 3:00 AM | 0 | 3:00 PM | 2 | | |
| 3:15 AM | 0 | 3:15 PM | 4 | | |
| 3:30 AM | 0 | 3:30 PM | 2 | | |
| 3:45 AM | 0 | 3:45 PM | 0 | | |
| 4:00 AM | 0 | 4:00 PM | 2 | | |
| 4:15 AM | 0 | 4:15 PM | 1 | | |
| 4:30 AM | 0 | 4:30 PM | 2 | | |
| 4:45 AM | 1 | 4:45 PM | 3 | | |
| 5:00 AM | 0 | 5:00 PM | 4 | | |
| 5:15 AM | 0 | 5:15 PM | 6 | | |
| 5:30 AM | 1 | 5:30 PM | 2 | | |
| 5:45 AM | 1 | 5:45 PM | 2 | | |
| 6:00 AM | 0 | 6:00 PM | 2 | | |
| 6:15 AM | 0 | 6:15 PM | 1 | | |
| 6:30 AM | 1 | 6:30 PM | 2 | | |
| 6:45 AM | 2 | 6:45 PM | 1 | | |
| 7:00 AM | 2 | 7:00 PM | 1 | | |
| 7:15 AM | 1 | 7:15 PM | 0 | | |
| 7:30 AM | 1 | 7:30 PM | 0 | | |
| 7:45 AM | 2 | 7:45 PM | 1 | | |
| 8:00 AM | 0 | 8:00 PM | 0 | | |
| 8:15 AM | 0 | 8:15 PM | 0 | | |
| 8:30 AM | 3 | 8:30 PM | 0 | | |
| 8:45 AM | 1 | 8:45 PM | 1 | | |
| 9:00 AM | 0 | 9:00 PM | 0 | | |
| 9:15 AM | 0 | 9:15 PM | 0 | | |
| 9:30 AM | 0 | 9:30 PM | 0 | | |
| 9:45 AM | 1 | 9:45 PM | 0 | | |
| 10:00 AM | 0 | 10:00 PM | 0 | | |
| 10:15 AM | 0 | 10:15 PM | 0 | | |
| 10:30 AM | 2 | 10:30 PM | 0 | | |
| 10:45 AM | 0 | 10:45 PM | 0 | | |
| 11:00 AM | 0 | 11:00 PM | 1 | | |
| 11:15 AM | 0 | 11:15 PM | 0 | | |
| 11:30 AM | 0 | 11:30 PM | 1 | | |
| 11:45 AM | 1 | 11:45 PM | 1 | | |

QUALITY COUNTS REPORT

=====
 Type: Volume Data
 Location: W Avenue G e/o 110th St W
 Specific Location: 0 ft from
 City/State: LA County
 QCJobNo: 13184905
 Direction: WB
 Comments: Site 29
 =====

| Start Time | 28-Jan-15 | Start Time | 28-Jan-15 | ADT | 96 |
|------------|-----------|------------|-----------|---------|---------|
| 12:00 AM | 0 | 12:00 PM | 3 | AM Peak | 5:15 AM |
| 12:15 AM | 0 | 12:15 PM | 0 | Volume | 4 |
| 12:30 AM | 0 | 12:30 PM | 1 | | |
| 12:45 AM | 0 | 12:45 PM | 2 | PM Peak | 2:00 PM |
| 1:00 AM | 0 | 1:00 PM | 0 | Volume | 5 |
| 1:15 AM | 0 | 1:15 PM | 4 | | |
| 1:30 AM | 1 | 1:30 PM | 1 | | |
| 1:45 AM | 0 | 1:45 PM | 1 | | |
| 2:00 AM | 0 | 2:00 PM | 5 | | |
| 2:15 AM | 0 | 2:15 PM | 1 | | |
| 2:30 AM | 0 | 2:30 PM | 2 | | |
| 2:45 AM | 0 | 2:45 PM | 1 | | |
| 3:00 AM | 1 | 3:00 PM | 3 | | |
| 3:15 AM | 0 | 3:15 PM | 1 | | |
| 3:30 AM | 0 | 3:30 PM | 2 | | |
| 3:45 AM | 2 | 3:45 PM | 1 | | |
| 4:00 AM | 2 | 4:00 PM | 4 | | |
| 4:15 AM | 1 | 4:15 PM | 0 | | |
| 4:30 AM | 0 | 4:30 PM | 0 | | |
| 4:45 AM | 1 | 4:45 PM | 5 | | |
| 5:00 AM | 0 | 5:00 PM | 2 | | |
| 5:15 AM | 4 | 5:15 PM | 3 | | |
| 5:30 AM | 2 | 5:30 PM | 2 | | |
| 5:45 AM | 1 | 5:45 PM | 0 | | |
| 6:00 AM | 3 | 6:00 PM | 1 | | |
| 6:15 AM | 0 | 6:15 PM | 1 | | |
| 6:30 AM | 2 | 6:30 PM | 1 | | |
| 6:45 AM | 2 | 6:45 PM | 0 | | |
| 7:00 AM | 3 | 7:00 PM | 1 | | |
| 7:15 AM | 3 | 7:15 PM | 0 | | |
| 7:30 AM | 1 | 7:30 PM | 0 | | |
| 7:45 AM | 2 | 7:45 PM | 0 | | |
| 8:00 AM | 2 | 8:00 PM | 2 | | |
| 8:15 AM | 0 | 8:15 PM | 0 | | |
| 8:30 AM | 0 | 8:30 PM | 0 | | |
| 8:45 AM | 2 | 8:45 PM | 0 | | |
| 9:00 AM | 2 | 9:00 PM | 0 | | |
| 9:15 AM | 0 | 9:15 PM | 0 | | |
| 9:30 AM | 0 | 9:30 PM | 0 | | |
| 9:45 AM | 2 | 9:45 PM | 0 | | |
| 10:00 AM | 1 | 10:00 PM | 0 | | |
| 10:15 AM | 0 | 10:15 PM | 0 | | |
| 10:30 AM | 0 | 10:30 PM | 2 | | |
| 10:45 AM | 2 | 10:45 PM | 0 | | |
| 11:00 AM | 0 | 11:00 PM | 0 | | |
| 11:15 AM | 0 | 11:15 PM | 1 | | |
| 11:30 AM | 1 | 11:30 PM | 0 | | |
| 11:45 AM | 0 | 11:45 PM | 0 | | |

QUALITY COUNTS REPORT

=====
 Type: Volume Data
 Location: W Avenue I e/o 110th St W
 Specific Location: 0 ft from
 City/State: LA County
 QCJobNo: 13184906
 Direction: EB
 Comments: Site 30
 =====

| Start Time | 3-Feb-15 | Start Time | 3-Feb-15 | ADT | 540 |
|------------|----------|------------|----------|---------|---------|
| 12:00 AM | 1 | 12:00 PM | 7 | AM Peak | 7:15 AM |
| 12:15 AM | 1 | 12:15 PM | 4 | Volume | 20 |
| 12:30 AM | 0 | 12:30 PM | 5 | | |
| 12:45 AM | 0 | 12:45 PM | 9 | PM Peak | 3:30 PM |
| 1:00 AM | 0 | 1:00 PM | 7 | Volume | 16 |
| 1:15 AM | 1 | 1:15 PM | 5 | | |
| 1:30 AM | 2 | 1:30 PM | 8 | | |
| 1:45 AM | 2 | 1:45 PM | 14 | | |
| 2:00 AM | 0 | 2:00 PM | 14 | | |
| 2:15 AM | 0 | 2:15 PM | 10 | | |
| 2:30 AM | 0 | 2:30 PM | 12 | | |
| 2:45 AM | 0 | 2:45 PM | 12 | | |
| 3:00 AM | 1 | 3:00 PM | 8 | | |
| 3:15 AM | 0 | 3:15 PM | 10 | | |
| 3:30 AM | 0 | 3:30 PM | 16 | | |
| 3:45 AM | 1 | 3:45 PM | 15 | | |
| 4:00 AM | 1 | 4:00 PM | 8 | | |
| 4:15 AM | 0 | 4:15 PM | 4 | | |
| 4:30 AM | 0 | 4:30 PM | 10 | | |
| 4:45 AM | 0 | 4:45 PM | 14 | | |
| 5:00 AM | 1 | 5:00 PM | 12 | | |
| 5:15 AM | 2 | 5:15 PM | 12 | | |
| 5:30 AM | 4 | 5:30 PM | 12 | | |
| 5:45 AM | 4 | 5:45 PM | 8 | | |
| 6:00 AM | 4 | 6:00 PM | 8 | | |
| 6:15 AM | 5 | 6:15 PM | 6 | | |
| 6:30 AM | 9 | 6:30 PM | 9 | | |
| 6:45 AM | 12 | 6:45 PM | 8 | | |
| 7:00 AM | 9 | 7:00 PM | 2 | | |
| 7:15 AM | 20 | 7:15 PM | 1 | | |
| 7:30 AM | 15 | 7:30 PM | 2 | | |
| 7:45 AM | 14 | 7:45 PM | 4 | | |
| 8:00 AM | 7 | 8:00 PM | 0 | | |
| 8:15 AM | 9 | 8:15 PM | 2 | | |
| 8:30 AM | 14 | 8:30 PM | 0 | | |
| 8:45 AM | 8 | 8:45 PM | 5 | | |
| 9:00 AM | 9 | 9:00 PM | 4 | | |
| 9:15 AM | 5 | 9:15 PM | 5 | | |
| 9:30 AM | 10 | 9:30 PM | 1 | | |
| 9:45 AM | 7 | 9:45 PM | 1 | | |
| 10:00 AM | 7 | 10:00 PM | 2 | | |
| 10:15 AM | 13 | 10:15 PM | 3 | | |
| 10:30 AM | 6 | 10:30 PM | 2 | | |
| 10:45 AM | 6 | 10:45 PM | 2 | | |
| 11:00 AM | 2 | 11:00 PM | 0 | | |
| 11:15 AM | 10 | 11:15 PM | 2 | | |
| 11:30 AM | 5 | 11:30 PM | 0 | | |
| 11:45 AM | 7 | 11:45 PM | 1 | | |

QUALITY COUNTS REPORT

=====
 Type: Volume Data
 Location: W Avenue I e/o 110th St W
 Specific Location: 0 ft from
 City/State: LA County
 QCJobNo: 13184906
 Direction: WB
 Comments: Site 30
 =====

| Start Time | 3-Feb-15 | Start Time | 3-Feb-15 | ADT | 514 |
|------------|----------|------------|----------|---------|---------|
| 12:00 AM | 1 | 12:00 PM | 6 | AM Peak | 6:00 AM |
| 12:15 AM | 0 | 12:15 PM | 3 | Volume | 22 |
| 12:30 AM | 0 | 12:30 PM | 4 | | |
| 12:45 AM | 2 | 12:45 PM | 7 | PM Peak | 2:00 PM |
| 1:00 AM | 1 | 1:00 PM | 8 | Volume | 12 |
| 1:15 AM | 1 | 1:15 PM | 6 | | |
| 1:30 AM | 0 | 1:30 PM | 5 | | |
| 1:45 AM | 1 | 1:45 PM | 7 | | |
| 2:00 AM | 1 | 2:00 PM | 12 | | |
| 2:15 AM | 1 | 2:15 PM | 10 | | |
| 2:30 AM | 0 | 2:30 PM | 10 | | |
| 2:45 AM | 1 | 2:45 PM | 6 | | |
| 3:00 AM | 0 | 3:00 PM | 8 | | |
| 3:15 AM | 0 | 3:15 PM | 8 | | |
| 3:30 AM | 2 | 3:30 PM | 10 | | |
| 3:45 AM | 1 | 3:45 PM | 10 | | |
| 4:00 AM | 0 | 4:00 PM | 5 | | |
| 4:15 AM | 0 | 4:15 PM | 10 | | |
| 4:30 AM | 6 | 4:30 PM | 9 | | |
| 4:45 AM | 7 | 4:45 PM | 10 | | |
| 5:00 AM | 6 | 5:00 PM | 7 | | |
| 5:15 AM | 5 | 5:15 PM | 12 | | |
| 5:30 AM | 8 | 5:30 PM | 11 | | |
| 5:45 AM | 9 | 5:45 PM | 10 | | |
| 6:00 AM | 22 | 6:00 PM | 6 | | |
| 6:15 AM | 18 | 6:15 PM | 7 | | |
| 6:30 AM | 8 | 6:30 PM | 12 | | |
| 6:45 AM | 6 | 6:45 PM | 6 | | |
| 7:00 AM | 10 | 7:00 PM | 4 | | |
| 7:15 AM | 12 | 7:15 PM | 4 | | |
| 7:30 AM | 9 | 7:30 PM | 3 | | |
| 7:45 AM | 10 | 7:45 PM | 6 | | |
| 8:00 AM | 3 | 8:00 PM | 2 | | |
| 8:15 AM | 5 | 8:15 PM | 3 | | |
| 8:30 AM | 8 | 8:30 PM | 1 | | |
| 8:45 AM | 6 | 8:45 PM | 6 | | |
| 9:00 AM | 8 | 9:00 PM | 6 | | |
| 9:15 AM | 9 | 9:15 PM | 0 | | |
| 9:30 AM | 4 | 9:30 PM | 0 | | |
| 9:45 AM | 8 | 9:45 PM | 2 | | |
| 10:00 AM | 6 | 10:00 PM | 0 | | |
| 10:15 AM | 4 | 10:15 PM | 1 | | |
| 10:30 AM | 4 | 10:30 PM | 2 | | |
| 10:45 AM | 4 | 10:45 PM | 2 | | |
| 11:00 AM | 2 | 11:00 PM | 2 | | |
| 11:15 AM | 5 | 11:15 PM | 2 | | |
| 11:30 AM | 9 | 11:30 PM | 0 | | |
| 11:45 AM | 10 | 11:45 PM | 0 | | |

QUALITY COUNTS REPORT

=====
 Type: Volume Data
 Location: W Avenue K e/o 110th St W
 Specific Location: 0 ft from
 City/State: LA County
 QCJobNo: 13184907
 Direction: EB
 Comments: Site 31
 =====

| Start Time | 28-Jan-15 | Start Time | 28-Jan-15 | ADT | 1089 |
|------------|-----------|------------|-----------|---------|---------|
| 12:00 AM | 1 | 12:00 PM | 18 | AM Peak | 7:00 AM |
| 12:15 AM | 0 | 12:15 PM | 11 | Volume | 32 |
| 12:30 AM | 0 | 12:30 PM | 14 | | |
| 12:45 AM | 0 | 12:45 PM | 14 | PM Peak | 5:15 PM |
| 1:00 AM | 0 | 1:00 PM | 6 | Volume | 48 |
| 1:15 AM | 1 | 1:15 PM | 13 | | |
| 1:30 AM | 1 | 1:30 PM | 14 | | |
| 1:45 AM | 1 | 1:45 PM | 16 | | |
| 2:00 AM | 1 | 2:00 PM | 13 | | |
| 2:15 AM | 0 | 2:15 PM | 15 | | |
| 2:30 AM | 2 | 2:30 PM | 18 | | |
| 2:45 AM | 1 | 2:45 PM | 28 | | |
| 3:00 AM | 1 | 3:00 PM | 18 | | |
| 3:15 AM | 0 | 3:15 PM | 20 | | |
| 3:30 AM | 2 | 3:30 PM | 18 | | |
| 3:45 AM | 2 | 3:45 PM | 18 | | |
| 4:00 AM | 1 | 4:00 PM | 37 | | |
| 4:15 AM | 2 | 4:15 PM | 36 | | |
| 4:30 AM | 1 | 4:30 PM | 24 | | |
| 4:45 AM | 2 | 4:45 PM | 30 | | |
| 5:00 AM | 2 | 5:00 PM | 41 | | |
| 5:15 AM | 4 | 5:15 PM | 48 | | |
| 5:30 AM | 12 | 5:30 PM | 18 | | |
| 5:45 AM | 7 | 5:45 PM | 40 | | |
| 6:00 AM | 6 | 6:00 PM | 16 | | |
| 6:15 AM | 10 | 6:15 PM | 27 | | |
| 6:30 AM | 14 | 6:30 PM | 27 | | |
| 6:45 AM | 18 | 6:45 PM | 15 | | |
| 7:00 AM | 32 | 7:00 PM | 17 | | |
| 7:15 AM | 28 | 7:15 PM | 9 | | |
| 7:30 AM | 16 | 7:30 PM | 8 | | |
| 7:45 AM | 19 | 7:45 PM | 6 | | |
| 8:00 AM | 10 | 8:00 PM | 3 | | |
| 8:15 AM | 19 | 8:15 PM | 2 | | |
| 8:30 AM | 10 | 8:30 PM | 3 | | |
| 8:45 AM | 12 | 8:45 PM | 6 | | |
| 9:00 AM | 8 | 9:00 PM | 2 | | |
| 9:15 AM | 18 | 9:15 PM | 7 | | |
| 9:30 AM | 15 | 9:30 PM | 4 | | |
| 9:45 AM | 8 | 9:45 PM | 3 | | |
| 10:00 AM | 8 | 10:00 PM | 3 | | |
| 10:15 AM | 13 | 10:15 PM | 5 | | |
| 10:30 AM | 14 | 10:30 PM | 1 | | |
| 10:45 AM | 11 | 10:45 PM | 2 | | |
| 11:00 AM | 11 | 11:00 PM | 1 | | |
| 11:15 AM | 14 | 11:15 PM | 4 | | |
| 11:30 AM | 14 | 11:30 PM | 4 | | |
| 11:45 AM | 12 | 11:45 PM | 2 | | |

QUALITY COUNTS REPORT

=====
 Type: Volume Data
 Location: W Avenue K e/o 110th St W
 Specific Location: 0 ft from
 City/State: LA County
 QCJobNo: 13184907
 Direction: WB
 Comments: Site 31
 =====

| Start Time | 28-Jan-15 | Start Time | 28-Jan-15 | ADT | 1073 |
|------------|-----------|------------|-----------|---------|---------|
| 12:00 AM | 0 | 12:00 PM | 9 | AM Peak | 6:00 AM |
| 12:15 AM | 4 | 12:15 PM | 12 | Volume | 37 |
| 12:30 AM | 2 | 12:30 PM | 19 | | |
| 12:45 AM | 0 | 12:45 PM | 18 | PM Peak | 4:45 PM |
| 1:00 AM | 0 | 1:00 PM | 12 | Volume | 22 |
| 1:15 AM | 0 | 1:15 PM | 12 | | |
| 1:30 AM | 0 | 1:30 PM | 13 | | |
| 1:45 AM | 0 | 1:45 PM | 8 | | |
| 2:00 AM | 0 | 2:00 PM | 11 | | |
| 2:15 AM | 1 | 2:15 PM | 16 | | |
| 2:30 AM | 0 | 2:30 PM | 14 | | |
| 2:45 AM | 0 | 2:45 PM | 11 | | |
| 3:00 AM | 2 | 3:00 PM | 19 | | |
| 3:15 AM | 0 | 3:15 PM | 14 | | |
| 3:30 AM | 0 | 3:30 PM | 21 | | |
| 3:45 AM | 3 | 3:45 PM | 17 | | |
| 4:00 AM | 8 | 4:00 PM | 15 | | |
| 4:15 AM | 8 | 4:15 PM | 20 | | |
| 4:30 AM | 10 | 4:30 PM | 14 | | |
| 4:45 AM | 21 | 4:45 PM | 22 | | |
| 5:00 AM | 15 | 5:00 PM | 20 | | |
| 5:15 AM | 29 | 5:15 PM | 18 | | |
| 5:30 AM | 18 | 5:30 PM | 12 | | |
| 5:45 AM | 7 | 5:45 PM | 18 | | |
| 6:00 AM | 37 | 6:00 PM | 16 | | |
| 6:15 AM | 37 | 6:15 PM | 9 | | |
| 6:30 AM | 31 | 6:30 PM | 12 | | |
| 6:45 AM | 32 | 6:45 PM | 11 | | |
| 7:00 AM | 28 | 7:00 PM | 13 | | |
| 7:15 AM | 29 | 7:15 PM | 6 | | |
| 7:30 AM | 26 | 7:30 PM | 7 | | |
| 7:45 AM | 17 | 7:45 PM | 6 | | |
| 8:00 AM | 25 | 8:00 PM | 5 | | |
| 8:15 AM | 12 | 8:15 PM | 10 | | |
| 8:30 AM | 6 | 8:30 PM | 8 | | |
| 8:45 AM | 6 | 8:45 PM | 6 | | |
| 9:00 AM | 9 | 9:00 PM | 7 | | |
| 9:15 AM | 17 | 9:15 PM | 7 | | |
| 9:30 AM | 12 | 9:30 PM | 13 | | |
| 9:45 AM | 6 | 9:45 PM | 6 | | |
| 10:00 AM | 10 | 10:00 PM | 8 | | |
| 10:15 AM | 10 | 10:15 PM | 7 | | |
| 10:30 AM | 6 | 10:30 PM | 6 | | |
| 10:45 AM | 10 | 10:45 PM | 5 | | |
| 11:00 AM | 10 | 11:00 PM | 0 | | |
| 11:15 AM | 9 | 11:15 PM | 1 | | |
| 11:30 AM | 13 | 11:30 PM | 1 | | |
| 11:45 AM | 12 | 11:45 PM | 0 | | |

QUALITY COUNTS REPORT

=====
 Type: Volume Data
 Location: SR-138 e/o 300th St W
 Specific Location: 0 ft from
 City/State: LA County
 QCJobNo: 13184912
 Direction: EB
 Comments: Site 36
 =====

| Start Time | 28-Jan-15 | Start Time | 28-Jan-15 | ADT | 1951 |
|------------|-----------|------------|-----------|---------|---------|
| 12:00 AM | 3 | 12:00 PM | 13 | AM Peak | 9:00 AM |
| 12:15 AM | 2 | 12:15 PM | 21 | Volume | 32 |
| 12:30 AM | 4 | 12:30 PM | 24 | | |
| 12:45 AM | 3 | 12:45 PM | 20 | PM Peak | 4:30 PM |
| 1:00 AM | 2 | 1:00 PM | 15 | Volume | 66 |
| 1:15 AM | 4 | 1:15 PM | 30 | | |
| 1:30 AM | 2 | 1:30 PM | 38 | | |
| 1:45 AM | 2 | 1:45 PM | 25 | | |
| 2:00 AM | 5 | 2:00 PM | 36 | | |
| 2:15 AM | 0 | 2:15 PM | 45 | | |
| 2:30 AM | 7 | 2:30 PM | 53 | | |
| 2:45 AM | 4 | 2:45 PM | 35 | | |
| 3:00 AM | 8 | 3:00 PM | 60 | | |
| 3:15 AM | 6 | 3:15 PM | 54 | | |
| 3:30 AM | 6 | 3:30 PM | 64 | | |
| 3:45 AM | 4 | 3:45 PM | 54 | | |
| 4:00 AM | 6 | 4:00 PM | 58 | | |
| 4:15 AM | 8 | 4:15 PM | 50 | | |
| 4:30 AM | 10 | 4:30 PM | 66 | | |
| 4:45 AM | 6 | 4:45 PM | 31 | | |
| 5:00 AM | 18 | 5:00 PM | 50 | | |
| 5:15 AM | 4 | 5:15 PM | 42 | | |
| 5:30 AM | 10 | 5:30 PM | 26 | | |
| 5:45 AM | 11 | 5:45 PM | 38 | | |
| 6:00 AM | 14 | 6:00 PM | 46 | | |
| 6:15 AM | 12 | 6:15 PM | 32 | | |
| 6:30 AM | 16 | 6:30 PM | 26 | | |
| 6:45 AM | 20 | 6:45 PM | 27 | | |
| 7:00 AM | 20 | 7:00 PM | 29 | | |
| 7:15 AM | 19 | 7:15 PM | 14 | | |
| 7:30 AM | 12 | 7:30 PM | 25 | | |
| 7:45 AM | 17 | 7:45 PM | 10 | | |
| 8:00 AM | 28 | 8:00 PM | 14 | | |
| 8:15 AM | 17 | 8:15 PM | 10 | | |
| 8:30 AM | 17 | 8:30 PM | 16 | | |
| 8:45 AM | 14 | 8:45 PM | 16 | | |
| 9:00 AM | 32 | 9:00 PM | 12 | | |
| 9:15 AM | 26 | 9:15 PM | 20 | | |
| 9:30 AM | 20 | 9:30 PM | 13 | | |
| 9:45 AM | 24 | 9:45 PM | 14 | | |
| 10:00 AM | 16 | 10:00 PM | 6 | | |
| 10:15 AM | 29 | 10:15 PM | 7 | | |
| 10:30 AM | 20 | 10:30 PM | 22 | | |
| 10:45 AM | 18 | 10:45 PM | 10 | | |
| 11:00 AM | 26 | 11:00 PM | 8 | | |
| 11:15 AM | 7 | 11:15 PM | 3 | | |
| 11:30 AM | 28 | 11:30 PM | 6 | | |
| 11:45 AM | 24 | 11:45 PM | 6 | | |

QUALITY COUNTS REPORT

=====
 Type: Volume Data
 Location: SR-138 e/o 300th St W
 Specific Location: 0 ft from
 City/State: LA County
 QCJobNo: 13184912
 Direction: WB
 Comments: Site 36
 =====

| Start Time | 28-Jan-15 | Start Time | 28-Jan-15 | ADT | 2094 |
|------------|-----------|------------|-----------|---------|---------|
| 12:00 AM | 4 | 12:00 PM | 30 | AM Peak | 5:45 AM |
| 12:15 AM | 7 | 12:15 PM | 22 | Volume | 50 |
| 12:30 AM | 1 | 12:30 PM | 26 | | |
| 12:45 AM | 4 | 12:45 PM | 19 | PM Peak | 3:00 PM |
| 1:00 AM | 0 | 1:00 PM | 22 | Volume | 47 |
| 1:15 AM | 10 | 1:15 PM | 31 | | |
| 1:30 AM | 5 | 1:30 PM | 28 | | |
| 1:45 AM | 1 | 1:45 PM | 30 | | |
| 2:00 AM | 6 | 2:00 PM | 24 | | |
| 2:15 AM | 6 | 2:15 PM | 25 | | |
| 2:30 AM | 6 | 2:30 PM | 44 | | |
| 2:45 AM | 8 | 2:45 PM | 28 | | |
| 3:00 AM | 5 | 3:00 PM | 47 | | |
| 3:15 AM | 6 | 3:15 PM | 28 | | |
| 3:30 AM | 6 | 3:30 PM | 44 | | |
| 3:45 AM | 8 | 3:45 PM | 25 | | |
| 4:00 AM | 11 | 4:00 PM | 26 | | |
| 4:15 AM | 15 | 4:15 PM | 45 | | |
| 4:30 AM | 21 | 4:30 PM | 26 | | |
| 4:45 AM | 20 | 4:45 PM | 25 | | |
| 5:00 AM | 28 | 5:00 PM | 21 | | |
| 5:15 AM | 30 | 5:15 PM | 27 | | |
| 5:30 AM | 28 | 5:30 PM | 22 | | |
| 5:45 AM | 50 | 5:45 PM | 10 | | |
| 6:00 AM | 30 | 6:00 PM | 24 | | |
| 6:15 AM | 46 | 6:15 PM | 35 | | |
| 6:30 AM | 46 | 6:30 PM | 18 | | |
| 6:45 AM | 45 | 6:45 PM | 16 | | |
| 7:00 AM | 28 | 7:00 PM | 14 | | |
| 7:15 AM | 20 | 7:15 PM | 20 | | |
| 7:30 AM | 36 | 7:30 PM | 14 | | |
| 7:45 AM | 21 | 7:45 PM | 15 | | |
| 8:00 AM | 41 | 8:00 PM | 10 | | |
| 8:15 AM | 30 | 8:15 PM | 5 | | |
| 8:30 AM | 32 | 8:30 PM | 24 | | |
| 8:45 AM | 30 | 8:45 PM | 12 | | |
| 9:00 AM | 32 | 9:00 PM | 6 | | |
| 9:15 AM | 44 | 9:15 PM | 15 | | |
| 9:30 AM | 34 | 9:30 PM | 24 | | |
| 9:45 AM | 32 | 9:45 PM | 13 | | |
| 10:00 AM | 39 | 10:00 PM | 6 | | |
| 10:15 AM | 43 | 10:15 PM | 10 | | |
| 10:30 AM | 35 | 10:30 PM | 11 | | |
| 10:45 AM | 25 | 10:45 PM | 10 | | |
| 11:00 AM | 28 | 11:00 PM | 6 | | |
| 11:15 AM | 22 | 11:15 PM | 10 | | |
| 11:30 AM | 32 | 11:30 PM | 8 | | |
| 11:45 AM | 30 | 11:45 PM | 6 | | |

QUALITY COUNTS REPORT

=====
 Type: Volume Data
 Location: 60th St W s/o W Avenue A
 Specific Location: 0 ft from
 City/State: LA County
 QCJobNo: 13184916
 Direction: NB
 Comments: Site 40
 =====

| Start Time | 3-Feb-15 | Start Time | 3-Feb-15 | ADT | 564 |
|------------|----------|------------|----------|---------|---------|
| 12:00 AM | 1 | 12:00 PM | 8 | AM Peak | 7:30 AM |
| 12:15 AM | 0 | 12:15 PM | 4 | Volume | 12 |
| 12:30 AM | 0 | 12:30 PM | 6 | | |
| 12:45 AM | 1 | 12:45 PM | 6 | PM Peak | 3:45 PM |
| 1:00 AM | 2 | 1:00 PM | 9 | Volume | 20 |
| 1:15 AM | 1 | 1:15 PM | 8 | | |
| 1:30 AM | 0 | 1:30 PM | 3 | | |
| 1:45 AM | 1 | 1:45 PM | 8 | | |
| 2:00 AM | 1 | 2:00 PM | 6 | | |
| 2:15 AM | 0 | 2:15 PM | 7 | | |
| 2:30 AM | 1 | 2:30 PM | 10 | | |
| 2:45 AM | 1 | 2:45 PM | 10 | | |
| 3:00 AM | 0 | 3:00 PM | 8 | | |
| 3:15 AM | 1 | 3:15 PM | 8 | | |
| 3:30 AM | 1 | 3:30 PM | 14 | | |
| 3:45 AM | 0 | 3:45 PM | 20 | | |
| 4:00 AM | 2 | 4:00 PM | 16 | | |
| 4:15 AM | 1 | 4:15 PM | 14 | | |
| 4:30 AM | 5 | 4:30 PM | 18 | | |
| 4:45 AM | 3 | 4:45 PM | 15 | | |
| 5:00 AM | 2 | 5:00 PM | 11 | | |
| 5:15 AM | 8 | 5:15 PM | 13 | | |
| 5:30 AM | 6 | 5:30 PM | 20 | | |
| 5:45 AM | 7 | 5:45 PM | 11 | | |
| 6:00 AM | 3 | 6:00 PM | 9 | | |
| 6:15 AM | 9 | 6:15 PM | 11 | | |
| 6:30 AM | 4 | 6:30 PM | 6 | | |
| 6:45 AM | 8 | 6:45 PM | 10 | | |
| 7:00 AM | 3 | 7:00 PM | 6 | | |
| 7:15 AM | 3 | 7:15 PM | 1 | | |
| 7:30 AM | 12 | 7:30 PM | 4 | | |
| 7:45 AM | 6 | 7:45 PM | 8 | | |
| 8:00 AM | 11 | 8:00 PM | 4 | | |
| 8:15 AM | 6 | 8:15 PM | 8 | | |
| 8:30 AM | 7 | 8:30 PM | 4 | | |
| 8:45 AM | 9 | 8:45 PM | 5 | | |
| 9:00 AM | 10 | 9:00 PM | 3 | | |
| 9:15 AM | 3 | 9:15 PM | 10 | | |
| 9:30 AM | 2 | 9:30 PM | 1 | | |
| 9:45 AM | 4 | 9:45 PM | 5 | | |
| 10:00 AM | 2 | 10:00 PM | 5 | | |
| 10:15 AM | 10 | 10:15 PM | 2 | | |
| 10:30 AM | 5 | 10:30 PM | 4 | | |
| 10:45 AM | 4 | 10:45 PM | 1 | | |
| 11:00 AM | 4 | 11:00 PM | 3 | | |
| 11:15 AM | 5 | 11:15 PM | 2 | | |
| 11:30 AM | 6 | 11:30 PM | 3 | | |
| 11:45 AM | 10 | 11:45 PM | 5 | | |

QUALITY COUNTS REPORT

=====
 Type: Volume Data
 Location: 60th St W s/o W Avenue A
 Specific Location: 0 ft from
 City/State: LA County
 QCJobNo: 13184916
 Direction: SB
 Comments: Site 40
 =====

| Start Time | 3-Feb-15 | Start Time | 3-Feb-15 | ADT | 490 |
|------------|----------|------------|----------|---------|---------|
| 12:00 AM | 1 | 12:00 PM | 6 | AM Peak | 7:00 AM |
| 12:15 AM | 0 | 12:15 PM | 7 | Volume | 19 |
| 12:30 AM | 2 | 12:30 PM | 10 | | |
| 12:45 AM | 0 | 12:45 PM | 6 | PM Peak | 3:45 PM |
| 1:00 AM | 0 | 1:00 PM | 7 | Volume | 16 |
| 1:15 AM | 2 | 1:15 PM | 10 | | |
| 1:30 AM | 1 | 1:30 PM | 14 | | |
| 1:45 AM | 0 | 1:45 PM | 5 | | |
| 2:00 AM | 0 | 2:00 PM | 7 | | |
| 2:15 AM | 1 | 2:15 PM | 4 | | |
| 2:30 AM | 0 | 2:30 PM | 3 | | |
| 2:45 AM | 0 | 2:45 PM | 10 | | |
| 3:00 AM | 1 | 3:00 PM | 7 | | |
| 3:15 AM | 1 | 3:15 PM | 11 | | |
| 3:30 AM | 0 | 3:30 PM | 14 | | |
| 3:45 AM | 0 | 3:45 PM | 16 | | |
| 4:00 AM | 2 | 4:00 PM | 11 | | |
| 4:15 AM | 2 | 4:15 PM | 6 | | |
| 4:30 AM | 4 | 4:30 PM | 15 | | |
| 4:45 AM | 4 | 4:45 PM | 4 | | |
| 5:00 AM | 1 | 5:00 PM | 12 | | |
| 5:15 AM | 4 | 5:15 PM | 6 | | |
| 5:30 AM | 6 | 5:30 PM | 11 | | |
| 5:45 AM | 6 | 5:45 PM | 9 | | |
| 6:00 AM | 6 | 6:00 PM | 6 | | |
| 6:15 AM | 8 | 6:15 PM | 7 | | |
| 6:30 AM | 9 | 6:30 PM | 14 | | |
| 6:45 AM | 11 | 6:45 PM | 4 | | |
| 7:00 AM | 19 | 7:00 PM | 4 | | |
| 7:15 AM | 13 | 7:15 PM | 3 | | |
| 7:30 AM | 14 | 7:30 PM | 2 | | |
| 7:45 AM | 7 | 7:45 PM | 6 | | |
| 8:00 AM | 6 | 8:00 PM | 3 | | |
| 8:15 AM | 7 | 8:15 PM | 2 | | |
| 8:30 AM | 5 | 8:30 PM | 3 | | |
| 8:45 AM | 11 | 8:45 PM | 3 | | |
| 9:00 AM | 5 | 9:00 PM | 4 | | |
| 9:15 AM | 2 | 9:15 PM | 5 | | |
| 9:30 AM | 5 | 9:30 PM | 5 | | |
| 9:45 AM | 2 | 9:45 PM | 3 | | |
| 10:00 AM | 5 | 10:00 PM | 1 | | |
| 10:15 AM | 7 | 10:15 PM | 1 | | |
| 10:30 AM | 1 | 10:30 PM | 1 | | |
| 10:45 AM | 2 | 10:45 PM | 2 | | |
| 11:00 AM | 2 | 11:00 PM | 1 | | |
| 11:15 AM | 4 | 11:15 PM | 0 | | |
| 11:30 AM | 4 | 11:30 PM | 0 | | |
| 11:45 AM | 5 | 11:45 PM | 1 | | |

QUALITY COUNTS REPORT

=====
 Type: Volume Data
 Location: 60th St W s/o SR-138
 Specific Location: 0 ft from
 City/State: LA County
 QCJobNo: 13184920
 Direction: NB
 Comments: Site 44
 =====

| Start Time | 28-Jan-15 | Start Time | 28-Jan-15 | ADT | 702 |
|------------|-----------|------------|-----------|---------|---------|
| 12:00 AM | 3 | 12:00 PM | 8 | AM Peak | 9:15 AM |
| 12:15 AM | 1 | 12:15 PM | 8 | Volume | 18 |
| 12:30 AM | 0 | 12:30 PM | 10 | | |
| 12:45 AM | 0 | 12:45 PM | 9 | PM Peak | 3:30 PM |
| 1:00 AM | 2 | 1:00 PM | 8 | Volume | 22 |
| 1:15 AM | 1 | 1:15 PM | 13 | | |
| 1:30 AM | 0 | 1:30 PM | 10 | | |
| 1:45 AM | 2 | 1:45 PM | 8 | | |
| 2:00 AM | 1 | 2:00 PM | 14 | | |
| 2:15 AM | 0 | 2:15 PM | 12 | | |
| 2:30 AM | 0 | 2:30 PM | 14 | | |
| 2:45 AM | 1 | 2:45 PM | 11 | | |
| 3:00 AM | 0 | 3:00 PM | 8 | | |
| 3:15 AM | 0 | 3:15 PM | 14 | | |
| 3:30 AM | 2 | 3:30 PM | 22 | | |
| 3:45 AM | 1 | 3:45 PM | 16 | | |
| 4:00 AM | 3 | 4:00 PM | 16 | | |
| 4:15 AM | 2 | 4:15 PM | 20 | | |
| 4:30 AM | 1 | 4:30 PM | 16 | | |
| 4:45 AM | 8 | 4:45 PM | 12 | | |
| 5:00 AM | 6 | 5:00 PM | 16 | | |
| 5:15 AM | 11 | 5:15 PM | 17 | | |
| 5:30 AM | 6 | 5:30 PM | 17 | | |
| 5:45 AM | 8 | 5:45 PM | 11 | | |
| 6:00 AM | 10 | 6:00 PM | 6 | | |
| 6:15 AM | 14 | 6:15 PM | 14 | | |
| 6:30 AM | 14 | 6:30 PM | 9 | | |
| 6:45 AM | 11 | 6:45 PM | 3 | | |
| 7:00 AM | 6 | 7:00 PM | 2 | | |
| 7:15 AM | 9 | 7:15 PM | 10 | | |
| 7:30 AM | 10 | 7:30 PM | 7 | | |
| 7:45 AM | 10 | 7:45 PM | 4 | | |
| 8:00 AM | 3 | 8:00 PM | 6 | | |
| 8:15 AM | 3 | 8:15 PM | 8 | | |
| 8:30 AM | 5 | 8:30 PM | 6 | | |
| 8:45 AM | 6 | 8:45 PM | 8 | | |
| 9:00 AM | 3 | 9:00 PM | 12 | | |
| 9:15 AM | 18 | 9:15 PM | 7 | | |
| 9:30 AM | 8 | 9:30 PM | 9 | | |
| 9:45 AM | 4 | 9:45 PM | 6 | | |
| 10:00 AM | 9 | 10:00 PM | 8 | | |
| 10:15 AM | 8 | 10:15 PM | 2 | | |
| 10:30 AM | 6 | 10:30 PM | 0 | | |
| 10:45 AM | 9 | 10:45 PM | 2 | | |
| 11:00 AM | 10 | 11:00 PM | 0 | | |
| 11:15 AM | 10 | 11:15 PM | 5 | | |
| 11:30 AM | 6 | 11:30 PM | 3 | | |
| 11:45 AM | 2 | 11:45 PM | 2 | | |

QUALITY COUNTS REPORT

=====
 Type: Volume Data
 Location: 60th St W s/o SR-138
 Specific Location: 0 ft from
 City/State: LA County
 QCJobNo: 13184920
 Direction: SB
 Comments: Site 44
 =====

| Start Time | 28-Jan-15 | Start Time | 28-Jan-15 | ADT | 673 |
|------------|-----------|------------|-----------|---------|---------|
| 12:00 AM | 1 | 12:00 PM | 8 | AM Peak | 7:00 AM |
| 12:15 AM | 1 | 12:15 PM | 8 | Volume | 24 |
| 12:30 AM | 0 | 12:30 PM | 6 | | |
| 12:45 AM | 1 | 12:45 PM | 9 | PM Peak | 1:15 PM |
| 1:00 AM | 1 | 1:00 PM | 14 | Volume | 20 |
| 1:15 AM | 0 | 1:15 PM | 20 | | |
| 1:30 AM | 1 | 1:30 PM | 8 | | |
| 1:45 AM | 1 | 1:45 PM | 16 | | |
| 2:00 AM | 1 | 2:00 PM | 9 | | |
| 2:15 AM | 1 | 2:15 PM | 5 | | |
| 2:30 AM | 0 | 2:30 PM | 6 | | |
| 2:45 AM | 1 | 2:45 PM | 6 | | |
| 3:00 AM | 1 | 3:00 PM | 17 | | |
| 3:15 AM | 2 | 3:15 PM | 10 | | |
| 3:30 AM | 0 | 3:30 PM | 10 | | |
| 3:45 AM | 2 | 3:45 PM | 18 | | |
| 4:00 AM | 1 | 4:00 PM | 8 | | |
| 4:15 AM | 2 | 4:15 PM | 15 | | |
| 4:30 AM | 2 | 4:30 PM | 16 | | |
| 4:45 AM | 2 | 4:45 PM | 12 | | |
| 5:00 AM | 4 | 5:00 PM | 12 | | |
| 5:15 AM | 2 | 5:15 PM | 16 | | |
| 5:30 AM | 12 | 5:30 PM | 11 | | |
| 5:45 AM | 7 | 5:45 PM | 4 | | |
| 6:00 AM | 6 | 6:00 PM | 9 | | |
| 6:15 AM | 8 | 6:15 PM | 8 | | |
| 6:30 AM | 14 | 6:30 PM | 10 | | |
| 6:45 AM | 18 | 6:45 PM | 9 | | |
| 7:00 AM | 24 | 7:00 PM | 5 | | |
| 7:15 AM | 17 | 7:15 PM | 8 | | |
| 7:30 AM | 20 | 7:30 PM | 4 | | |
| 7:45 AM | 14 | 7:45 PM | 6 | | |
| 8:00 AM | 12 | 8:00 PM | 4 | | |
| 8:15 AM | 5 | 8:15 PM | 5 | | |
| 8:30 AM | 12 | 8:30 PM | 6 | | |
| 8:45 AM | 10 | 8:45 PM | 6 | | |
| 9:00 AM | 3 | 9:00 PM | 1 | | |
| 9:15 AM | 6 | 9:15 PM | 2 | | |
| 9:30 AM | 6 | 9:30 PM | 2 | | |
| 9:45 AM | 6 | 9:45 PM | 2 | | |
| 10:00 AM | 4 | 10:00 PM | 4 | | |
| 10:15 AM | 6 | 10:15 PM | 4 | | |
| 10:30 AM | 10 | 10:30 PM | 6 | | |
| 10:45 AM | 16 | 10:45 PM | 2 | | |
| 11:00 AM | 6 | 11:00 PM | 2 | | |
| 11:15 AM | 11 | 11:15 PM | 0 | | |
| 11:30 AM | 7 | 11:30 PM | 1 | | |
| 11:45 AM | 12 | 11:45 PM | 4 | | |

QUALITY COUNTS REPORT

=====
 Type: Volume Data
 Location: 110th St W s/o W Avenue G
 Specific Location: 0 ft from
 City/State: LA County
 QCJobNo: 13184921
 Direction: NB
 Comments: Site 45
 =====

| Start Time | 28-Jan-15 | Start Time | 28-Jan-15 | ADT | 294 |
|------------|-----------|------------|-----------|---------|---------|
| 12:00 AM | 3 | 12:00 PM | 3 | AM Peak | 6:15 AM |
| 12:15 AM | 0 | 12:15 PM | 2 | Volume | 12 |
| 12:30 AM | 0 | 12:30 PM | 2 | | |
| 12:45 AM | 1 | 12:45 PM | 3 | PM Peak | 5:15 PM |
| 1:00 AM | 0 | 1:00 PM | 5 | Volume | 13 |
| 1:15 AM | 1 | 1:15 PM | 2 | | |
| 1:30 AM | 0 | 1:30 PM | 6 | | |
| 1:45 AM | 0 | 1:45 PM | 2 | | |
| 2:00 AM | 0 | 2:00 PM | 3 | | |
| 2:15 AM | 0 | 2:15 PM | 4 | | |
| 2:30 AM | 0 | 2:30 PM | 4 | | |
| 2:45 AM | 0 | 2:45 PM | 3 | | |
| 3:00 AM | 0 | 3:00 PM | 8 | | |
| 3:15 AM | 0 | 3:15 PM | 3 | | |
| 3:30 AM | 0 | 3:30 PM | 1 | | |
| 3:45 AM | 0 | 3:45 PM | 4 | | |
| 4:00 AM | 0 | 4:00 PM | 6 | | |
| 4:15 AM | 1 | 4:15 PM | 10 | | |
| 4:30 AM | 0 | 4:30 PM | 11 | | |
| 4:45 AM | 3 | 4:45 PM | 6 | | |
| 5:00 AM | 1 | 5:00 PM | 8 | | |
| 5:15 AM | 2 | 5:15 PM | 13 | | |
| 5:30 AM | 8 | 5:30 PM | 8 | | |
| 5:45 AM | 9 | 5:45 PM | 8 | | |
| 6:00 AM | 4 | 6:00 PM | 5 | | |
| 6:15 AM | 12 | 6:15 PM | 4 | | |
| 6:30 AM | 12 | 6:30 PM | 3 | | |
| 6:45 AM | 11 | 6:45 PM | 6 | | |
| 7:00 AM | 2 | 7:00 PM | 4 | | |
| 7:15 AM | 4 | 7:15 PM | 4 | | |
| 7:30 AM | 4 | 7:30 PM | 2 | | |
| 7:45 AM | 0 | 7:45 PM | 2 | | |
| 8:00 AM | 3 | 8:00 PM | 1 | | |
| 8:15 AM | 2 | 8:15 PM | 3 | | |
| 8:30 AM | 4 | 8:30 PM | 1 | | |
| 8:45 AM | 6 | 8:45 PM | 2 | | |
| 9:00 AM | 1 | 9:00 PM | 1 | | |
| 9:15 AM | 8 | 9:15 PM | 0 | | |
| 9:30 AM | 0 | 9:30 PM | 1 | | |
| 9:45 AM | 2 | 9:45 PM | 1 | | |
| 10:00 AM | 2 | 10:00 PM | 0 | | |
| 10:15 AM | 2 | 10:15 PM | 0 | | |
| 10:30 AM | 3 | 10:30 PM | 2 | | |
| 10:45 AM | 3 | 10:45 PM | 1 | | |
| 11:00 AM | 2 | 11:00 PM | 2 | | |
| 11:15 AM | 3 | 11:15 PM | 0 | | |
| 11:30 AM | 0 | 11:30 PM | 0 | | |
| 11:45 AM | 4 | 11:45 PM | 1 | | |

QUALITY COUNTS REPORT

=====
 Type: Volume Data
 Location: 110th St W s/o W Avenue G
 Specific Location: 0 ft from
 City/State: LA County
 QCJobNo: 13184921
 Direction: SB
 Comments: Site 45
 =====

| Start Time | 28-Jan-15 | Start Time | 28-Jan-15 | ADT | 305 |
|------------|-----------|------------|-----------|---------|---------|
| 12:00 AM | 1 | 12:00 PM | 6 | AM Peak | 5:30 AM |
| 12:15 AM | 0 | 12:15 PM | 1 | Volume | 13 |
| 12:30 AM | 0 | 12:30 PM | 3 | | |
| 12:45 AM | 0 | 12:45 PM | 6 | PM Peak | 3:30 PM |
| 1:00 AM | 0 | 1:00 PM | 2 | Volume | 10 |
| 1:15 AM | 0 | 1:15 PM | 4 | | |
| 1:30 AM | 2 | 1:30 PM | 3 | | |
| 1:45 AM | 2 | 1:45 PM | 6 | | |
| 2:00 AM | 1 | 2:00 PM | 4 | | |
| 2:15 AM | 1 | 2:15 PM | 3 | | |
| 2:30 AM | 0 | 2:30 PM | 4 | | |
| 2:45 AM | 0 | 2:45 PM | 4 | | |
| 3:00 AM | 1 | 3:00 PM | 2 | | |
| 3:15 AM | 1 | 3:15 PM | 6 | | |
| 3:30 AM | 0 | 3:30 PM | 10 | | |
| 3:45 AM | 3 | 3:45 PM | 7 | | |
| 4:00 AM | 2 | 4:00 PM | 8 | | |
| 4:15 AM | 4 | 4:15 PM | 10 | | |
| 4:30 AM | 2 | 4:30 PM | 0 | | |
| 4:45 AM | 4 | 4:45 PM | 4 | | |
| 5:00 AM | 3 | 5:00 PM | 6 | | |
| 5:15 AM | 11 | 5:15 PM | 6 | | |
| 5:30 AM | 13 | 5:30 PM | 7 | | |
| 5:45 AM | 6 | 5:45 PM | 4 | | |
| 6:00 AM | 8 | 6:00 PM | 1 | | |
| 6:15 AM | 6 | 6:15 PM | 6 | | |
| 6:30 AM | 7 | 6:30 PM | 6 | | |
| 6:45 AM | 7 | 6:45 PM | 2 | | |
| 7:00 AM | 9 | 7:00 PM | 2 | | |
| 7:15 AM | 5 | 7:15 PM | 2 | | |
| 7:30 AM | 6 | 7:30 PM | 2 | | |
| 7:45 AM | 6 | 7:45 PM | 1 | | |
| 8:00 AM | 3 | 8:00 PM | 2 | | |
| 8:15 AM | 3 | 8:15 PM | 1 | | |
| 8:30 AM | 3 | 8:30 PM | 2 | | |
| 8:45 AM | 4 | 8:45 PM | 3 | | |
| 9:00 AM | 3 | 9:00 PM | 0 | | |
| 9:15 AM | 1 | 9:15 PM | 3 | | |
| 9:30 AM | 4 | 9:30 PM | 2 | | |
| 9:45 AM | 2 | 9:45 PM | 2 | | |
| 10:00 AM | 2 | 10:00 PM | 0 | | |
| 10:15 AM | 1 | 10:15 PM | 2 | | |
| 10:30 AM | 1 | 10:30 PM | 1 | | |
| 10:45 AM | 2 | 10:45 PM | 1 | | |
| 11:00 AM | 2 | 11:00 PM | 0 | | |
| 11:15 AM | 1 | 11:15 PM | 0 | | |
| 11:30 AM | 2 | 11:30 PM | 0 | | |
| 11:45 AM | 3 | 11:45 PM | 0 | | |

QUALITY COUNTS REPORT

=====
 Type: Volume Data
 Location: 110th St W s/o E Avenue K
 Specific Location: 0 ft from
 City/State: LA County
 QCJobNo: 13184923
 Direction: NB
 Comments: Site 54
 =====

| Start Time | 28-Jan-15 | Start Time | 28-Jan-15 | ADT | 1641 |
|------------|-----------|------------|-----------|---------|---------|
| 12:00 AM | 0 | 12:00 PM | 22 | AM Peak | 7:30 AM |
| 12:15 AM | 1 | 12:15 PM | 14 | Volume | 37 |
| 12:30 AM | 2 | 12:30 PM | 20 | | |
| 12:45 AM | 1 | 12:45 PM | 18 | PM Peak | 5:15 PM |
| 1:00 AM | 1 | 1:00 PM | 18 | Volume | 76 |
| 1:15 AM | 0 | 1:15 PM | 19 | | |
| 1:30 AM | 1 | 1:30 PM | 25 | | |
| 1:45 AM | 1 | 1:45 PM | 19 | | |
| 2:00 AM | 1 | 2:00 PM | 19 | | |
| 2:15 AM | 1 | 2:15 PM | 19 | | |
| 2:30 AM | 1 | 2:30 PM | 38 | | |
| 2:45 AM | 0 | 2:45 PM | 34 | | |
| 3:00 AM | 3 | 3:00 PM | 24 | | |
| 3:15 AM | 1 | 3:15 PM | 28 | | |
| 3:30 AM | 2 | 3:30 PM | 30 | | |
| 3:45 AM | 1 | 3:45 PM | 26 | | |
| 4:00 AM | 2 | 4:00 PM | 53 | | |
| 4:15 AM | 2 | 4:15 PM | 54 | | |
| 4:30 AM | 2 | 4:30 PM | 48 | | |
| 4:45 AM | 5 | 4:45 PM | 42 | | |
| 5:00 AM | 5 | 5:00 PM | 62 | | |
| 5:15 AM | 12 | 5:15 PM | 76 | | |
| 5:30 AM | 16 | 5:30 PM | 40 | | |
| 5:45 AM | 13 | 5:45 PM | 57 | | |
| 6:00 AM | 16 | 6:00 PM | 27 | | |
| 6:15 AM | 13 | 6:15 PM | 43 | | |
| 6:30 AM | 27 | 6:30 PM | 32 | | |
| 6:45 AM | 34 | 6:45 PM | 24 | | |
| 7:00 AM | 36 | 7:00 PM | 24 | | |
| 7:15 AM | 31 | 7:15 PM | 19 | | |
| 7:30 AM | 37 | 7:30 PM | 6 | | |
| 7:45 AM | 24 | 7:45 PM | 11 | | |
| 8:00 AM | 25 | 8:00 PM | 4 | | |
| 8:15 AM | 24 | 8:15 PM | 8 | | |
| 8:30 AM | 20 | 8:30 PM | 6 | | |
| 8:45 AM | 14 | 8:45 PM | 8 | | |
| 9:00 AM | 10 | 9:00 PM | 6 | | |
| 9:15 AM | 18 | 9:15 PM | 7 | | |
| 9:30 AM | 20 | 9:30 PM | 6 | | |
| 9:45 AM | 12 | 9:45 PM | 4 | | |
| 10:00 AM | 12 | 10:00 PM | 5 | | |
| 10:15 AM | 20 | 10:15 PM | 6 | | |
| 10:30 AM | 20 | 10:30 PM | 5 | | |
| 10:45 AM | 11 | 10:45 PM | 4 | | |
| 11:00 AM | 16 | 11:00 PM | 2 | | |
| 11:15 AM | 18 | 11:15 PM | 4 | | |
| 11:30 AM | 15 | 11:30 PM | 7 | | |
| 11:45 AM | 19 | 11:45 PM | 2 | | |

QUALITY COUNTS REPORT

=====
 Type: Volume Data
 Location: 110th St W s/o E Avenue K
 Specific Location: 0 ft from
 City/State: LA County
 QCJobNo: 13184923
 Direction: SB
 Comments: Site 54
 =====

| Start Time | 28-Jan-15 | Start Time | 28-Jan-15 | ADT | 1640 |
|------------|-----------|------------|-----------|---------|---------|
| 12:00 AM | 1 | 12:00 PM | 14 | AM Peak | 6:15 AM |
| 12:15 AM | 4 | 12:15 PM | 14 | Volume | 70 |
| 12:30 AM | 1 | 12:30 PM | 26 | | |
| 12:45 AM | 0 | 12:45 PM | 19 | PM Peak | 3:45 PM |
| 1:00 AM | 3 | 1:00 PM | 15 | Volume | 32 |
| 1:15 AM | 0 | 1:15 PM | 15 | | |
| 1:30 AM | 0 | 1:30 PM | 18 | | |
| 1:45 AM | 2 | 1:45 PM | 12 | | |
| 2:00 AM | 0 | 2:00 PM | 22 | | |
| 2:15 AM | 1 | 2:15 PM | 21 | | |
| 2:30 AM | 1 | 2:30 PM | 21 | | |
| 2:45 AM | 0 | 2:45 PM | 22 | | |
| 3:00 AM | 3 | 3:00 PM | 26 | | |
| 3:15 AM | 0 | 3:15 PM | 26 | | |
| 3:30 AM | 2 | 3:30 PM | 25 | | |
| 3:45 AM | 6 | 3:45 PM | 32 | | |
| 4:00 AM | 12 | 4:00 PM | 22 | | |
| 4:15 AM | 14 | 4:15 PM | 28 | | |
| 4:30 AM | 15 | 4:30 PM | 20 | | |
| 4:45 AM | 29 | 4:45 PM | 27 | | |
| 5:00 AM | 31 | 5:00 PM | 28 | | |
| 5:15 AM | 59 | 5:15 PM | 27 | | |
| 5:30 AM | 35 | 5:30 PM | 20 | | |
| 5:45 AM | 42 | 5:45 PM | 22 | | |
| 6:00 AM | 69 | 6:00 PM | 22 | | |
| 6:15 AM | 70 | 6:15 PM | 14 | | |
| 6:30 AM | 42 | 6:30 PM | 24 | | |
| 6:45 AM | 54 | 6:45 PM | 14 | | |
| 7:00 AM | 42 | 7:00 PM | 18 | | |
| 7:15 AM | 41 | 7:15 PM | 9 | | |
| 7:30 AM | 44 | 7:30 PM | 8 | | |
| 7:45 AM | 27 | 7:45 PM | 8 | | |
| 8:00 AM | 40 | 8:00 PM | 7 | | |
| 8:15 AM | 18 | 8:15 PM | 12 | | |
| 8:30 AM | 11 | 8:30 PM | 9 | | |
| 8:45 AM | 14 | 8:45 PM | 14 | | |
| 9:00 AM | 14 | 9:00 PM | 7 | | |
| 9:15 AM | 14 | 9:15 PM | 4 | | |
| 9:30 AM | 12 | 9:30 PM | 15 | | |
| 9:45 AM | 7 | 9:45 PM | 15 | | |
| 10:00 AM | 16 | 10:00 PM | 10 | | |
| 10:15 AM | 13 | 10:15 PM | 11 | | |
| 10:30 AM | 9 | 10:30 PM | 6 | | |
| 10:45 AM | 11 | 10:45 PM | 6 | | |
| 11:00 AM | 9 | 11:00 PM | 1 | | |
| 11:15 AM | 12 | 11:15 PM | 2 | | |
| 11:30 AM | 15 | 11:30 PM | 2 | | |
| 11:45 AM | 14 | 11:45 PM | 1 | | |